Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics

Diploma Thesis

Impact of Foreign Direct Investment on Employment in the Czech Republic

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

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Objectives of thesis

The aim of the Thesis is to answer the following questions

1. Is there co-integrating relationship between FDI inflow and domestic employment?
2. Does the co-integrating relationship between FDI and employment vary across sectors of economy?
3. Does FDI cause employment in the Czech Republic in the short run and in the long run?

Methodology

The thesis aims to investigate the impact of FDI on employment in the Czech Republic. In order to find correlation between the variables FDI, EMP and GDP I compute Pearson Correlation Coefficient between all the three variables. In the second more in depth co-integration analysis, Im-Pesaran-Shin (IPS) test is applied to all the three variables in order to find out the order of integration of the variables. After finding out the order of integration Johansen Fisher Panel Co-integration Test in order to find out if there exist one or more co-integration relationships between FDI, GDP and employment. Once the co-integrating relationship is determined between the variables then I apply the Vector Error Correction Model (VECM) in order to find out the short term and long term causality running from FDI and GDP to the employment in the Czech Republic.
In the end impulse response functions are generated in order to find out the impact of a shock in one variable on the other variables.

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Declaration

I declare that I have worked on my diploma thesis titled “Impact of FDI on employment in the Czech Republic” by myself and I have used only the sources mentioned at the end of the thesis.

In Prague on date _15.03.2014__

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Arshad Hayat

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Table of Contents

Declaration 1

Acknowledgement 2

List of Abbreviations 6

Abstrakt 7

Abstract 8

Chapter: 1 Introduction 9

1.1 Objectives of the Study 12

1.2 Limitations of the Study 13

Chapter: 2 Literature Review 14

2.1. FDI Inflow and GDP 15

2.2. FDI Inflow and Employment 27

Chapter: 3 Data and Methodology 36

3.1 Data 36

3.2 Methodology 36

3.3 Pearson Correlation Coefficient 37

3.4 Im-Pesaran-Shin (IPS) Test for Unit Root 38

3.5 Johansen Fisher Co-integration Test 39

3.6 Vector Error Correction Model (VECM) 41

3.7 Impulse Response Functions 42

Chapter: 4 Patterns of Foreign Direct Investment in the Czech Republic 43

4.1 Inward FDI in the Czech Republic 43

4.2 Inward FDI by Industry 46

4.3 Inward FDI by Source Country 49

4.4 Inward FDI by Region of Czech Republic 52

4.5 Employment in the Czech Republic 54

4.6 Employment by Industry in the Czech Republic 55

Chapter: 5 Analysis of Results 57

5.1 Pearson Correlation Coefficient 57

5.2 Im-Pesaran-Shin (IPS) Test for Unit Root 58

5.3 Johansen Fisher Co-integration Test 59

5.4 Vector Error Correction Model 62

5.5 Impulse response Functions 65

Chapter: 6 Conclusions and Recommendations 66
References 68

Dopad přímých zahraničních investic na zaměstnanost v České republice

Impact of Foreign Direct Investment on Employment in the Czech Republic

List of Abbreviations

ADF	Augmented Dickey Fuller
AIK	Akaike Information Criteria
CZK	Czech Crown
EMP	Employment
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
ILO	International Labor Organization
IPS	Im Pesaran Shim
MNEs	Multinational Enterprises
OECD	Organization for Economic Cooperation and Development
TPCA	Toyota Peugeot Citroen Automobile
OLS	Ordinary Least Square
VECM	Vector Error Correction Model

Abstrakt

Tato práce se zabývá zkoumáním vlivu přílivu přímých zahraničních investic (PZI) do České republiky v letech 1993 – 2011. Nejprve, k zjištění proměnných a pořadí jejich integrace byl použit Im-Pesaran-Shin (IPS) test. Johansen Fisherův kointegračni test byl použit pro zjištění kointegračního vztahu mezi přílivem PZI, HDP a zaměstnaností v České republice. Po nalezení kointegračního vztahu byl použit model vektoru korelační chyby, aby bylo možné určit souvislosti mezi PZI, HDP a zaměstnaností v České republice, a to v krátkém i dlouhém období. Nakonec byly odhadnuty impulsní funkce, abychom nalezli reakci HDP a zaměstnanosti na exogenní šok přílivu PZI.

Výsledky naznačují, že existuje kointegrace mezi přílivem PZI a zaměstnaností v celé ekonomice. Ačkoli Johan Fisherův test provedený pro jednotlivé sektory naznačuje, že kointegrační vztah existuje pouze pro sektor služeb, primární sektor a stavebnictví, zatímco zpracovatelský průmysl a sektor energetický nevykazují žádné známky kointegrace mezi přílivem PZI, HDP a zaměstnaností. Výsledky modelu vektoru korelační chyby ukazují, že existuje jak krátkodobá, tak dlouhodobá souvislost mezi přílivem PZI a zaměstnaností v České republice. Impulsní funkce jasně svědčí o pozitivní odezvě HDP i zaměstnanosti v České republice na exogenní šok přílivu PZI. Avšak vliv na zaměstnanost je velmi malý ve srovnání s vlivem na HDP. Proto lze z výše uvedených výsledků konstatovat, že příliv přímých zahraničních investic do České republiky měl pozitivní vliv na zaměstnanost v České republice a přítomnost zahraničních firem v České republice vytváří nové pracovní příležitosti.

Klíčová slova: Přímé Zahraniční Investice (PZI), Zaměstnanost, Česká republika, Unit Root, Co-integration, Kauzalita

Abstract

In this thesis, I examined the impact of inflow of foreign direct investment on employment in the Czech Republic during the period 1993 to 2011. First Im-Pesaran-Shin (IPS) test was applied to find out the variables in order to find out the order of integration. Johansen Fisher test for cointegration was applied to find the cointegration relationship between the FDI inflow, GDP and employment in the Czech Republic. After finding the cointegration relationship, Vector Error Correction Model (VECM) was applied to find out the long run and short run causality between the FDI inflow, GDP and employment in the Czech Republic. In the end impulse response functions were estimated in order to find the response of GDP and employment to an exogenous shock in the FDI inflow.

The results suggest that there exist a cointegration relationship between the FDI inflow and employment for the overall economy. However, the sector-wise Johansen Fisher panel cointegration test result suggest that the cointegration relationship exist only for the services sector, primary sector and construction sector, while for manufacturing sector and electrify, water and gas sector there is no cointegration relationship between FDI inflow, GDP and employment. The VECM results indicate that there is both short term and long term causality between the FDI inflow and employment in the Czech Republic. The impulse response functions clearly show a positive response both by the GDP and employment in the Czech Republic to the exogenous shock in the FDI inflow. However, the positive response in employment is very small compared to the response of GDP. Therefore, from the above results it can be concluded that the FDI inflow into the Czech Republic has been positively effecting the employment in the Czech Republic and the presence of foreign firms in the Czech Republic generate employment opportunities.

Keywords: Foreign Direct Investment (FDI), Employment, Czech Republic, Unit Root, Co-integration, Causality

Chapter: 1 Introduction

The increased economic globalization has resulted in multinational enterprises (MNE's) making huge investments in the shape of foreign direct investment (FDI). FDI is the direct investment into manufacturing or business activity by an individual or a firm from a foreign country. In contrast to the portfolio investment, investors investing in the form of foreign direct investment has management control in the firm they are investing in. FDI takes place in the shape of Greenfield investment or mergers and takeovers. FDI coming in the shape of Greenfield investment refers to the establishment of new manufacturing unit or business facility in the host country while the mergers and takeovers takes place in the form of taking over an existing firm or the merger of two existing firms.[1]

Firms become multinational and start businesses beyond the geographical boundaries of an individual country for various reasons. Some of the most important reasons are the following. [2]

a) Market seeking:

The main motivation for firms to go overseas in one form or the other is access buyers for the firm's goods and services. When the firm's production capacity is larger than the home country market or the home country market is saturated, in this case the firm try to go overseas and look for other markets. In other cases the firm want to expand the production further and look for new market and expand to other countries in the form of establishing new manufacturing unit in that country or at least distribution business to that country.

b) Resource seeking:

In this case the multinational firms expand their business overseas in order to benefit from the relatively superior quality or cost effective factors of production (land, labor,

[1] Greenfield Foreign Direct Investment and Mergers and Acquisitions: Feedback and Macroeconomic Effects [accessed from] http://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-3192
[2] (Global Capitalism, FDI and Competitiveness, Dunning, John. H 2002)

capital and natural resources) than at home. The firm may produce overseas for selling the produce at the home market or the host country market or even for the host country regional market. These decision are also taken keeping in mind the market proximity.

c) Strategic asset seeking

One of the main motive behind extending business beyond the international boundaries is that firms want to acquire assets in other firms through which they can build distribution networks and acquire new technology.

d) Efficiency seeking

Multinational firms move their assets from one country to another because of efficiency seeking. This might happen in cases where there are change taking place in the form of free trade agreements or lower tariff rates between certain countries. Exchange rate fluctuations might also change firm's profits and therefore, firms might shift resources from one country to another.

Firms makes their decision of going multinational in order to expand business, access market share or seek efficiency. However, at the same time countries all over the world make effort and provide to attract foreign direct investment. Countries provide huge amount of incentive in the shape of tax holidays, high standard infrastructure and cheaper industrial plots in order to attract FDI. United States state of Alabama provided incentive to attract new Mercedes plant in 1994 and spent US$150,000 per each job created in the process [3]. The Czech Republic has been providing many such incentives to foreign firms willing to invest in the Czech Republic. The policy of attracting FDI aggressively was started in the late 1990s when the government started privatizing the state owned firms. During the period many bank were privatized, energy sector firms and telecommunication sector was privatized. Besides the privatization drive the government collaborated with the local government and subsidized creation of industrial parks which attracted both domestic and foreign firms. One of the most significant policies during the period was the creation of the investment and business development agency called CzechInvest. CzechInvest is an agency which provides a one window operation and helps the foreign firms go through the process of starting business at one place and help them

[3] Keller & Yeaple, 2004

avoid the bureaucratic hurdles. These policies has enabled the Czech Republic to attract a huge amount of foreign direct investment in the late 1990s and in the last decade. The FDI inflow has continuously recorded huge growth. [4]

The policies of attracting FDI is pursued so aggressively by many countries due to the fact that FDI inflow is considered to be contributing towards economic growth and generate employment opportunities in the host country. FDI affects employment through different direct and indirect channels. The direct effect of FDI on employment takes place when a new investment is made and new employment is generated. However, this effect might be more prevalent in the case of Greenfield investment when FDI takes place in the shape of the incorporation of a new enterprise by foreign individuals.

The indirect effect of FDI takes place through technology spillover, which has been the subject of many research studies. The technology spillover effect of FDI has been discussed mainly in two ways i.e. horizontal and vertical spillovers. Firstly, the horizontal spillover (intra-industry spillover), due to the inflow of FDI the existing domestic firms improve their efficiency which may result in changes in employment. These changes in employment maybe positive or negative. Higher efficiency and higher production might lead to an increase in employment. However, in the case of inflow of FDI the domestic firms might feel pressure and they might have to cut jobs in order to cut costs and remain competitive in the presence of the newly entered multinational enterprises (MNE's). In some extreme cases of FDI coming in shape of MNEs some of the domestic firms will possibly find themselves unable to compete and might have to shut down which will lead to an very high increase in unemployment. Secondly, with Vertical spillover (inter-industry spillover of knowledge), the technology spillover effect of FDI occurs in the shape of efficiency improvements in customers and suppliers due to the presence of MNEs. This improvement in efficiency might lead to changes in labor demand. The presence of MNE's might result in the implementation of capital intensive technology which might lead to a decrease in demand for labor and reduced employment. [5]

[4] Performance Volume 4|issue 3 [accessed from] http://performance.ey.com/wp-content/uploads/downloads/2012/06/Performance-4.3-April-2012-Journal-v16-p7079.Czech-Republic.pdf
[5] Dinga and Munich 2010

The impact of such FDI inflow on different economic indicators is being researched. Numerous studies have been conducted to investigate the impact of FDI on economic growth of the host country. However, little attention has been given to the impact of FDI on employment in the host country. In this thesis, I try to examine the impact of the inflow of FDI on employment in the Czech Republic. Literature review on the topic is presented in chapter 2 and is followed by methodology adopted for this research in chapter 3. Chapter 4 presents a description of patterns of FDI and employment in the Czech Republic. Analysis of results are presented in chapter 5 while chapter 6 concludes the thesis.

1.1 Objectives of the Study

FDI is expected to increase economic activity and generate employment opportunities. Therefore, in order to attract FDI governments provide huge incentives to companies to investment in the respective countries. The policy makers keep the potential positive effects of FDI inflow and expect the increased inflow to boost the country's economic growth and generate employment opportunities in the country. The expectations of policy makers towards FDI to cure national employment problems are usually very high [6]. Czech Republic has attracted huge FDI in the last couple of decades. While the impact of FDI inflow on the host country economic growth has been the subject of many studies, its impact on employment in the host country has little been explored and most of the studies conducted found inconclusive and divergent results.

This thesis aims to investigate the impact does FDI have on employment in the Czech Republic. It analyze the existence of a co-integration relationship between the FDI inflow and employment in the country on a sector-wise bases. The aim of the thesis is to answer the following questions.

[6] Mickiewicz. T, Radosevic. S, Varblane. U (2000)

1. Is there co-integrating relationship between FDI inflow and domestic employment?
2. Does the co-integrating relationship between FDI and employment vary across sectors of economy?
3. Does FDI cause employment in the Czech Republic in the short run and in the long run?

1.2 Limitations of the Study

The scope of this study is limited to the co-integration analysis of FDI and employment and especially in different sectors of economy in the Czech Republic. However, the study doesn't examine the impact of inward FDI on domestic wages or labor productivity in the Czech Republic. The scope of study doesn't extend to cost and benefit evaluation of inward FDI. The study doesn't evaluate the policies put in place by the government in the Czech Republic in order to attract FDI into the country.

Chapter: 2 Literature Review

Foreign direct investment (FDI) is considered to have a positive impact on the host country's economy. It is considered to be positively contributing towards countries gross domestic product as well as employment level. Countries spend huge sums of money and provide different incentives to firms in order to attract them and persuade them to make investments in the country and to promote economic activity through spillover of knowledge and will ultimately to GDP growth. This growth ultimately leads to an increase in labor demand. The incentives are generally provided in the form of tax holidays, accelerated depreciation allowances on capital taxes, exemption from import duties and duty drawbacks on exports while in some cases even firms are provided with the free industrial plots for establishment of production units.[7]

The purposes of attracting FDI is to accelerate economic activity in the local economy and provide create jobs for the local population. A large number of studies have been conducted in order to investigate the possible impact of the FDI on GDP of the host economy, largely with inconclusive results. However, very few studies have been conducted to inquire the impact of foreign direct investment on employment in the host country. While the direct effect of FDI on employment is always positive which takes place mostly in the shape of Greenfield investment, the direction of indirect effect (both in case of Greenfields and mergers and takeovers) of FDI on employment is far from clear. While the type of FDI also matters in its impact on employment in the economy. Greenfield FDI is supposed to create more jobs and increase demand for employment while the takeovers might have a mix impact on employment with potential negative impact. [8]

The literature on the impact of FDI on the employment in the host country has also largely been inconclusive and divergent. The possible impact of FDI on employment takes place through different direct and indirect channels. The direct effect of FDI on employment takes place when a new investment is made and new employment is generated. However,

[7] Rajan. S. Ramkishen (2004)
[8] Dinga and Munich (2010)

this effect might be more prevalent in case of Greenfield investment when FDI takes place in the shape of incorporation of new enterprise by foreign individuals and less in case of takeovers.

The indirect effect of FDI takes place through technology spillover, which has been the subject of many research studies. The technology spillover effect of FDI has been discussed mainly in two ways i.e. horizontal and vertical spillovers. Horizontal spillover is the intra-industry spillover effect of FDI which occurs in the form of increased efficiency in the FDI receiving firm. Horizontal spillover effect of FDI is not clear. It might both be positive and/or negative. A higher efficiency and higher production might lead to increase in employment. However, in case of inflow of FDI the existing domestic firms might feel pressure and they might have to cut jobs in order to cut cost and remain competitive in the presence of the newly entered multinational enterprises. Also in some extreme cases of FDI coming in shape of MNEs some of the domestic firms will possibly find themselves unable to compete and might have to shut down and will lead to a very high increase in unemployment. [9]

2.1. FDI Inflow and GDP

The effect of FDI on the gross domestic product has been the subject of many research studies. Gorodnichenko, Svejnar and Terrell (2007) examined firm level data from 17 emerging economies for the period 2002-2005 in order to find out the impact of FDI inflow on the productivity and spillover effect on the host country firms. The study find positive but mostly insignificant horizontal FDI spillover in case of older firms as well as firms operating in services sector while a strong vertical spillover effect was found for both supplier and consumer firms in the domestic economy. Horvath and Irsova (2013) analyzed data from 45 countries in order to examine the spillover effect of FDI. They collected 1,205 estimates from studies conducted on spillover effects of FDI and published in different scientific journals. The used meta-data analysis in order to test for estimation bias and estimate the true horizontal spillover effect of FDI. The study finds out that the horizontal spillover effect of FDI is on average zero. However, the sign and magnitude of the effects depends on the characteristics of FDI originating economy and the FDI

[9] (Global Capitalism, FDI and Competitiveness, Dunning, John. H 2002)

receiving economy. Technology gap between the two economies is found to be the biggest determinant as the largest of the spillovers were found to be generated by the FDI investment coming from countries with a slight technology edge over the receiving economy. Further they found out that such investors generate the largest spillovers in case they create a joint venture with a local firm. In the same way many studies are conducted to find out the horizontal spillover effect of FDI into the local economy. The studies concludes largely divergent results and the horizontal spillover effect of FDI inflow on the local economy is far from clear.

The second form of spillover is vertical spillover or inter-industry spillover of knowledge. It is the technology spillover effect of FDI that takes place in the shape of efficiency improvements in customers and suppliers due to the presence of MNEs. This improvement in efficiency might also lead to changes in labor demand. The supplier providing raw material or different services in the same industry expand their business due to the presence of MNEs and increase productivity. At the same time firms consuming goods and services by the industry where MNEs arrive can also find themselves expanding their business due to the presence of MNEs and increase efficiency in the supplier market. Consistent with the theory most of the studies conducted on the spillover effect of FDI across between industries is concluded to be positive. Javorcik (2004) studied the impact of FDI in the industries upstream and downstream. The study focused on the spillover effect from the foreign firm into firms that are suppliers or consumer of the industry in which the MNEs operates. The study analyzed firm lever data from Lithuania in order to find out the possible spillover effect of FDI inflow into other industries in the local economy. The study found a positive spillover taking place through FDI firms and local suppliers. However, this spillover effect is true only for the firms shared by domestic and foreign owners. The author didn't find any such relationship for the firms fully owned by foreign investors. Blalock and Garter (2005) analyzed the impact of multination firms operating in developing markets in order to find out its impact on the productivity, competition and prices in the host markets. The study is based on data from Indonesia and try to find out the FDI impact on the firm in the industries downstream and finds out that the transfer of technology from the MNEs to the local firms is Pareto improving value added increasing both for the buyer and seller firms. They

found strong evidence of productivity gain, lower prices and increased competition in the buyer and supplier firms that are connected with the MNEs as well as those not connected with the MNEs. Javorcik and Sparateanu (2011) examine the vertical spillover effect of foreign firms using firm level data from Romania. They analyzed the spillover effect with special emphasis on the origin of the investor origin and tried to find out if the origin of the investor may affect the level of spillover into the domestic economy through producers and suppliers of intermediate inputs. They consider two criteria's considering the origin of the investor namely the distance between the origin of the investor firm and Romania and the presence of any preferential agreement between the source country and Romania. The study found a strong positive association between the foreign firms and productivity spillovers and further found that the spillover is stronger for American firms as compared to the European firms because of the fact that Europe enjoys preferential trade agreement with Romania and firm could import intermediate inputs from other countries thus limiting the spillover effect. Reganati and Sica (2007) analyzed firm level data from Italy in order to investigate both horizontal (within an industry) and vertical (across industry) spillover FDI on the local industry due to the presence of Multinational Enterprises. The study found positive spillover across industry while no evidence of horizontal spillover to the Italian firms was found. There are many more studies conducted finding the spillover effects of FDI on the host country firms efficiency and productivity with almost all concluding a strong positive vertical spillover effect on the host country firms. One very important study based on meta-analysis was conducted by Horvat and Irsova (2011). The study is based on a meta-analysis of more than 100 researchers who examined the spillover effect of FDI. The study checks for specification and publication bias in order to find out if the spillover effect shown in the research papers under consideration is truly depicted or it is exaggerated. They collected 3,626 estimated of the vertical spillovers tested them for both specification and publication bias. After consideration of both the biases the study found that the true spillover effect is relatively smaller than depicted in most research papers, however, still significant. While FDI affect host country economy through horizontal and vertical spillover, the size of these affect may differ for economies with the different levels of development.

There are many other factors that affect the size and magnitude of the spillover effect on the host country productivity and efficiency. These factors include trade openness of the host country, technology gape between the origin country and the host country and the type of investment project involving the FDI. Horvat and Irsova (2011) found that countries that are more open to trade and has an underdeveloped financial system received greater vertical spillovers from FDI. At the same time study finds that the origin of the investor is also important and greater amounts of spillovers were observed for firms that are coming from distant countries and from countries with a small technological edge over the receiving country. De Mello (1999) used both time series and panel data from a larger pool of countries both from OECD and non-OECD states. The study used data for the period 1970 to 1990 in order to investigate the impact of FDI inflow on capital accumulations, output and total factor productivity growth in the FDI host country. The study concluded that FDI inflow enhanced growth in the FDI receiving country via technology and knowledge spillovers. However, the magnitude of the effect on growth depends on the degree of complementarity and substitution between the foreign and domestic investment. The spillover effect is smaller in the technologically advanced countries and is higher with a smaller technology gap between the FDI originating country and the FDI receiving country.

Pardeep (2011) consider foreign direct Investment and Gross domestic product as the major determinant of the economy of any country and that FDI affects the GDP of a country directly and hence they are positively correlated. However, besides FDI there are other many variables that affect GDP at the same time. Therefore, in order to determine the exact influence and strength of the influence of the economic and non-economic variables on the GDP, the author propose an economic model. The study analyze the movement of the GDP along with the other factors like FDI, Index of Industrial Production, Per Capita Income, Employment and Inflation in order to predict the behavior of GDP. The study makes a detailed analysis to evolve a new model which could be more realistic and objective for the purpose of the study. The study examine ten years data on the variables and conclude that the GDP of the country is the symbol of the prosperity of the country and the economic model proposed earlier in the research is quite complete and accurate for such analysis. The study conclude that “There are many

economic forces not only two or three in numbers which directly or indirectly affects GDP of a country. Therefore we can say that GDP cannot be isolated from the other forces of the economy. The Qualitative forces like literacy, unemployment etc which seems to be unrelated to the GDP also contributed indirectly to the GDP of a country. The factors like Inflation, FDI, Export, Industrial production directly contributed to the growth of the GDP which further represent the growth of the Country. The Coefficient of Correlation shows that the strength to which the different forces are correlated with GDP. The Coefficient of Correlation shows that the major contributing factors rare FDI, IIP, and Exports of a Country. The GDP of the country was quite fluctuating in the starting of the decade but it started stabilizing towards the end of the decade due to increase in FDI, Exports, and IIP. It is also clear that high inflation in a country leads to tighter monetary policies which further slower down the IIP and hence GDP". In his analysis the author further conclude about the Indian economy in the following. "The attractiveness of the host market also affects the FDI positively and significantly. In many ways India's principal problem remains that of boosting its rate of saving and investment from the current about 23% of GDP to over 30% of GDP in order to make growth prospects take a quantum jump and become comparable with the high growth phases of the Chinese and East Asian economies. FDI becomes important in its own right if it makes contributions towards technology progress; productivity spillovers and consolidating niche export markets". The study further recommend that the authorities must consider all these secondary forces besides the primary factors while formulating GDP growth policies. This study emphasizes that the FDI attracting policy to be made part of the general policy of attracting investment both domestic and foreign under the condition of sustained production efficiency.

Agrawal and Khan (2011) examined the impact of FDI on the economic growth of India and China. The authors included data from 1993 to the year 2009 in order to control for the structural changes in both economies. They include factors like GDP, human capital, labor force, FDI and gross capital formation in order to build a modified growth model. The authors used ordinary least square (OLS) regression to find out the impact of all the variables including FDI on the GDP growth of India. They conclude that "FDI promotes economic growth, and further provides an estimate that 1% increase in FDI would result

in 0.07% increase in GDP of China and 0.02% increase in GDP of India. We also found that China's growth is more affected by FDI than India's growth and FDI is not as much significant as other variables to predict growth. The study also provides possible reasons behind China's great show of FDI and the lessons India should learn from China for better utilization of FDI. The majority of the foreign investors prefer China over India for investment opportunities as China has a bigger market size than India, offers easy accessibility to export market, government incentives, developed infrastructure, cost-effectiveness, and macro-economic climate. India on the other hand has talented management system, rule of law, transparent system of work, cultural affinity and regulatory environment.

Jay (2010), examines the co-integration relationship between the FDI inflows and economic growth in china. The author uses data for the real GDP growth of china and inflow of FDI into china for the period from 1983 to the year 2001. He uses augmented Dickey-Fuller tests in order to determine the order of integration of the series and uses Pesaran and Shins autoregressive, distributed lags model in order to test for cointegration relationship between among the variables under consideration. Further in order to establish the causality, the author apply granger causality test. The study conclude that both the variables i.e. the real GDP growth and the FDI inflow into china, are non-stationary and are integrated of order 1 and the co-integration test reveal that both the variables are co-integrated. However, the granger causality test results show that causality flows from GDP growth to the FDI inflow and not the other way around. Which means that in china, during the period under consideration, the increase in the inflow of FDI has not caused any increase in the real GDP growth of china. However, the increase in the real GDP growth on the other hand has been the cause of attracting increase inflows of FDI into china.

Olusanya and Olumuyiwa (2013), try to investigate the impact of Foreign Direct Investment inflow on economic growth in a pre and post deregulated Nigerian economy. The authors used data for the economic growth (GDP) IN Nigeria and FDI inflow into Nigeria for the period 1970 to the year 2010. The study period is divided into three periods i.e. first period from 1970 to 1986, second period from 1986 to 2010 and the whole period

of 1970 to 2010. The authors used Granger causality test to find out if increase in the FDI inflows cause economic growth in Nigeria.

The results suggest that for the first period (1970-1986) of the study, which the authors tagged as the pre deregulation period of Nigeria, the increase in FDI inflow causes GDP growth. However, the study for the second period (1986-2010) of the study, which the authors tagged as the post deregulation period of Nigeria, the FDI inflow doesn't cause GDP growth. The third period which consist of the whole time period of the study (1970-2010), the results suggest that the FDI inflow causes economic growth and vice versa. Which means that there is a two way causality between the FDI inflow and GDP growth. An increase in FDI inflow leads to increase in GDP growth and GDP growth causes increase in FDI inflows.

Whalley and Xin (2010) try to examine the contribution of inward FDI to China's recent rapid economic growth. The authors use a two stage decomposition approach to analyze the FDI inflow into china and its contribution towards the rapid growth of Chinese economy. The paper conclude that "Foreign Invested Enterprises (FIEs), often (but not exclusively) are joint ventures between foreign companies and Chinese enterprises, and can be thought of as forming a distinctive subpart of the Chinese economy. These enterprises account for over 50% of China's exports and 60% of China's imports. Their share in Chinese GDP has been over 20% in the last two years, but they employ only 3% of the work force, since their average labor productivity exceeds that of Non-FIEs by around 9:1. Their production is more heavily for export rather than the domestic market because FIEs provide access to both distribution systems abroad and product design for export markets". Further the study confirm the idea that the FDI inflow has largely contributed towards the recent rapid economic growth of Chinese economy. FDI inflow also help the transfer of technology to the local firms which creates sustainable conditions for future growth of the economy. However, attracting stable amounts of FDI inflow and the sustainability of the economic growth and the growth in export is a long term concern for the Chinese economy. The authors suggest substantial improvement in the legal system in order to continue attracting FDI and be able to keep the economy growing.

Ahmed, E.M (2012), investigate the impact of FDI inflows, human capital, labor force, absorptive capacity, physical capital and GDP on the productivity growth in Malaysia. He uses time series quarterly data for all the variables in question for the period 1999 to the year 2008 in order to estimate the effect of FDI inflows on human capital, labor forces, absorptive capacity and physical capital in Malaysia. In the first step the author uses ordinary least squares (OLS) regression to estimate the equation while in the second step he estimate the productivity indicators.

The results conclude that the FDI inflows and inputs used contributed negatively to the total factor productivity. However, FDI did play a significant role in the economic growth of Malaysian economy through input driven through the contribution of total factor productivity. Therefore, the author conclude that there is a significant positive relationship between human capital, labor force and absorptive capacity this positive relationship leads to the creation of spillover effect on Malaysian economy growth. However, the physical capital was found to negatively affect the economic growth.

Temiz and Gokmen (2014) analyse the impact of increase inflow of FDI on economic growth of Turkey. Over the last decade turkey has been attracting large amount of FDI inflow and many multinational enterprises are investing into the Turkey's economy. FDI inflow is expected to result in the accumulation of capital, transfer of technology, spillover of knowledge, innovations. All these factors are expected to result in the economic growth of the host country. The paper try to analyze the impact of FDI inflow into turkey on the economic growth of Turkey. The authors use Augmented Dickey-fuller test (ADF) in order to find out the order of integration of the variables. The Johansen co-integration test is applied in order to find out the presence of cointegration relationship between the variables. After the cointegration relationship the authors apply Granger causality test to find out the flow of causality from one variable to the other. Finally the author estimate the Ordinary least square methods (OLS) in order to estimate the regression. The paper conclude that there is no presence of any relationships between the FDI inflow and GDP growth in Turkey both in the short run and in the long run.

Yao and Wei (2007) examine the effect of FDI on economic growth in the newly industrialized economies and try to test the perceived positive impact of that FDI is believed to have on the host country economic growth. The paper test two propositions i.e. "First, FDI is a mover of production efficiency because it helps reduce the gap between the actual level of production and a steady state production frontier. Second, FDI being embedded with advanced technologies and knowledge is a shifter of the host country's production frontier". Because of the dual role that FDI plays in the host country economy it is considered to be a strong tool of economic growth for the newly industrialized economies for boosting their economies and catching on with the developed economies. The study is based on the cobb-Douglas model which includes labor and capital as inputs and FDI, exports, human capital, transportation and real exchange rate are calibrated into the production functions. The authors conclude that technological progress contributed to 3.5-4.4 percent of aggregate economic growth annually and FDI contributed for up to 30 percent of the total technological progress. Therefore, FDI plays its role in the economic growth through technology spillovers in to the host country i.e. china.

Hsiao and Hsiao (2006) examine the relationship between the FDI inflow and economic growth of the South East Asian economies. The authors use both time series and panel data for the period 1986 to the year 2004 for the variables including GDP, exports and FDI inflows for the most rapidly growing south east Asian economies including china, south Korea, Taiwan, Hong Kong, Singapore, Malaysia, Philippines and Thailand. The paper estimated Vector Auto Regressive (VAR) model for the three variables and the find apply granger causality test in order to find out the direction of the flow of causality. The study found different causality relationships for different countries. Therefore, the causality test doesn't yield any general rule. Then the authors applied the panel data VAR equations for the three variables and eight countries and Granger causality test was applied after the VAR estimation. The panel data analysis conclude that FDI cause GDI both directly as well as indirectly through increasing the exports of the country. However, there exist a two way causality between the exports and GDP for the group of countries. The results indicate that the panel data results are superior to that of time series results of the causality test. Saini Law and Ahmad (2010) explore the impact of FDI inflow on the host country economic growth in coupled with the level of development of the

financial markets of the country. The paper is based on the data from 91 countries for the period 1975 to 2005. The study adopt a regression model based on the threshold to capture the effect of FDI inflow in all the countries under consideration on the GDP growth conditional upon the level of development of the financial markets in those countries. The study conclude that there FDI inflow doesn't have any GDP growth enhancing effect until a certain level of development of the financial markets is achieved. However, after that threshold in the development of financial markets is reached the FDI inflow boosts economic growth in the host country. Therefore, the authors suggest that while policies are made in order to attract FDI inflow into the country, at the same time policies for the development of financial markets should be adopted.

Waldkirch and Ofosu (2010) examine the impact of presence of the foreign firms on the manufacturing sector productivity level in Ghana. They study examine both the labor productivity and total factor productivity (TFP) effect of the foreign firms. The study conclude interesting results that the presence of foreign firm in a certain sector has a strong negative effect on the productivity of the domestically owned firms. However, their presence have a positive effect on most of the foreign owned firms in that sector. The study further finds that the positive effect of the presence of foreign firms is unlikely to compensate the negative effect of these firms on the domestically owned firms. The study further examine the effect of foreign firms on the wages in the host country and found that their presence doesn't affect the host country wages.

Herzer, Klasen and Lehmann (2008) try to challenge the generally perceived positive effect of FDI on the economic growth of the developing countries by analyzing the FDI effect on GDP growth of the developing countries. The study examine and test the hypothesis of FDI promoting GDP growth for 28 developing countries. The authors used cointegration techniques in order to find out co-integrating relationship between the two variables on country to country basis. The study conclude that for the majority of the countries, the GDP growth enhancing effect of FDI doesn't exist. The study doesn't find any such effect neither a long run nor a short run effect. The study suggest that the reason behind results of "no cointegration relationship" might be that the FDI inflow recorded during the period 1970s and 1980s was rather low. During that period FDI was often

recorded as less than 1% of GDP. However a significant increase in the FDI inflows was recorded in the 1990s. Therefore the authors suggest that a reexamination of the relationship between the FDI inflow and GDP growth based on different periods would give more meaningful results. Furthermore, the study doesn't support any cointegration relationship between the FDI and GDP per capita, the level of education, the degree of openness of trade and the level of financial markets development for the 28 developing countries.

Alfaro, Chanda, Areendam, Ozcan and Sayek (2010) examine the possibility of the positive productivity spillovers of the FDI inflow on the host country economy. The study try to answer the question of FDI spillover on the host country productivity, which has largely been in conclusive. The study is based on the mechanism emphasizing the role of host country financial markets development. The authors believe a country with the more developed financial markets would achieve the greater productivity spillover from the FDI inflow. The study compare the response of GDP growth to the FDI inflow in the developing economies against those of financially developed economies and conclude that countries benefit from the productivity spillovers of FDI inflow if the country's financial markets are developed while countries with the least developed financial markets don't benefit from the productivity spillovers of the FDI inflows. The authors found that besides the widespread believe of positive productivity spillovers of FDI the study didn't find any positive spillover effects. The authors suggest that "Policymakers should be cautious when implementing policies aimed at attracting FDI that is complementary to local production. Desired complementarities are those between final and intermediate industry sectors; not necessarily between domestic and foreign final good produces".

Borensztein, Gregorio and Lee (1998) analyze the impact of FDI inflow on the economic growth of the developing countries. The authors use an extensive data set from 69 developing countries for the around 20 years. The study conclude that FDI plays an important role in the technology transfer and FDI inflow contributes more than the domestic investment to the GDP. However, the productivity spillover of FDI depends on the stock of human capital in the host country. The higher productive spillovers of FDI takes place for countries that meets the human capital threshold. Therefore, the authors

suggest that the productivity spillovers takes place for countries that has absorptive capacity in terms of human capital. The authors suggest that "The results suggest that the beneficial effects on growth of FDI come through higher efficiency rather than simply from higher capital accumulation. This suggests the possibility of testing the effect of FDI on the rate of total factor productivity growth in recipient countries. In addition, given the robustness of the effect of interactions between human capital and FDI, it might be interesting to explore the effects of FDI on the level of human capital."

Malaysia has been one of the fastest growing economy in the Southeast Asia and it has been one of the major recipient of the FDI. Masron, Zulkafli and Ibrahim (2012) try to explore the spillover effect of FDI into the Malaysian manufacturing sector. The study apply correlation analysis in order to find out the correlation between the inflow of FDI into Malaysia over the years and the output of the subsectors of Malaysian manufacturing sector. The study is based on the data for the period 1999 to 2004 and try to examine the effect of FDI inflow into one subsector of manufacturing sector on the output of another subsector of the same manufacturing sector. This cross relationship of FDI inflow in one subsector and output in another subsector is considered to be the spillover effect. The study found out that while in some sector FDI inflow generate positive productivity spillovers, at the same time in certain other sectors it produces negative spillover effects on productivity.

Hansen and Rand (2004) analyze the impact of FDI on the host country GDP for a huge sample of 31 developing countries. The study is based on the data for the period 1970 to 2000. The authors used Granger causality test in order to find out the causality relationship between the FDI and GDP. Further they used the heterogeneous panel data estimators and found that there exist a bidirectional causal relationship between the ratio of FDP and GDP (FDI/GDP) and the level of GDP. The study found the FDI effect GDP in the long run. However, GDP doesn't cause FDI/GDP ratio in the long run. Furthermore the study estimate the model for FDI as a percentage of Gross Capital Formation (GCF) and GDP and find changes in the average level of FDI/GCF in the long run and conclude that FDI has an impact on the GDP via spillover of knowledge and adaptation of new technology.

2.2. FDI Inflow and Employment

FDI affect employment in an economy through the same channels as it effects the growth of GDP. Positive spillover generated by the inflow of FDI in the shape of MNEs leads to expansion of firms and hence leads to an increase in demand for labor and increase employment opportunities. On the other hand negative spillovers (if any) will lead to decrease in demand for labor and increase unemployment. FDI taking place in the shape of Greenfield directly affect employment positively by creating new job opportunities while the indirect effect of FDI inflow on the domestic employment takes place through both the horizontal and vertical spillovers of technology which in turn leads to expansion/contraction of firm and leads to changes in employment in the economy.

Besides the direct and indirect effect of the inflow of FDI in the form of MNE's also results in a crowding out effect on the employment. The changes in labor demand that occurs in the shape of crowding out effect when new investment is made and new jobs are created. Some already employed people move to fill the newly created jobs leaving their old position vacant, which ultimately are filled by other potential workers.

One of the most striking affect that FDI has on the host country employment is that it globalizes the labor market and connects the local labor markets more strongly to the international markets which mean that changes in different macroeconomic indicator globally might affect local labor market. This globalization factor makes the local labor markets more dependent and vulnerable to changes in the global market. A recession in the global markets might lead to decrease in the demand for the products MNEs are producing in the host country forcing the investor to cut jobs. In the same way a boom in the global market might result in a drastic increase in the demand for labor in the host country.

While the direct effect of FDI on employment is always positive which takes place mostly in the shape of Greenfield investment, the direction of indirect effect (both in case of Greenfields and mergers and takeovers) of FDI on employment is far from clear. While the type of FDI also matters in its impact on employment in the economy. Greenfield FDI

is supposed to create more jobs and increase demand for employment while the takeovers might have a mix impact on employment with potential negative impact.

Elias Ajaga and Peter Nunnenkamp (2008) analyzed US states level time series data for employment and foreign direct investment for the period of 1977 to 2001 and applied Johansen's (1988) co-integration technique and Toda and Yamamoto's (1995) Granger causality tests to investigated the long-run relationships between inward FDI, value added and employment at the US states level. They study focuses on the employment effect of FDI in the whole economy specifically in the manufacturing sector because the manufacturing sector is assumed to be the most benefiting from FDI in terms of employment generation. The study found strong evidence of favorable FDI effects on output and employment at the US states level and concluded that FDI consistently Granger-causes outcome variables including output and employment. The same employment and growth generating result holds for manufacturing sector.

Marian Dinga and Daniel Munich (2009) evaluated the impact of the FDI on employment level in the Czech Republic. They study analyzed the Toyota Peugeot Citroen Automobile (TPCA) investment project in the district of Kolin of the Czech Republic. The TPCA project was announced in December 2001 by Peugeot Citroen and Toyota Motors Corporation to be established in Kolin-Ovcary industrial area of the Czech Republic. The company was established with the name TPCA in March 2002 and construction work started on the project. As this was a Greenfield form of FDI, 350 people were employed for the construction work and later on over 3,500 workers were employed for the manufacturing work as the company progressed. The study analysis the employment level and inflow and outflow of employment in the Kolin district before and after the firm was established and also compares the employment level over the period under consideration with other districts of the Czech Republic that didn't attract such huge investment projects. It studies the impact of this Greenfield FDI project from 1993 to 2006 on local labor market performance. They compared the performance of labor market in Kolin to other districts that didn't attract such huge FDI inflows by applying the difference-in-difference estimation method. The study found that the FDI project in the form of TPCA increased employed in the Kolin District by a 3.7 percentage point. They further found that the number of people who found jobs during the period was greater than the total number of

employees at TPCA which is an evidence of the spillover effect of FDI on employment in the existing industries.

In the past decade Turkey has seen a remarkable growth in its economy. The growth is led mainly by the foreign investment and exports. This growth and increased production led to increase in employment and living standards in Turkey. Ismail Aktar and Latif Ozturk (2009) studied the impact of FDI on economic growth, exports and employment in Turkey. The study is based on a quarterly time series data for the period starting from first quarter of 2000 to the last quarter of 2007 and applies Johansen and Jeseluis cointegration test in order to investigate the dynamic relationship and co-integration among unemployment, foreign direct investment, gross national product and export. They found that exports attracted FDI into turkey during the period under consideration and the impact of increased exports on GDP was positive but insignificant therefore, the authors rejected the export led growth hypothesis. And at the same time, they didn't find any evidence that would support that FDI created new jobs in the country during the period. Another very useful study was conducted by Priit Vahter (2004) who used enterprise-level yearly panel data of 326 firms over the period 1996-2001 in Slovenia and panel data of 332 firms over the same period of 1996-2001 for Estonia. The study is more relevant because the central and eastern European region has attracted huge investment in the past two decades and has seen considerable improvements in the economic condition of the region. It is based on firms operating only in manufacturing sector and it aims to investigate the productivity spillover effect of FDI on firms attracting FDI. The study conclude that the productivity spillover effect of FDI was far greater in the domestic market oriented firms as compared to the exported oriented firms which attracted the FDI. While on the other hand in Slovenia, no horizontal productivity spillover was observed while positive and significant spillover effect was observed for domestic industries. Further the study find that positive spillover generation depends on many factors including the level of economic development of the host country and technology gape between the origin and host country of FDI.

Hunya and Geishecker (2005) analyzed the impact of foreign direct investment on the employment in the Central and Eastern Europe. The authors make then analyses that

there has been a transformation of jobs in the region due to economic transformation of the regional economies which took place in the shape of privatizations. Domestic manufacturing firms or manufacturing firms owned by local owners have reduced the number of employees while at the same time the foreign owned firms have increased the numbers of people employed. This is partly as a result of foreign firms transferring supply connections abroad after taking over the domestic firm as a result of privatization. The study shows from a foreign affiliates' indicator database that foreign affiliates use latest technology as compared to domestic firms therefore fore, comparatively they have higher labor productivity and better capital endowment than the domestic firms. In the same way the differences are also clear in the way differential. Foreign firms tend to employ young and skilled and productive employees. Young skilled workers in foreign firms earn higher wages as compared to the young and skilled workers employed by the domestic firms as well as higher than the skilled and unskilled older employees of domestic as well as foreign firms. Further the authors suggest that in the new EU member states FDI determine the composition of the skills and FDI has a small positive but significant effect on the high skilled non-manual employment and the low skill employment.

South East Asia is a region that has seen enormous growth in the recent decades and have attracted huge foreign direct investment. They have been referred to as the Asian tigers. Malaysia is an important country in that region and has been very successful over the years in attracting huge amount of foreign direct investment and is a manufacturing hub in the region. In the same way Malaysian economy has grown with a remarkable growth rate over the years and the living standards have improved. As most of the foreign firms initially moving to Malaysia were Japanese and main reason behind the move was cheap labor, therefore, it makes it more interesting a case to look at the effect of this inflow of investment on the host country employment. Pinn, Ching, Kogid, Mulok, Mansur and Loganathan (2011) examines the relationships between the employment and FDI in Malaysia. Malaysia. The authors used time series data on employment and FDI for the period 1970 to 2007 and applied Autoregressive Distributive Lag (ARDL) model and Error Correction Model-Autoregressive Distributive Lag (ECM-ARDL) models to find out the co-integration relationship between inflow of FDI and employment in Malaysia. The study found that there is a causal relationship between employment and FDI in the short

run and found that FDI significantly contribute to employment growth in Malaysia. However, they didn't find long term co-integrations relationship between FDI and employment over the same period.

Another we popular destination of FDI in the south East Asia has been Vietnam. It has attracted large amounts of FDI and has seen considerable economic growth over the past couple of decades. In 1990s Vietnam opened its economy to investment and trade and the economy has become much more integrated with the region and the rest of the world. A major chunk of its FDI comes from the OECD country including Japan and the Republic of Korea, while at the same time most of its exports goes to the same OECD countries. Vietnam opened up its economy for trade with the rest of the world in order to attract the much needed FDI. In 2000s trade openness in Vietnam rose to more than three times the level of openness in the mid-1980s. Trade openness led to huge increased trade and the trade to GDP ratio rose enormously. This trade openness and increase in trade resulted in an enormous growth of FDI Inflow. The growth of FDI inflow into Vietnam is clear from the fact that the FDI stock to GDP ratio grew from zero percent of GDP in the mid-1980s to over 75% of GDP. It is therefore, we useful to look into the impact of the FDI inflow into Vietnam on the labor sector dynamics especially on the labor demand and level of employment. A study carried out by Rhys Jenkins (2006) investigated the impact of FDI on employment in Vietnam. The author conclude that despite the considerable inflow of FDI into Vietnam over the last two decades, the employment generating effect of FDI has been very limited due to the fact that there has been very limited linkage between the FDI receiving firms and the domestically owned firms. The indirect effect is also considered to be minimal in the case of Vietnam and even possibly negative due to possibility of "crowding out" of domestic investment in the presence of foreign more competitive firms.

Japan has been one of the biggest source of FDI flowing into the developing countries. Japans economy has not been attracting greater amounts of FDI. However, over the last couple of decades Japans economy has slowed down and the foreign direct investment is felt increasingly important for growth in economic activity. M. Palat (2011) analyzed data from 1983 to 2009 on FDI and unemployment from Japan in order to investigate

correlation between FDI and unemployment. The author compared FDI inflow in Japan, USA and the European Union and applied regression and correlation analysis and confirm correlation between the two variables in Japan over the period analyzed.

Central and Eastern Europe has been one of the favorite destination for investors after opening up of economies for foreign investment. During the last two decade Central and Eastern European countries including Czech Republic, Slovakia and Poland privatized public sector enterprises and liberalized their economies. Then in 2004, these countries entered into the European Union which further removed the remaining barriers and attracted foreign direct investment into the region. The impact of this FDI inflow on different economic indicators in the region is studied by Bruno, Crinò and Falzoni (2012). The study is based on manufacturing sector industry level yearly panel data from 1994 to 2002 for Poland, Hungary and the Czech Republic. The authors applied least squared Dummy Variables (LSDV), two stage least square (TSLS) and generalized method of moments (GMM) methods to estimate the effects of inward FDI and trade on relative skilled labor demand and wage inequality. Consistent with their expectations, they found that the effect of FDI on relative skilled labor demand vary across countries. The effect of FDI on relative skilled labor demand was always significantly positive for Hungary; weakly negative for Poland and in case of the Czech Republic the effect was negligible.

Carsten Eckel (2003) examined the impact of efficiency-seeking FDI on factor prices, employment, and output and conclude that with the decrease in transportation cost, labor intensive firms relocate to countries with low wages. The study further concludes that internationality of production leads to increase in employment in case the supply of capital is elastic and the rise in employment will be even greater if the increase in production was due to efficiency caused by the movement of capital.

Mexico has been another example of developing countries where cost of labor is relatively low and firms from the neighboring United States move to produce cheaper goods especially in manufacturing sector. This low cost labor and closer vicinity to the largest world markets has made Mexico an attractive destination for investors. This surge in inflow of FDI is evident from the fact that FDI stock accounted to 8.5 percent of the

county's GDP in 1990 while in 2005 the stock of FDI amounted to 27.3 percent of Mexico's GDP. The picture becomes more clear we when compare these figures with the worldwide stock of FDI which stands at 22.7 percent of the world GDP. Nunnenkamp and Bremont (2007) analyze the inflow of FDI into Mexico and investigate if the increasing inflow of FDI has in any way helped Mexico solve its labor market problems of low wages and unemployment. The study used FDI panel data for the period 1994-2006 for about 200 manufacturing firms of both foreign origin and partnership between foreign and domestic owner. They estimate the dynamic labor demand function for blue and white collar workers in those firms and apply GMM estimator to find out if FDI inflow has any impact on the manufacturing employment of either type. The study reject the view that FDI create white collar jobs. However, the study finds a small but significant positive impact of FDI inflow on employment in general in Mexico.

Pacific island states have been attracting FDI in order to generate economic activity and improve the living standards of region. Fiji is one of the largest economies of the pacific island states and have been successfully attracting large amount of FDI. T.K. Jayaraman and Baljeet Singh (2007) investigate the long term relationship between FDI and employment in Fiji. They employ the bounds testing approach to co-integration to find correlation between the two variables and then apply granger causality test to find the causality flow from one variable to the other. They analyzed the 34 year period annual data from 1970 to 2003 and conclude that there is a long term correlation between the FDI inflows and annual employment in Fiji over the period analyzed. There further found that the causality flows from FDI inflow to employment during the period.

Ghana has been one of the most stable country in Africa and has seen a huge increase in the inflow of foreign capital to the country. China has been aggressively investing in Ghana. Tang and Gyasi (2012) looks into the effects of Chinese FDI inflow into Ghana and its effects on Ghana's economy especially on the employment sector. They study conclude that more than 80% of the investment coming from china into Ghana from the year 2006 to the year 2010 has been concentrated in the manufacturing sector, building and constructions and the general trade sector of the Ghana economy. The study further conclude that "about 91% of the total employment projection generations between 2006 and 2010 came from Chinese investments with Ghanaians enjoying a chunk of it as

against the expatriates. From 2006 to 2010, about 80% or more of investments from China have been mostly concentrated in the Manufacturing, Building & Construction and General Trade sectors of Ghana. Investors must enter into under-served sectors which have been inadvertently overlooked". The paper make suggestions that the government of Ghana that in order to upgrade the domestic operations some of the manufacturing and building construction contracts should be allocated to the local investors. Further they suggest that the geographical focus of investment should be widened as well as other less exploited sectors should be focus on and more foreign investment should be attracted to those areas.

Aizenman (2003) examine the economic implications of the increased presence of the multinational enterprises in the emerging markets. The main purpose of the study is to find out the FDI inflow on the employment of the host country in the presence of macroeconomic volatility. The authors suggest that the macroeconomic volatility in the economy has a large impact on the decision making of the multinational firms with regards to employment and investment in the intermediate input production in the developing countries. The author conclude that "circumstances where this diversification is costly to emerging markets. Such a diversification increases the responsiveness of the multinationals' employment in each country to productivity shocks, channeling the average employment from the more to the less volatile location, and reducing the multinationals' total expected employment in emerging markets".

Blomstrom, Fors and Lipsey (1997) compare the relationship between foreign firms' production and their parent employment in the US manufacturing multinational firms with the Swedish firms. The study found that the US multinational firms have allocated more labor intensive operations in the developing world for selling in the international markets as compared to the operations in the home productions. Home production of the US firms is relatively capital intensive as compared to their developing countries operations. Compare to the US firms the Swedish firms produce little in the developing countries and that production has been for the host country sales. While the production of the Swedish affiliates in the developed world i.e. US market and European market is associated highly with the blue collar jobs.

Ayumu (2012) examine the impact of the FDI outflow on the home country employment and on the workforce composition. The authors used propensity score matching methods in order to examine the effect of the Japanese manufacturing, wholesale and services sector firms' which were involved in the outwards FDI on the domestic employment level during the period 2003 to 2005. The study conclude that a higher employment growth was recorded in all three sectors of the Japanese economy for the firms that initiated foreign direct investment compared to those that didn't initiate any FDI. Furthermore, the Japanese manufacturing sector recorded higher growth of employment for the non-regular workers. Therefore, the study conclude that the outwards FDI impacts the home country employment positively.

Chapter: 3 Data and Methodology

3.1 Data

The study is based on the Annual data on FDI inflow, GDP and employment for the Period 1993-2011 for the Czech Republic. Data is FDI inflow into the Czech Republic and GDP was obtained from the OECD statistics and data on employment is obtained from the International Labor Organization (ILO) database. Data on all three variables is obtained on the following sectors for the sector-wise panel data analysis.

- Manufacturing sector
- Primary Sector (agriculture, Fisheries and Mining)
- Construction
- Services
- Ewg (Electricity, water and gas)

3.2 Methodology

The thesis aims to investigate the impact of FDI on employment in the Czech Republic. In order to find correlation between the variables FDI, EMP and GDP I compute Pearson Correlation Coefficient between all the three variables.

In the second more in depth co-integration analysis, Im-Pesaran-Shin (IPS) test is applied to all the three variables in order to find out the order of integration of the variables. After finding out the order of integration *Johansen Fisher Panel Co-integration Test* in order to find out if there exist one or more co-integration relationships between FDI, GDP and employment. Once the co-integrating relationship is determined between the variables then I apply the Vector Error Correction Model (VECM) in order to find out the short term and long term causality running from FDI and GDP to the employment in the Czech Republic.

In the end impulse response functions are generated in order to find out the impact of a shock in one variable on the other variables.

3.3 Pearson Correlation Coefficient

The Pearson correlation coefficient (or Pearson product-moment correlation coefficient) is a measures the strength of a linear correlation between any two variables. It can also be described as a line of best fit through the two variables data and the Pearson correlation coefficient gives us idea of how far is the data on both variables from the line of the best fit.

The Pearson correlation coefficient is denoted by "r" and is computed for any two variables X and Y as the following.

$$r_{yx} = \frac{\mathrm{cov}(y,x)}{\sqrt{\mathrm{var}(y) * \mathrm{var}(x)}} = \frac{\sum(X_i - \overline{X})(Y_i - \overline{Y})/N}{\sqrt{\sum(X_i - \overline{X})^2 \sum(Y_i - \overline{Y})^2 / N * N}} = \frac{\sum(X_i - \overline{X})(Y_i - \overline{Y})}{\sqrt{\sum(X_i - \overline{X})^2 \sum(Y_i - \overline{Y})^2}}$$

Where $\overline{X}$ is the arithmetic mean of variable X and $\overline{Y}$ is the arithmetic mean of variable and var(x) and var(y) are variance of X and Y respectively.

The Pearson correlation coefficient "r" can take values between -1 and +1

i.e. $-1<r<+1$

An "r" taking value of less than zero indicates that there is a negative (opposite) correlation between the two variables while an "r" with a value bigger than zero indicates a positive correlation between the two. A correlation coefficient "r" equal to zero indicates zero correlation between the two variables. For any two variables a correlation coefficient of above $|\pm 0.5|$, the variables are considered to be strongly correlated and an "r" less than $|\pm 0.5|$ indicates that the two variables are weakly correlated.

3.4 Im-Pesaran-Shin (IPS) Test for Unit Root

In order to investigate the panel co-integration relationship between variables, it is important to test the order of integration of variables. To find out the order of integration of all the variables I used Im-Pesaran-Shin (IPS) test.

IPS test is preferred for the long run analysis because of the greater test power as compared to other test for unit root. IPS test is based on the Augmented Dickey Fuller (ADF) test procedure and it combines the information on unit root hypothesis from N unit root tests based on N cross-sections. The test is applied on balanced panel data. In this research, I use IPS test for the unit root testing of all the three variables.

The following ADF model is estimated for each variable.

$$\Delta Y_{i,t} = \gamma i Y_{i,t-1} + \sum_{j=1}^{p} \alpha_{i,j} \Delta Y_{i,t-j} + \beta t + \omega_{i,t} \text{ ----------(4.1)}$$

Where i=1, 2,...., N (cross-sections)

t=1, 2,....,T (time series)

t= Time trend

ω=Error Term

The following null hypothesis are test again the given alternative hypothesis.

Null and Alternative hypothesis

Ho: $\gamma_i = 0, i = 1, 2, \ldots, N$ (The series has a unit root, is non stationary)

$H_A : \rho i < 0, i = 1, 2, \ldots, N1; \rho i = 1, i = N1 + 1, N1 + 2, \ldots, N$

(The series doesn't have a unit root and is stationary)

IPS uses each individual unit root test based on Augmented Dickey Fuller (ADF) test statistics for N cross sections. An average of all the individual cross-sectional ADF tests t_i is computed in the following.

IPS Test Statistic:

$$\bar{t}_{N,T} = 1/N \sum_{i=1}^{N} t_{\gamma i} \text{ ----------} (4.2)$$

The above t^ statistic values are compared with the corresponding critical values from the original paper of Im-Pesaran-Shin. The null hypothesis of "unit root" is rejected if the t^ statistic value is smaller than the corresponding critical value and vice-versa.

3.5 Johansen Fisher Co-integration Test

Introduced by Johansen (1988), the Johansen cointegration test determines the presence of cointegration vector in a non-stationary time series. The test is based on two different approaches, namely the likelihood ratio trace statistics and the maximum eigenvalue statistics.

The likelihood ration trace statistics and the maximum eigenvalue statistics are given in the following (4.3) and (4.4).

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{n} \ln(1 - \hat{\lambda}_i) \text{ ----------} (4.3)$$

and

$$\lambda_{\max}(r, r+1) = -T \ln(1 - \hat{\lambda}_{r+1}) \text{ ----------} (4.4)$$

Where,

T is the number of observation, n is the number of variables i.e. foreign direct investment, gross domestic Investment and employment and $\hat{\lambda}_i$ is the i^{th} largest canonical correlation between residuals from the three dimensional processes and residuals from the three dimensional differentiate processes.

In case of trace test, the following null and alternative hypothesis is tested

Null Hypothesis

Ho: at most "r" vectors are co-integrated

Alternative hypothesis

H_A= full rank "r=n" co-integrating vector

While in case of the maximum eigenvalues statistics is the following

Null Hypothesis

Ho: at most "r" vectors are co-integrated

Alternative hypothesis

H_A= "r+1" co-integrating vector

Johansen fisher panel test investigate cointegration relationship for the whole panel by combining the individual cross-section i co-integration tests.

It is based on P-values (Pi) from individual Johansen test for each cross section i.

$$-2\sum_{i=1}^{N}\log P_i \sim \chi^2_{2N}$$

The following three null hypotheses are tested against the alternative hypothesis given

Null and Alternative hypothesis 1

Ho: There doesn't exist any co-integrating relationship in the model

H1: There exist co-integrating relationship in the model

Null and Alternative hypothesis 1

Ho: There exist at most 1 co-integrating relationship in the model

H1: There exist more than one co-integrating relationships in the model

Null and Alternative hypothesis 1

Ho: There exist at most 2 co-integrating relationship in the model

H1: There exist more than 2 co-integrating relationships in the model

3.6 Vector Error Correction Model (VECM)

Johansen Fisher Co-integration enables us to know if there exist any co-integrating relationship between the variables in question. After knowing that there exist a co-integrating relationship I apply the Vector Error Correction Model (VECM) in order to find out the short run and long run causality running from FDI and GDP to employment in the Czech Republic.

Suppose

X denote employment

Y denote Gross domestic product

Z denote foreign direct investment

The subscripts i and t denote the cross section (sectors of economy) and time series (years) respectively.

The following VECM model is estimated where $\propto_{X}$ estimate the speed of adjustment between the variables. In the model below $\propto_{2i}$ estimate the long run causality running from GDP to employment where $\propto_{3i}$ estimate the long run causality running from foreign direct investment to employment in the Czech Republic.

$$\begin{bmatrix}\Delta Xit\\ \Delta Yit\\ \Delta Zit\end{bmatrix} = \begin{bmatrix}\alpha 1\\ \alpha 2\\ \alpha 3\end{bmatrix} + [\propto_X \propto_Y \propto_z] \begin{bmatrix}\varepsilon^X\\ \varepsilon^X\\ \varepsilon^X\end{bmatrix} + \sum_{i=1}^{4} \propto_{1i} X_{t-i} + \sum_{i=1}^{4} \propto_{2i} Y_{t-i} + \sum_{i=1}^{4} \propto_{3i} z_{t-i} + \begin{bmatrix}\epsilon_X\\ \epsilon_Y\\ \epsilon_Z\end{bmatrix} -$$

$$- - - -

Null and Alternative hypothesis 1

Ho: $\propto_X = 0$ There doesn't exist any short run causality running from FDI and GDP to employment.

H1: $\propto_X < 0$, There exist a short run causality between running from FDI and GDP to employment.

Null and Alternative hypothesis 2

Ho: $\propto_{21} = \propto_{22} = \propto_{23} = \propto_{24} = 0$, GDP doesn't cause employment in the long run

Ho: $\propto_{21} \neq \propto_{22} \neq \propto_{23} \neq \propto_{24} \neq 0$, GDP does cause employment in the long run

Null and Alternative hypothesis 3

Ho: $\propto_{31} = \propto_{32} = \propto_{33} = \propto_{34} = 0$, FDI doesn't cause employment in the long run

Ho: $\propto_{31} \neq \propto_{32} \neq \propto_{33} \neq \propto_{34} \neq 0$, FDI does cause employment in the long run

3.7 Impulse Response Functions

In applied research work, it is of interest to learn the response of one variables to an exogenous shock in another variable. Therefore, it is important to investigate the impulse response relationship between the FDI inflow, GDP and employment in the Czech Republic. I estimate the impulse response function of employment in the Czech Republic to the exogenous shock in FDI inflow and GDP.

Chapter: 4 Patterns of Foreign Direct Investment in the Czech Republic

4.1 Inward FDI in the Czech Republic

The Czech Republic has attracted huge inflow of foreign direct investments since the late 1990s. The inflow of foreign capital has been attracted both in the form of "greenfield investment" i.e. establishment of new branch of a foreign business as well as in the form of "brownfield investment" which takes place in the form of privatization, acquisition and takeovers of existing firms. Greenfields were mainly established by the Multinational firms in attempt to access the newly opened up economies. In 1997, the government of the day initiated a number of policies in order to attract FDI into the country. During the period many bank were privatized, energy sector firms and telecommunication sector was privatized. Besides the privatization drive the government collaborated with the local government and subsidized creation of industrial parks which attracted both domestic and foreign firms. One of the most significant policies during the period was the creation of the investment and business development agency called CzechInvest. CzechInvest is an agency which provides a one window operation and helps the foreign firms go through the process of starting business at one place and help them avoid the bureaucratic hurdles [10].

The FDI promoting policies of Czech Republic included establishment of an extensive network of industrial zones. These industrial zones are created within the cities or immediately adjacent to the cities and are all ready for companies to move in and start business. These zones are fully prepared and have complete infrastructure including rail and road transport access, energy supply and water management. Besides this all the necessary administrative and operational requirements are made easy and done swiftly for any company wanting to start business. According to the "Performance article" currently there are approximately 100 industrial zones in the Czech Republic. Most of these industrial zones are situated in the Central Bohemia, South Moravia, Moravia-

[10] Performance Volume 4|issue 3 [accessed from] http://performance.ey.com/wp-content/uploads/downloads/2012/06/Performance-4.3-April-2012-Journal-v16-p7079.Czech-Republic.pdf

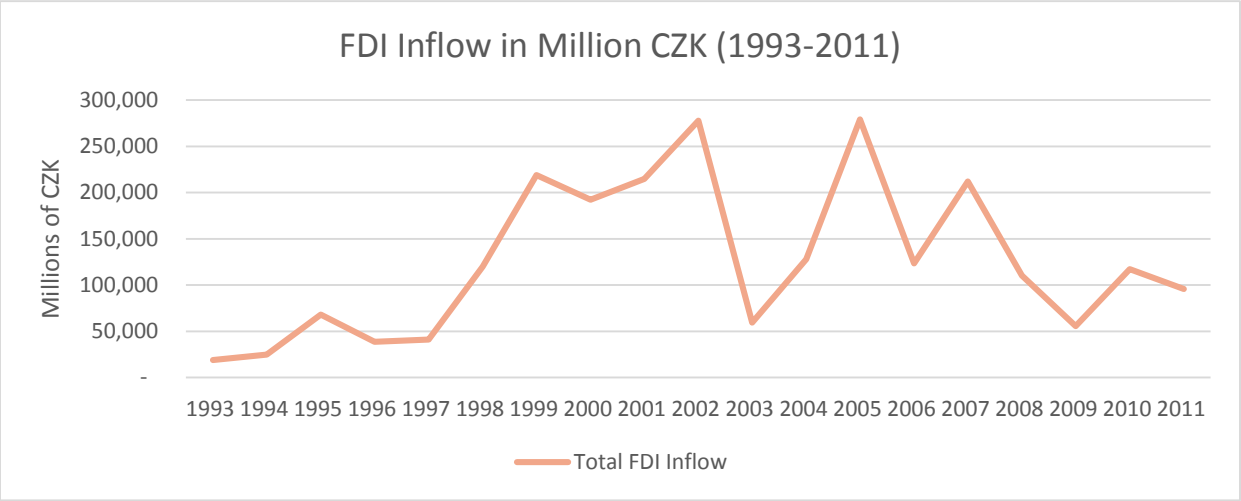
Silesia, Ústí and Vysočina regions. Five of these zones are high profile strategic industrial zones where the investors are provided with extra incentive for investment including ready infrastructure, cheaper land and good transport accessibility. [11]

The other most important tool of attracting FDI into the Czech Republic has been CzechInvest, the national investment and business development agency of the Czech Republic. CzechInvest is an organization established under the Ministry of Industry and Trade solely for the purpose of attracting foreign investment into the country. CzechInvest support small and medium-sized enterprises, business infrastructure and innovations in order to bolster competitiveness and create conditions to attract foreign investments in the areas of manufacturing, business support services and technology centers. CzechInvest has been very successful in attracting a large amount of foreign investment. According to the CzechInvest report during the period 1993 to 2010, CzechInvest cooperated with the investors on 1,565 investment projects. These projects brought in a total investment of 25.908 billion US dollars into the Czech Republic. These projects included new investments and didn't include the investment brought into the country by the privatization drive of the government. These investments included projects in different sectors of economy including manufacturing, business support services and technology centers. According to the report these investment projects created a total of 215,763 new jobs in the Czech Republic. [12]

The above mentioned measures put Czech Republic on the FDI map and made it one of the most attractive destination for multinational firms to invest in. The results could be seen in figure 1 below. FDI inflow into Czech Republic reached 119.969 Billion CZK in 1998 and 218.812 Billion CZK in 1999 as compared to only 41.251 Billion CZK in 1997. This high inflow continued for years. The second boost in the inflow can be seen in the years from 2004 onwards. In 2004 Czech Republic entered into the European Union and all the remaining restrictions on the inflow of capital were lifted which again brought big inflows of foreign investments.

11, 12, Performance Volume 4|issue 3 [accessed from] http://performance.ey.com/wp-content/uploads/downloads/2012/06/Performance-4.3-April-2012-Journal-v16-p7079.Czech-Republic.pdf

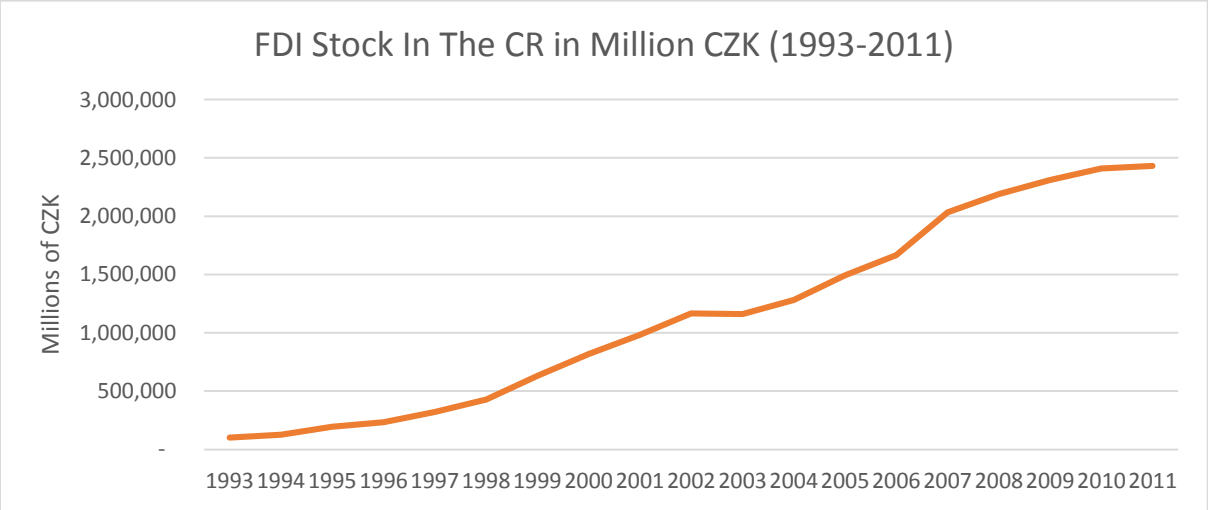
Figure 1: FDI Inflow into the Czech Republic



Data Source: OECD stat website [data accessed on 15.01.2014]

However, there has been a decrease in the FDI inflow into Czech Republic from the years 2008 and onwards which could be explained as the effect of 2008 global financial crisis. The crisis made firms more reluctant to invest and this lead to a decrease in investment on a global level which also affected the FDI inflow into the Czech Republic. However, there has been a slight recovery from the year 2010 onwards and the firms are returning to the Czech Republic with a greater investments. The consistent inflow of huge amounts of FDI accumulated huge stock of FDI in the Czech Republic. Figure 2 below shows that the accumulated total stock of inward FDI stood at 2,431 Billion CZK in 2011 as compared to a merely 102.539 Billion CZK in 1993.

Figure 2: Inward FDI Position in the Czech Republic



Data Source: OECD stat website [data accessed on 15.01.2014]

4.2 Inward FDI by Industry

Czech Republic has been successful in attracting foreign investors by implementing the investors' friendly policies. The investment was attracted in a number of sectors including manufacturing sector, services sector, construction, electricity, water and gas and primary sectors.

After opening up the economy to the foreign investors, the initial investment was attracted mainly in manufacturing sector. The reason behind the success of manufacturing sector was the low cost of production in the manufacturing sector as compared to the cost of production in the Western Europe. The combination of low cost and high quality of labor attracted huge inflow of investment into the Czech Republic manufacturing sector. Some of the most popular world leading automotive producers that operate in the Czech Republic include Volkswagen, Toyota Peugeot Citroen Automobile, Hyundai Motors, Tatra, Iribus Iveco etc.[13] besides car manufacturing other manufacturing sector industries that attracted high inflow of FDI included, Food and Tabaco, Textile, wearing apparel and leather, wood, paper and publishing, refined petroleum and chemicals, basic metal and metallic products, nonmetallic products, machinery and equipment and other manufacturing industries. The manufacturing sector attracted an FDI of 10.6 billion CZK in the year 1993 which increased to 19.10 billion CZK in the year 2000 and continues with almost the same rate till the year 2007. In the year 2008 manufacturing sector experienced a huge decrease in the inflow of foreign direct investment. [14]

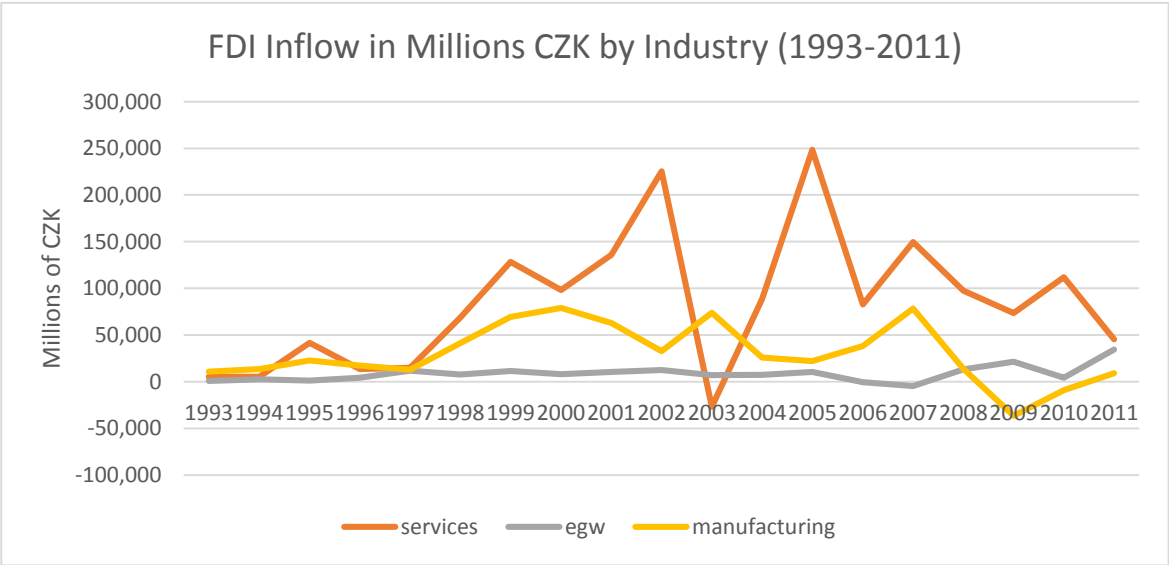
However, over the years services sector has been the biggest attraction for the foreign investors and it has been receiving the biggest FDI inflow in the Czech Republic. While manufacturing sector FDI inflow has been growing slowly the services sector FDI inflow has drastically increased over the years. Most of the services sector foreign investment has been attracted by the financial services industry, software and information technology and business support services industry. The figure 3 below shows the inflow of FDI into

[13] CzechInvest Report (2009)
[14] CzechInvest Report (2013)

the Czech Republic in each sector of the economy. It can be seen that the services sector has been attracting the biggest investment into the Czech Republic. FDI inflow in the services sector saw a gradual increase and reached the as high as 225.464 billion CZK in the year 2002. In 2003 the FDI inflow decreased drastically. However, the years ahead saw a recovery and a huge inflow was received in the year 2004 and 2005. The services sector saw the biggest inflow of investment in the year 2005 which is 248.459 billion CZK. The pace of the inflow has slowed down since then and the services sector FDI inflow was recorded only 45.365 billion CZK in the year 2001. However, the services sector still remains the biggest attraction in the Czech Republic for the foreign investors.

The third biggest sector which attracted foreign investment in the Czech Republic is "electricity, water and gas". The inflow of investment in the electricity water and gas sector has been very small over the year. However, after the year 2007 this sector has seen some increase in the inflow of foreign investment and the sector attracted an investment of 34.25 billion CZK in the year 2011. Besides the three main sectors of manufacturing, services sector and electricity water and gas sector, Czech Republic has been attracting a sizeable foreign investment in the construction sector and the primary sector which includes agriculture, fisheries and mining.

Figure 3: FDI Inflow into Czech Republic by Industry:



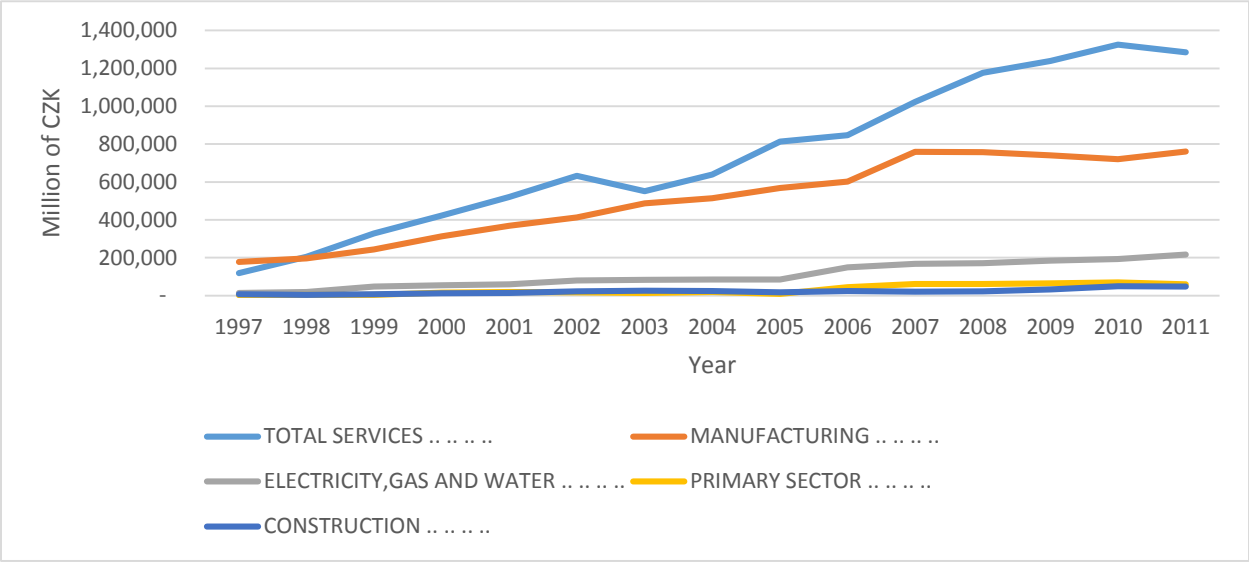
Data Source: OECD stat website [data accessed on 15.01.2014]

Due to the high inflow of FDI in the services sector, services sector has accumulated the biggest stock of FDI in the Czech Republic. There has been a steep increase in the inflow of FDI in the services sector during both periods namely after the implementation of FDI attracting policies in the late 1990s and after 2004 when the Czech Republic Joined the EU. However, there has been a slight decrease in the inflow after the 2008, which most probably is due to the global financial crisis. In the aftermath of the world crisis the investors were reluctant to investment and therefore the FDI inflow in almost every sector of the economy including services sector fall down. The effect of this high inflow and subsequent fall in the FDI inflow could also be seen from the figure 4 below, which depicts the FDI stock position in the Czech Republic from 1993-2011.

The stock of FDI in the services sector was 118.548 billion CZK in 1993 which has grown up to an enormous amount of 1,284.86 billion CZK in the year 2011. In the same way the manufacturing sector FDI has also grown steadily but at a rate lower than the services sector FDI and the manufacturing sector inward FDI stock position is 760.173 billion CZK in the 2011. The third sector largest sector with respect to FDI stock in the Czech Republic is the electricity water and gas sector in which investment has largely remained flat. However, it has lately seen a rising trend and is attracting huge amount of foreign investment. This surge in the inflow of FDI in electricity water and gas sector lead the FDI stock in the sector to a huge sum of 216.115 billion CZK in the year of 2011.

The fourth and fifth and the less attractive sectors of the Czech economy with respect to attracting foreign direct investment has been the construction and primary sectors (agriculture, fisheries and mining). FDI stock in the construction sector and primary sector stands at 48.056 billion CZK and 60.106 billion CZK respectively in the year 2011. The overtime increasing stock of FDI in each sector of the Czech Republic economy from the year 1997 to the year 2011 can be seen in the figure 4 below.

Figure 4: FDI Stock by Industry in the Czech Republic:



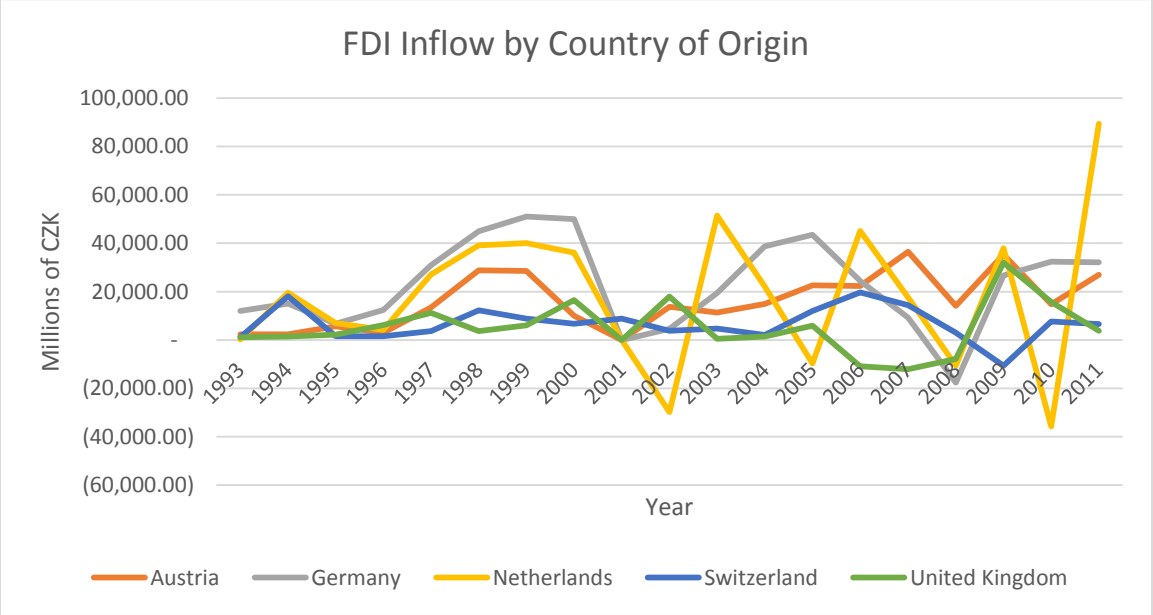
Data Source: OECD stat website [data accessed on 15.01.2014]

4.3 Inward FDI by Source Country

Czech Republic has been attracting foreign direct investment from all over the developed world. However, the majority of the investment has been coming from the European Union member countries, understandably because of the absence of any restrictions on the capital mobility within the European Union member countries. The other major economies of the world contributing big chunks of the inflow of FDI into the Czech Republic. The biggest investment overs the year has been coming from the neighboring countries like Germany and Austria. Initially the biggest investment was attracted by the privatization program in the late 1999s from the countries like Germany, Austria, Netherlands, and United Kingdome etc. However, lately the investment has been coming mostly in the form of expansion of multinational firms from the western European countries and in the shape of outsourcing part of manufacturing and business activities. Figure 5 below shows the inflow of FDI into the Czech Republic from the five biggest source countries. It can be seen from the figure that the inflow of FDI has largely been volatile or almost all the origin countries. However, the inflow from the two biggest origin countries i.e. Germany and Austria, has largely been stable except for the years 2008 and

2009. The possible reason for the drop in the FDI inflow in these years has been the global financial crisis. The crisis hit business across the world and especially within the European Union which affected investors' confidence and therefore lead to a decrease in inflow into the Czech Republic. The inflow from the rest of the top five source countries has been largely volatile. However, there is a trend of surge in the inflow during the late 1999s and a gradual slow down afterwards. The increase was as a result of the aggressive FDI promoting policies of the government of the Czech Republic during that time. The second surge in the inflow can be seen during the year 2004 which was as a result of the entry of Czech Republic into the European Union. The top five sources countries of the FDI inflow into the Czech Republic are all European countries and entry into the European Union made it easier for the investors to invest in the Czech Republic. Then there is sizeable decrease during the global financial crisis of 2008. However, there seem to be a recovery in terms of the inflow of FDI into Czech Republic after the year 2009 onwards, which is indicative of the investors' confidence in the Czech Republic economy.

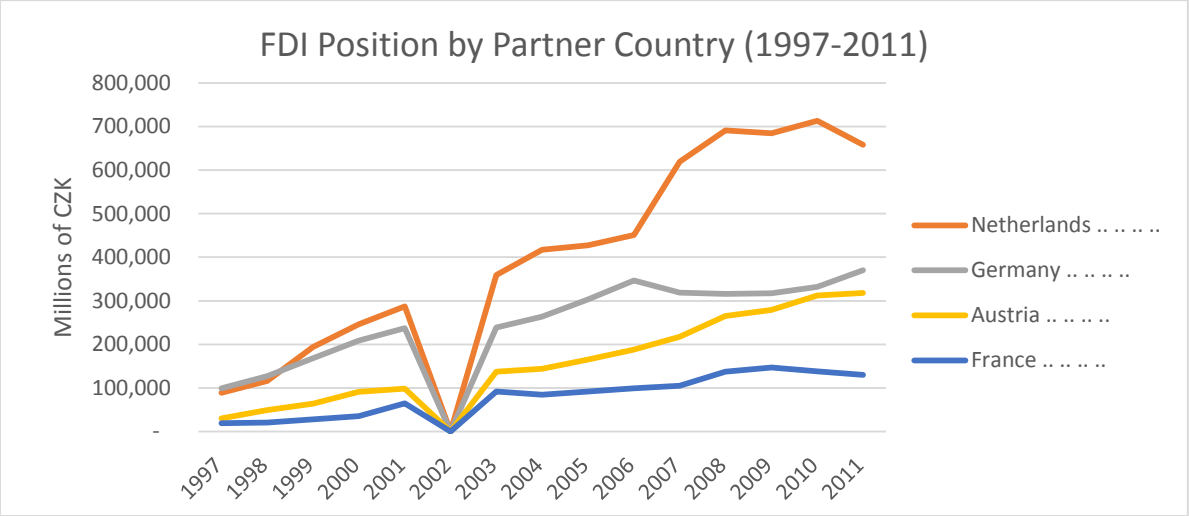
Figure 5: Inflow of FDI into the Czech Republic by Partner Country



Data Source: OECD stat website [data accessed on 15.01.2014]

Figure 6 in the following shows the FDI stock accumulated by firms with respect to their origin countries. The Netherlands accumulated the biggest stock of FDI in the Czech Republic by the year 2011 which stands at 658.47 billion CZK. Netherlands is followed by Germany with a stock of 370.46 billion CZK. The third and fourth biggest stock are accumulated by firms originating from Austria and France with a stock of 318.218 billion CZK and 129.87 billion CZK respectively.

Figure 6: FDI Stock in the Czech Republic by partner country



Data Source: OECD stat website [data accessed on 15.01.2014]

Following is the list of top ten FDI originating countries in the Czech Republic by the year 2011.

Origin Country	FDI Stock by 2011
Netherlands	658,472.24
Germany	370,462.85
Austria	318,218.26
France	129,872.14
Switzerland	116,098.33
Slovakia	90,832.83
United States	84,947.53
Belgium	76,627.55
Spain	74,592.37
United Kingdom	55,669.10

Data Source: OECD stat website [data accessed on 15.01.2014]

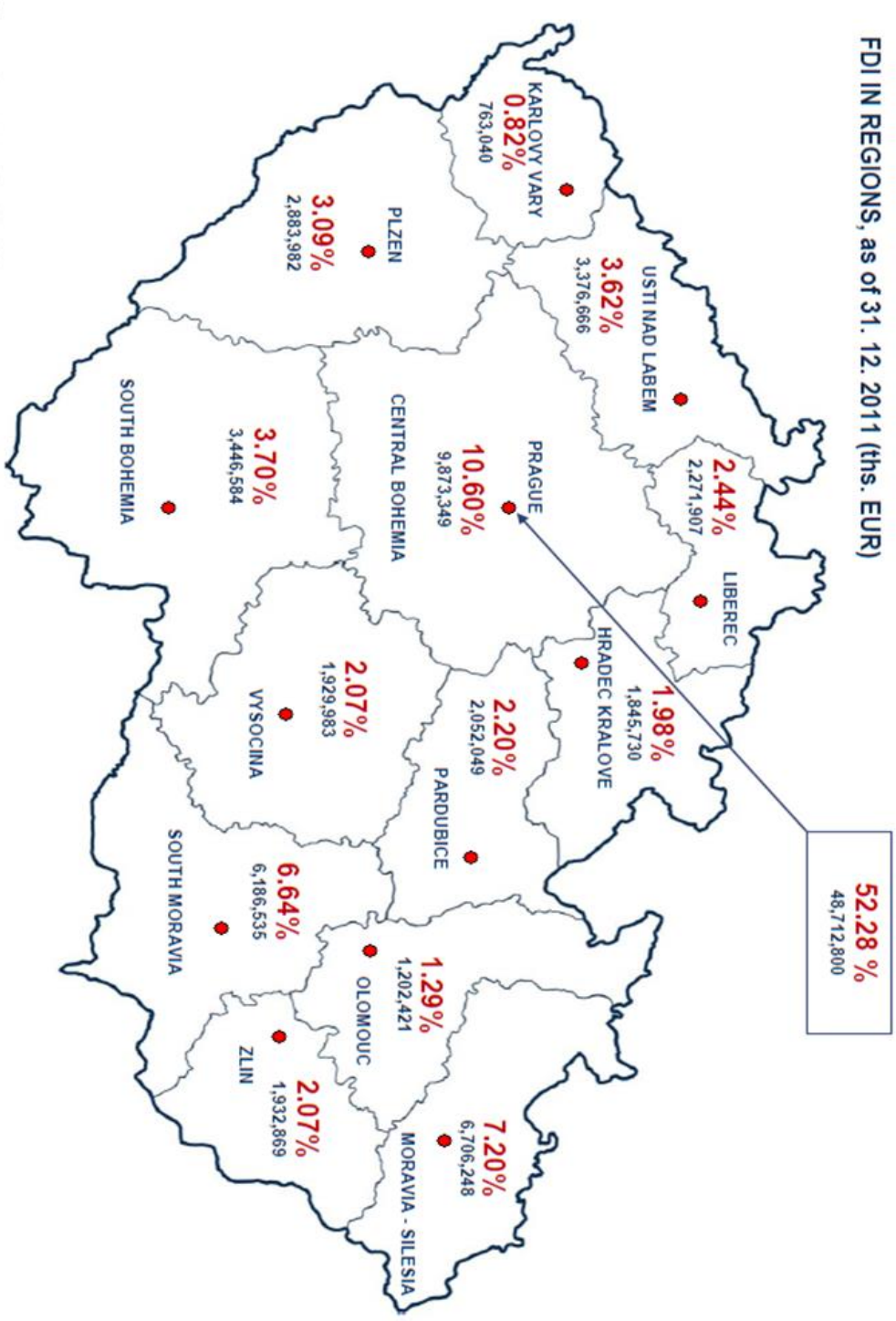
4.4 Inward FDI by Region of Czech Republic

Czech Republic has attracted huge amounts of FDI in every sector of the economy and the investment projects has largely been spread across the geographical regions of the country. However, as the services sector is the leading sector in attracting foreign direct investment in the Czech Republic, and the biggest part of the services industry services are provided in the capital city of Prague, therefore, Prague has been the main attraction of the services sector FDI.

Prague has the largest accumulation of foreign direct investment in the Czech Republic. According the Czech National Bank (CNB) data from May 2013, the total amount of FDI stock in the city of Prague is about 48.712 billion US dollar which makes the share of FDI stock located in the Prague city about 52.28% of the total stock of FDI in the Czech Republic. The region of central bohemia is the region holding the second biggest stock of FDI. Central Bohemia FDI stock in May 2013 stood at 9.873 billion US dollars which accounts for the 10.60% of the total FDI stock in the Czech Republic. Prague and Central Bohemia region is followed by Moravia-Silesia and South Moravia with 7.20% and 6.64% respectively. The complete map of the Czech Republic regions with the stock of foreign direct investment is given bellows which shows every region of the country with the percentage of the FDI stock held in the respective region. [15]

[15] CzechInvest Report (2013)

Figure: 7

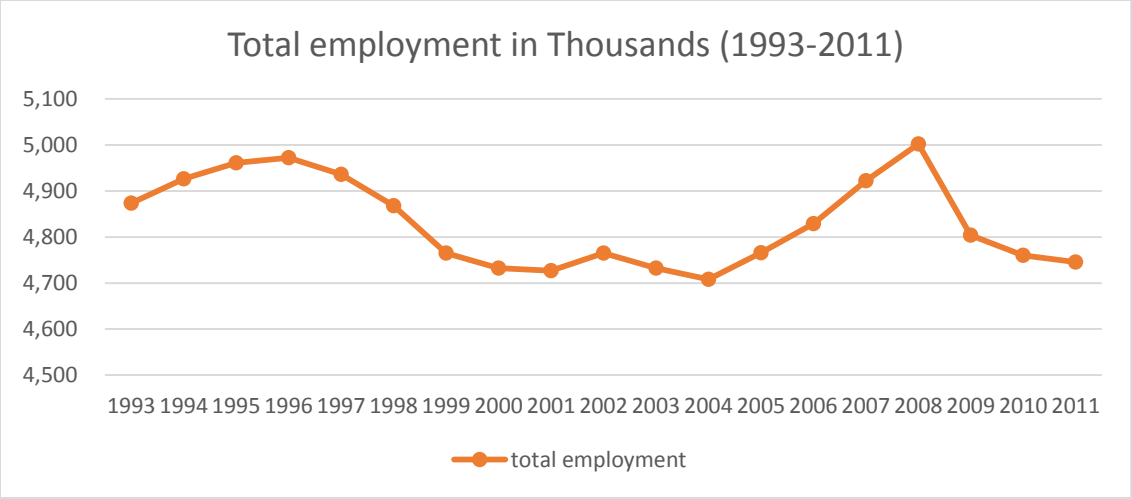

FDI IN REGIONS, as of 31. 12. 2011 (ths. EUR)
52.28 %
48,712,800
KARLOVY VARY
0.82%
763,040
USTI NAD LABEM
3.62%
3,376,666
LIBEREC
2.44%
2,271,907
HRADEC KRALOVE
1.98%
1,845,730
PRAGUE
10.60%
9,873,349
PLZEN
3.09%
2,883,982
CENTRAL BOHEMIA
2.20%
2,052,049
PARDUBICE
2.07%
1,929,983
VYSOCINA
SOUTH BOHEMIA
3.70%
3,446,584
SOUTH MORAVIA
6.64%
6,186,535
OLOMOUC
1.29%
1,202,421
ZLIN
2.07%
1,932,869
MORAVIA - SILESIA
7.20%
6,706,248
Source: Czech National Bank, May 2013
Latest update: May 2013
Fact Sheet No.2 - Inflow of Foreign Direct Investment

4.5 Employment in the Czech Republic

One of the main goals of the modern economic policies has been to provide employment to the population. Creating employment opportunities in the economy is important for a number of reasons. The main reason is that as many advanced economies in the world jobs are the main source of income for the households in the Czech Republic. This is because of this very reasons that no one like the high unemployment in the economy. In the presence of unemployment stats have to provide alternative programs like unemployment insurance and other jobless benefits.

Employment opportunities provide the opportunities to capable workforce to employ their human and physical resources in productive activities. This adds to increase in the overall production level and increase national welfare. In situation where an economy is experiencing unemployment, the valuable resource of labor and human capital is gone wasted. Therefore, countries try to employ different methods in order to create full employment condition. Saving and investment is promoted in order to bolster economic activity and create employment opportunities. Czech Republic, being a transition country has been trying hard to fight unemployment and create employment opportunities.

Figure: 8 Employment in the Czech Republic



Data Source: OECD stat website [data accessed on 15.01.2014]

The above figure 8 shows the number of people employed in the Czech Republic from 1993 to the year 2010. It can be from the graph that there is an increase in the number of people employed from the year 1993 onwards. The number of people employed in the Czech Republic reaches to the highest of 4.792 million employed people in the year 1996. However, there is a subsequent drop in the number of people employed from the year 1996 until 2004. In 2004 the number of people employed in the Czech Republic reaches the lowest number of 4.707 million.

From the year 2004 onwards the number of employment rises sharply and keep increasing until the year 2008. The increase might possibly be due to the entry of Czech Republic into the European Union and subsequent increase in the inflow of foreign direct investment into the Czech Republic. The employment level reaches the highest level of 5.002 million people employed in the year 2008. The number of employment starts falling after the year 2008 in the aftermath of the 2008 global financial crisis. The crisis lead to huge fall in investment and the production activity fall. This lead to a sharp decrease in the employment numbers. The persistent fall in the employment numbers after the year 2008 decreases the overall employment and it reaches 4.746 million by the year 2011.

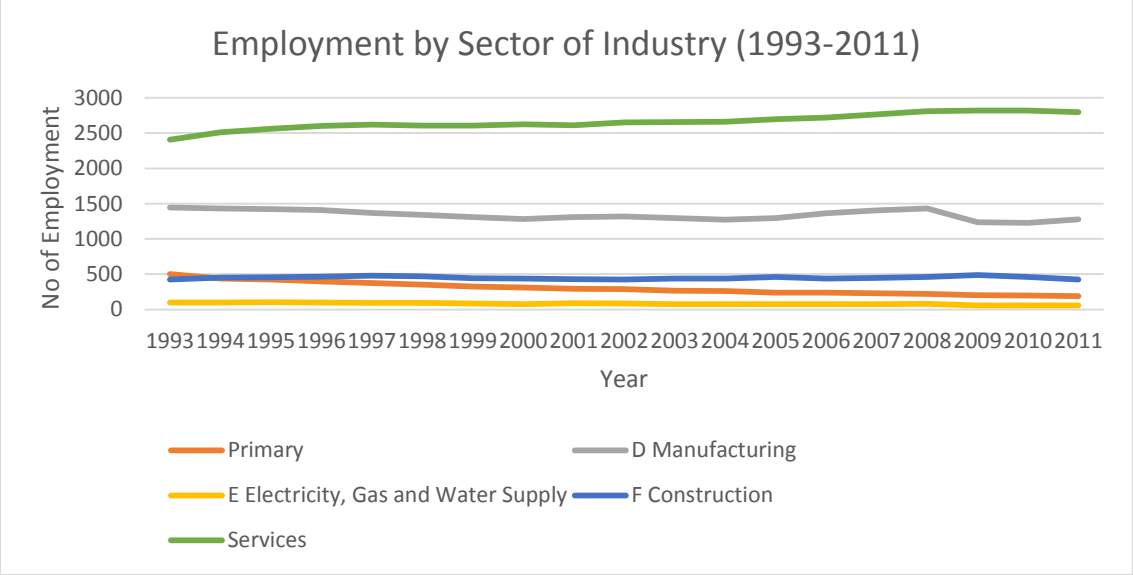
4.6 Employment by Industry in the Czech Republic

Services sector has historically been the largest sector with a huge margin in terms of providing employment opportunities in the Czech Republic. The share of services sector employment has been increasing over the years. This has mainly been happening due to the fact that the Czech Republic economy has been becoming more advance and the cost of production in the manufacturing sector increases. The increase in the manufacturing sector cost of production diverts some of the investment inflow into the services sector. In the year 1993, 2.405 million people were employed in the services sector. The share of services sector has increase continuously since then and has become 2.807 million workers in the year 2008, which shows an increase of over 402,000 workers in the sector in 15 years. The second highest employment providing sector of industry has been the

manufacturing sector. In 1993, the manufacturing sector provided working opportunities to 1.444 million workers. The share of manufacturing sector gradually decrease over the 1990s and reached the lowest numbers of 1.282 million workers in the year 2000. However, there has been a resurgence in the manufacturing sector employment numbers after 2000. In the year 2007, the manufacturing sector employment was recorded at 1.432 million workers. However, due to the global financial crisis in the year 2008 and afterwards, the number of manufacturing sector employment has decreased significantly and in the year 2011 the number of manufacturing employment was recorded as1.276 million workers.

The first two sectors of services and manufacturing sector employment is followed by the construction sector, primary sector and electricity, water, gas (EWG) sector respectively. Figure 9 in the following shows the share of each sector in employment in the Czech Republic over the years from 1993 to the year 2011.

Figure 9: Employment by Industry (In Thousands)



Data Source: OECD stat website [data accessed on 15.01.2014]

Chapter: 5 Analysis of Results

5.1 Pearson Correlation Coefficient

In order to find out the correlation between the three variables in the thesis, I compute the correlation matrix based on the Pearson correlation coefficient for FDI, GDP and employment. Table.1 below is the correlation matrix.

Table.1 Correlation Matrix

Variable	FDI	GDP	EMP
FDI	1	0.6530	0.6660
GDP	0.6530	1	0.7199
EMP	0.6660	0.7199	1

The correlation matrix above show that all the three correlation coefficients i.e. correlation coefficient between FDI and GDP, FDI and employment and GDP and employment are positive, Which is an indication that all these three variables vary in the same direction. Correlation coefficient between FDI and GDP is 0.6530, which means that there is a strong correlation between the two variables. The correlation between the FDI and employ is 0.660 which again is very high. The correlation coefficient between employment and GDP is 0.719 which is very high and indicate a strong correlation between GDP and employment in the Czech Republic.

The correlation coefficient shows a strong and positive correlation between the three variables in our analysis. However, in order to do in depth analysis of the relationship between these variables, co-integration analysis is conducted in the following.

5.2 Im-Pesaran-Shin (IPS) Test for Unit Root

In order to investigate the panel co-integration relationship between variables, it is important to test the order of integration of variables. To find out the order of integration of all the variables I used Im-Pesaran-Shin (IPS) test.

IPS test is applied in panel data analysis of unit root. However, the panel in the data has to be balanced. It is preferred for the long run analysis because of the greater test power as compared to other test for unit root. IPS test is based on the Augmented Dickey Fuller (ADF) test procedure and it combines the information on unit root hypothesis from N unit root tests based on N cross-sections.

Table.2 Results from Im-Pesaran-Shin (IPS) test:

Variable	Test in	No of Lags*	IPS Statistics	Critical Values**	Order of Integration
emp	Level	0-2	-1.1669	-2.48	I(1)
fdi	Level	0-2	-1.8313	-2.84	I(1)
gdp	Level	0-1	-1.7755	-2.48	I(1)
emp	*1st difference*	0-2	-5.3829	-2.9	*I(0)*
fdi	*1st difference*	0-2	-4.8702	-2.892	*I(0)*
gdp	*1st difference*	0	-2.9799	-2.892	*I(0)*

*Number of lags were chosen on the Akaike Information Criteria (AIC)
**Critical Values are obtained from the Original Paper by Im-Pesaran-Shin.

Table.2 above shows the results from the T statistics of the IPS test against the critical values of the test. The critical values are taken from the original Im-Pesaran-Shin paper on the IPS test, while the number of lags is chosen on the Akaike Information Criteria (AIC). The data in this thesis for all three variables has a trend and drift. In order to capture this data behavior, the IPS test is conducted with an intercept and time trend.

It can be seen from the results that in case of all three variables FDI, GDP and employment, the IPS t statistic value is bigger than the relevant critical value and therefore, I reject the null hypothesis of "no unit root" and conclude that all the three series has a unit root and are integrated series. In order to find the order of integration,

the same IPS test is conducted with the first difference for all three variables. Table 2 shows that the IPS t^ statistic values for all three variables are smaller than the corresponding critical values. Therefore, it can be concluded that the all three series are stationary and has no unit root with the first difference. In other words all the three series are integrated of order 1 i.e. I(1).

5.3 Johansen Fisher Co-integration Test

In the previous section I conducted the IPS test for unit root. From the unit root test it was found that all the three series are not stationary and are integrated of order one I(1). In the second stage Johansen Fisher Co-integration test is used in order to find co-integration relationship between the FDI, GDP and employment.

Johansen Fisher Co-integration test is conducted for the whole panel data as well as for each cross-section (sector of economy) of the data. Tables 3, 4, 5 and 6 in the following present the Johansen Fisher test of co-integration results.

Table.3 Results from Johansen Fisher Co-Integration test:

Hypothesis				
No of CE(s)	***Fisher Stat***	***P-value***	***Max Eigenvalue***	***P-value***
None	35.71	0.0001	34.48	0.0002
At most 1	11.83	0.2967	9.963	0.4437
At most 2	7.926	0.6361	7.926	0.6361

The hypothesis of "no co-integration", "at most 1 co-integrating relationship" and "at most 2 co-integrating relationship" were tested in the test. The results of this hypothesis testing for the whole data is presented in the above table3. Results for both Fisher statistics and maximum eigenvalues tests are presented with the corresponding P-values against each test statistic. It can be seen from the results that all the three null hypothesis of "none" is rejected at 5% confidence interval as the P-value is less than 0.05. This means that the

null hypothesis of zero co-integrating vectors is rejected. The second null hypothesis tested is that of "at most one co-integrating vector". However, this null hypothesis can't be rejected because the P-value of both maximum eigenvalue and fisher statistic is bigger than 0.05. Therefore, the null hypothesis can't be rejected and it is concluded that there exist at most one co-integrating vector in our model.

Table 4 below shows results of the Johannes Fisher co-integration test for the individual cross sections. The null hypothesis of "no co-integration" was tested for all the three variables across each sector of economy. It can be seen that null hypothesis is rejected at 5% confidence interval for the construction sector, primary sector and for the services sector because the P-values for these three sectors are less than 0.05. Therefore, it is concluded than there exist more than zero co-integrating vectors for three sectors. However, the same can't be said for the EWG sector and the manufacturing sector. Because the P-values for both the Fisher statistic and the maximum eigenvalue statistic is smaller than 0.05 for both these sectors. Therefore, the null hypothesis of no-cointegration vector can't be rejected for these two sector.

Table.4 Results from Johansen Fisher Co-Integration test:

Hypothesis of no co-integration	*Fisher Stat*	*P-value*	*Max Eigenvalue*	*P-value*
CONSTRUCTION	42.5756	0.0540	27.5971	0.0289
EGW	37.5447	0.1554	21.6968	0.1599
MANUFACTURING	42.4357	0.0558	24.1848	0.0810
PRIMARY	53.7006	0.0030	27.2924	0.0318
SERVICES	48.5211	0.0125	34.5699	0.0027

The null hypothesis of at most 1 co-integrating equation is tested in the following table 5. The results clearly suggest that the null hypothesis of at most 1 co-integrating equations can't be rejected at 5% confidence interval as the P-Values for all the sectors of economy are larger than 0.05 for both the Fisher statistics as well as the maximum eigenvalue. Therefore, it can be concluded that the null hypothesis of at most 1 co-integrating

relationship is can't be rejected for any of the sectors and it can be concluded that there exist at most one co-integrating equation among the analyzed variables of FDI inflow, GDP and employment for all the five sectors of economy.

Table.5 Results from Johansen Fisher Co-Integration test:

Hypothesis of at most 1 co-integrating equations	*Fisher Stat*	*P-value*	*Max Eigenvalue*	*P-value*
CONSTRUCTION	14.9785	0.5763	9.3421	0.6888
EGW	15.8480	0.5048	11.3223	0.4807
MANUFACTURING	18.2509	0.3273	12.1128	0.4048
PRIMARY	26.4083	0.0429	18.7581	0.0615
SERVICES	13.9513	0.6616	7.8785	0.8322

5.4 Vector Error Correction Model

In the first stage I found out that all the three variables are non-stationary and all are integrated of order 1 AR(1). Then I applied Johansen Fisher cointegration test in order to check for co-integrating relationship between the variables. The results suggested that there exist one co-integrating relationship between the variables.

In this section Vector Error Correction Model (VECM) is applied in order to find out the short run and long run causality running from inflow of foreign direct investment and gross domestic product to employment and the speed of adjustment to equilibrium.

The first equation in the system of equations (4.4) where "employment (X)" is the dependent variable and co-integrating equation, FDI inflow and its lagged values and GDP and its lagged values are the independent variables. The equation is estimated by applying VECM and results are presented in the following table.6, table.7 and table.8.

Table.6 Results from Vector Error Correction Model (VECM)

Coefficient	*Coefficient*	*Standard Error*	*t-statistics*	*P-value*
$\propto_X$	-0.014811	0.006440	-2.299819	0.0252
$\propto_{11}$	-0.079749	0.125984	-0.633011	0.5293
$\propto_{12}$	-0.074439	0.124555	-0.597642	0.5525
$\propto_{13}$	-0.828400	0.211168	-3.922945	0.0002
$\propto_{14}$	0.449725	0.185482	2.424624	0.0186
$\propto_{21}$	0.000441	0.000119	3.705287	0.0005
$\propto_{22}$	-0.000123	0.000126	-0.971810	0.3353
$\propto_{23}$	-2.28E-05	0.000161	-0.141901	0.8877
$\propto_{24}$	1.67E-05	0.000155	0.107584	0.9147
$\propto_{31}$	-0.000292	0.000166	-1.757738	0.0843
$\propto_{32}$	-0.000625	0.000154	-4.049145	0.0002
$\propto_{33}$	-0.000290	0.000120	-2.410993	0.0192
$\propto_{34}$	-0.000363	0.000102	-3.542070	0.0008

$\propto_1$	-10.38582	6.252470	-1.661075	0.1023

It can be seen from the first row of the table7, that the coefficient of the co-integrating equation "$\propto_X$" is -0.014822 and the P-value of the coefficient is 0.0252. The negative value of the coefficient of cointegration vector and the significance of the coefficient suggest that the variables are converging to the equilibrium value and that the foreign direct investment and GDP cause employment in the Czech Republic.

1) For the long run effect of GDP and FDI on employment and the causality, I tested the following two null hypothesis.

Ho: $\propto_{21}=\propto_{22}=\propto_{23}=\propto_{24}= 0$ (GDP doesn't cause employment in the long run)

H1: $\propto_{21}\neq\propto_{22}\neq\propto_{23}\neq\propto_{24}\neq 0$ (GDP does cause employment in the long run)

Wald test is used to test the above joint hypothesis and the results are given in the table.7 below.

Table.7 Wald Test

Test	Value	df	P-Value
F-statistic	4.078097	(4, 56)	0.0057
Chi-square	16.31239	4	0.0026

It can be seen from the table.7 results above that from both the F-statistic and the Chi-square statistics the P-value is less than 0.05 which indicates that the null hypothesis of joint insignificance of the coefficients $\propto_{21}, \propto_{22}$, $\propto_{23}$ and $\propto_{24}$ is rejected at 5 percent confidence interval. Therefore, it can be concluded that in the long run GDP does cause employment in the Czech Republic.

1) For finding the causality between FDI and employment, the following joint hypothesis is tested.

Ho: $\propto_{31}=\propto_{32}=\propto_{33}=\propto_{34}= 0$, FDI doesn't cause employment in the long run

H1: $\propto_{31}\neq\propto_{32}\neq\propto_{33}\neq\propto_{34}\neq 0$, FDI does cause employment in the long run

The results of the hypothesis testing are presented in the table.8 below.

Table.8 Wald Test

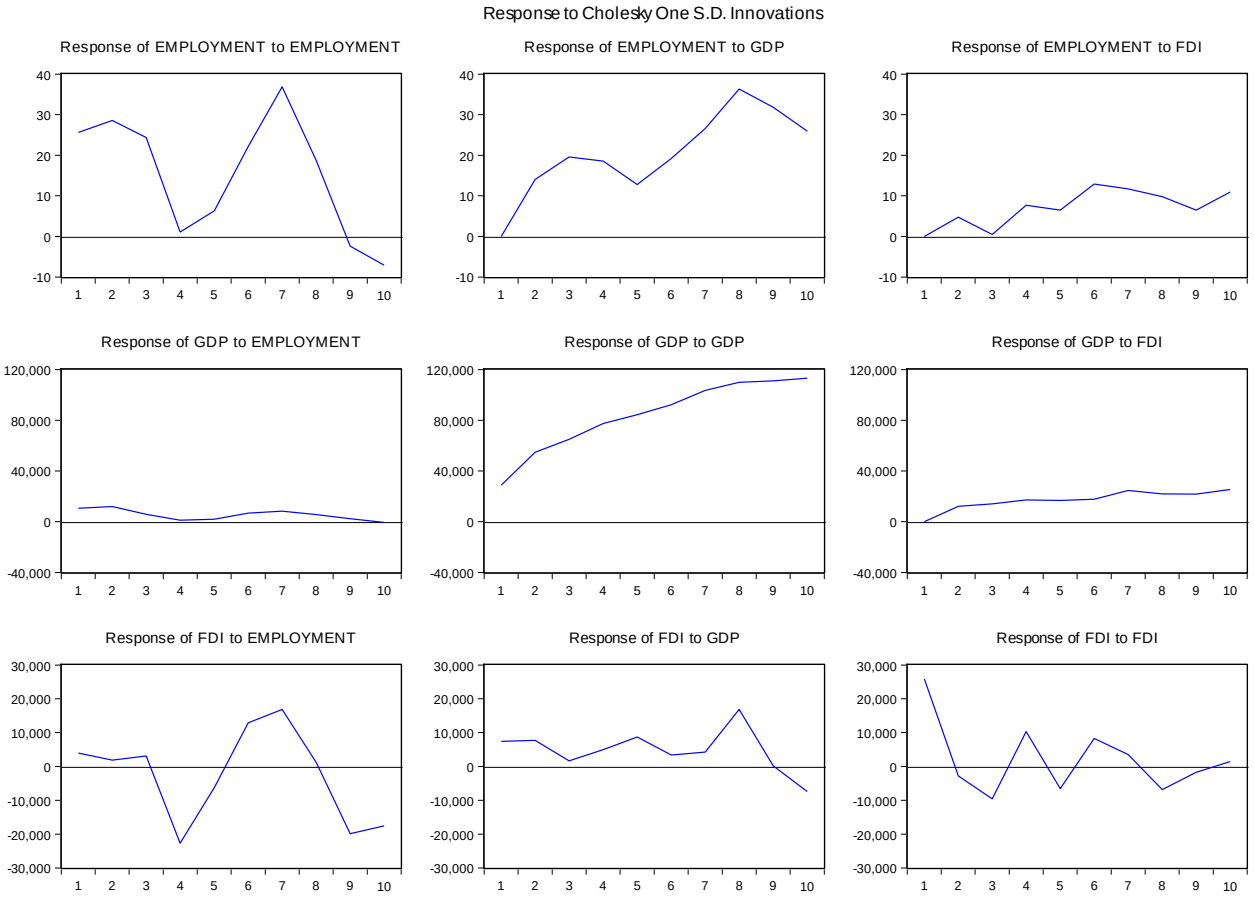
Test	Value	df	P-Value
F-statistic	5.924918	(4, 56)	0.0005
Chi-square	23.69967	4	0.0001

Again it can be seen from the table.8 results above that from both the F-statistic and the Chi-square statistics the P-value is less than 0.05 which indicates that the null hypothesis of joint insignificance of the coefficients $\propto_{31}, \propto_{32}, \propto_{33}$ and $\propto_{34}$ is rejected at 5 percent confidence interval. Therefore, it can be concluded that in the long run FDI does cause employment in the Czech Republic.

So the results from Vector Error Correction model (VECM) suggest that the both FDI inflow and GDP cause employment in the Czech Republic both in the short run and in the long run.

5.5 Impulse response Functions

The impulse responses of all three variables are given in case of outside shock to one of the variables. It can be seen that employment responds positively to a positive shock in both GDP and FDI inflow. However, the response to positive GDP shock is stronger than the response to the positive FDI inflow shock.



Chapter: 6 Conclusions and Recommendations

The increased economic globalization has resulted in multinational enterprises (MNE's) making huge investments in the shape of foreign direct investment (FDI). The inflow of such FDI is perceived to be generating employment opportunities in the host country economy. Therefore, different countries have been offering different incentives in order to attract these multinational firms to do business in the country. United States state of Alabama provided incentive to attract new Mercedes plant in 1994 and spent US$150,000 per each job created in the process (Keller and Yeaple, 2004). The Czech Republic has been providing many such incentives in the shape of tax holidays, better infrastructure and one window operations in order to attract foreign firms to invest in the Czech Republic. However, the impact of such FDI inflow in terms of generating employment opportunities has been unclear. Most of the studies conducted on impact of FDI on employment give divergent results.

In this thesis, I examined the impact of inflow of foreign direct investment on employment in the Czech Republic during the period 1993 to 2011. First Im-Pesaran-Shin (IPS) test was applied to find out the variables in order to find out the order of integration. Johansen Fisher test for cointegration was applied to find the cointegration relationship between the FDI inflow, GDP and employment in the Czech Republic. After finding the cointegration relationship, Vector Error Correction Model (VECM) was applied to find out the long run and short run causality between the FDI inflow, GDP and employment in the Czech Republic. In the end impulse response functions were estimated in order to find the response of GDP and employment to an exogenous shock in the FDI inflow.

The results suggest that there exist a cointegration relationship between the FDI inflow and employment for the overall economy. However, the sector-wise Johansen Fisher panel cointegration test result suggest that the cointegration relationship exist only for the services sector, primary sector and construction sector, while for manufacturing sector and electrify, water and gas sector there is no cointegration relationship between

FDI inflow, GDP and employment. The VECM results indicate that there is both short term and long term causality between the FDI inflow and employment in the Czech Republic. The impulse response functions clearly show a positive response both by the GDP and employment in the Czech Republic to the exogenous shock in the FDI inflow. However, the positive response in employment is very small compared to the response of GDP. Therefore, from the above results it can be concluded that the FDI inflow into the Czech Republic has been positively effecting the employment in the Czech Republic and the presence of foreign firms in the Czech Republic generate employment opportunities.

The results in the thesis have some very important policy implications. Therefore, as the results suggest that the FDI inflow has a positive impact on employment, in view of the results, I would suggest that the Czech Republic pursue the policy of attracting foreign firms aggressively and create all the conditions required for attracting foreign direct investment in order to create further employment opportunities.

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