Exploring the Causality and Co-integration Relationship between FDI, GDP and Employment: A Case of Czech Republic

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Abstract:

The paper investigate long term relationship between FDI, GDP and host country employment by using sector-wise panel data from 1993-2011 for the Czech Republic. IPS test is applied for panel data unit root testing and Johansen Fisher Panel Co-integration test is used to test for the presence of co-integration relationship between the variables. A vector error correction model (VECM) is estimated to find out the short run and long run causality between the variables. In the end, Impulse response functions are estimated. The paper found both a short term and long term causality going from FDI inflow to employment. Impulse responses show that both GDP and employment respond positively to an exogenous shock in FDI inflow. However, the employment response to FDI inflow shock is smaller than that of GDP response.

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

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1. Introduction:

The increased economic globalization has resulted multinational enterprises (MNE's) making huge investments in the shape of foreign direct investment (FDI). While countries make efforts and provides incentives to attract FDI, the impact of inflow of such FDI on different economic indicators is being explored by researchers. There has been a huge inflow of FDI into the Czech Republic after opening up of the economy in 1991. The second time an increase in the inflow was seen after the Czech Republic joined the EU in 2004. Numerous studies have been conducted to investigate the impact of FDI on economic growth of the host country. FDI inflow is generally considered to be helpful in improving the income level and employment in the host country. Therefore, states and policy makers try to attract investments in order to improve the employment prospects in the country. According to Keller and Yeaple (2003), US state of Alabama provided incentive to attract new Mercedes plant in 1994 and spent US$150,000 per each job created in the process. There are those who question the effectiveness of such policies incentivizing foreign investment and question the effectiveness in terms of creating jobs. However, there are very few studies conducted in order to find the impact of inflow of FDI on the employment generation in the host country.

This paper is an attempt to investigate any co-integration relationship between the inflow of FDI and employment in the Czech Republic. Section 2 of the paper presents review of relevant literature, methodology and data is presented in section 3. Section 4 presents results while section 5 concludes the paper.

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. The purposes of attracting FDI is to accelerate economic activity in the local economy and provide create jobs for the local population. A 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. 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, 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 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 it hard to compete and might have to shut down which will result in a very high increase in unemployment. 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. However, the direction of the technology spillover effect of FDI is not very clear and different studies have found divergent results. Marian Dinga and Daniel Munich (2009) evaluated the impact of the FDI in the shape of TPCA investment project in the Czech Republic in district of Kolin of the Czech Republic from 1993 to 206 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. They 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 was greater than the total number of employees at TPCA which is an evidence of the spillover effect of FDI on employment. Luiz R de Mello (1999) analyzed time series and panel data for a sample of OECD and non-OECD countries for the period 1970 to 1990 in order to investigate the impact of FDI on capital accumulations, output and total factor productivity growth in the FDI host country and found that the extent of FDI effect on growth depends on the degree of complementarity and substitution between the foreign and domestic investment.

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. Elias Ajaga and Peter Nunnenkamp (2008) analyzed US states level 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 in the US states. They found strong evidence of favorable FDI effects on output and employment at the US states level. They found that FDI consistently Granger-causes outcome variables including output and employment. They found the same impact of FDI for the whole economy as well as for the only manufacturing sector of US states. Ismail Aktar and Latif Ozturk (2009) applied Johansen and Jeseluis co-integration test to the quarterly data for the period 2000:1 to 2007:4 from Turkey 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. However, they didn't find any evidence that would support that job creating effect of FDI inflow in the country during the period.

3. Methodology:

Data and Estimation:

The paper is based on the sector-wise panel data on inflow of FDI, GDP and employment for the period 1993-2011 for primary (agriculture, hunting and fishing) sector, manufacturing sector, electricity, gas and water (egw), construction and services sectors. The data for sector-wise GDP and FDI is obtained from OECD stats while sector-wise employment data is taken from ILO database. IPS test is applied to find out the order of integration of the time series and then Johansen Fisher Panel Co-integration method is applied in order to find out the presence of a long term relationship between employment, FDI and GDP. In the next step vector error correction model (VECM) is estimated to find out the short run and long run causality between the variables and

finally impulse response functions are generated in order to find out the response of FDI and GDP to an exogenous shocks in FDI inflow.

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.

IPS test is based on the following ADF model.

$$\Delta Y_{i,t} = \gamma i Y_{i,t-1} + \sum_{j=1}^{p} \alpha_{i,j} \Delta Y_{i,t-j} + \beta t + \omega_{i,t} \text{ ----------(3.1)}$$

Where i=1, 2,…., N (cross-sections)

t=1, 2,….,T (time series)

t= Time trend

ω=Error Term

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:

$$\bar{t}_{N,T} = 1/N \sum_{i=1}^{N} t_{\gamma i} \text{ ----------(3.2)}$$

The above t^ statistic values are compared with the corresponding critical values from the paper Im-Pesaran-Shin (2003). The null hypothesis of "unit root" is rejected if the t^ statistic value is smaller than the corresponding critical value and vice-versa.

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)

$H_A : \rho i < 0, i = 1, 2, \ldots, N1; \rho i = 1, i = N1 + 1, N1 + 2, \ldots, N$ (series is stationary)

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).

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{n} \ln(1 - \hat{\lambda}_i) \text{ ---------- } (3.3)$$

and

$$\lambda_{\max}(r, r+1) = -T \ln(1 - \hat{\lambda}_{r+1}) \text{ ---------- } (3.4)$$

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.

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.

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

a) Hypothesis of no co-integration
b) Hypothesis of at most 1 co-integration relationship
c) Hypothesis of at most 2 co-integration relationship

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.

$$\begin{bmatrix}\Delta Xit\\ \Delta Yit\\ \Delta Zit\end{bmatrix} = \begin{bmatrix}\alpha 1\\ \alpha 2\\ \alpha 3\end{bmatrix} + [\propto_X \propto_Y \propto_z] \begin{bmatrix}\varepsilon^X\\ \varepsilon^X\\ \varepsilon^X\end{bmatrix} + \sum_{i=1}^{4} \propto_{1i} X_{t-i} + \sum_{i=1}^{4} \propto_{2i} Y_{t-i} + \sum_{i=1}^{4} \propto_{3i} z_{t-i} + \begin{bmatrix}\epsilon_X\\ \epsilon_Y\\ \epsilon_Z\end{bmatrix} - (3.5)$$

In the above equation 3.5 the term $\varepsilon\hat{}X$ refer to the co-integrating equation, where

$\varepsilon\hat{}X$ = C1+ C2* X(-1) + C3*Y(-1) + C4*Z(-1)----------(3.6)

By estimating the Vector Error Correction Model (VECM), I test the following three null hypothesis against the alternative hypothesis given

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

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.

4. Results Analysis:

Table.1 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).

Johansen Fisher Co-integration Test

The unit root test it 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 2, 3 and 4 in the following present the Johansen Fisher test of co-integration results.

Table.2 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 table 2. 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 3 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.3 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 4. 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.4 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

Vector Error Correction Model

Johansen Fisher cointegration test 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 (3.4) 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.5, table.6 and table 7.

Table.5 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 table 5, 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.6 below.

Table.6 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.6 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.7 Wald Test

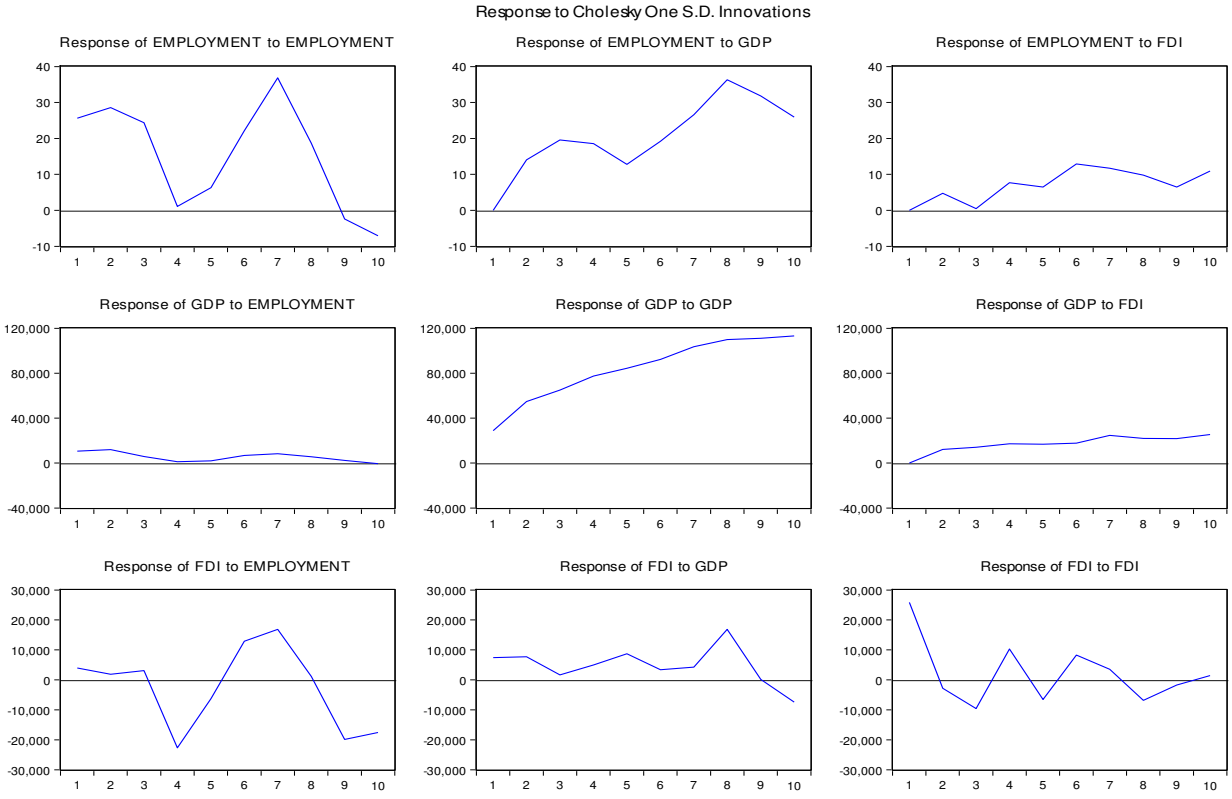
Test	*Value*	*df*	*P-Value*
F-statistic	5.924918	(4, 56)	0.0005
Chi-square	23.69967	4	0.0001

Again it can be seen from the table.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 $\propto_{31}, \propto_{32}, \propto_{33}$ 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.

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.



5. Conclusion:

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. 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 paper 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.

Bibliography:

1. Agrawal, G. and Khan, M. A. (2011), "Impact of FDI on GDP: A Comparative Study of China and India", *International Journal of Business and Management, Volume 6, Number 10*
2. Ahmed, E. M. (2012), "Are the FDI inflow spillover effects on Malaysia's economic growth input driven?" *Economic Modeling 29, 1498-1504*
3. Aizenman. J, (2003), "Volatility, employment and the patterns of FDI in emerging markets", *Journal of Development Economics 72, 585– 601*
4. Ajaga, E. and Nunnenkamp, P. (2008), "Inward FDI, Value Added and Employment in US States: A Panel Co-integration Approach", *Kiel Working Paper*
5. Alfaro. L, Chanda. Areendam, Ozcan. K. S and Sayek. S (2010), "Does foreign direct investment promote growth? Exploring the role of financial markets on linkages", *Journal of Development Economics 91, 242–256*
6. Ayumu. T (2012), "The Effects of FDI on Domestic Employment and Workforce Composition" [online], *RIETI Discussion Paper Series 12-E-069,* [Accessed from] http://www.rieti.go.jp/jp/publications/dp/12e069.pdf [accessed on 11.03.2014]

7. Baldwin, R. E. (1994), "The Effects of Trade and Foreign Direct Investment on Employment and Relative Wages", [online], *OECD Economics Studies No. 23,* accessible from: http://www1.oecd.org/eco/growth/33764702.pdf [accessed on 30.01.2014]
8. Blalock, G. and Garter, P.J. (2005), "Welfare Gains from Foreign Direct Investment through Technology Transfer to Local Suppliers", *Journal of International Economics, Volume No. 74, 402-421*
9. Blomstrom. M, Fors. G and Lipsey. R.E (1997), "Foreign Direct Investment and Employment: Home Country Experience in the United States and Sweden" *NBER Working Paper No. 6205*
10. Borensztein. E, Gregorio. J. D and Lee. J.W (1998), "How does foreign direct investment affect economic growth?" *Journal of International Economics 45, 115–135*
11. Bruno, G.S.F. Crino, R. and Falzoni, A.M. (2012), "Foreign Direct Investment, Trade and Skilled Labor Demand in Eastern Europe", *Review of Labor Economics and Industrial Relations, Volume No. 36, 495-513*
12. Calderon. C, Loayza. N and Serven. L (2004), "Greenfield Foreign Direct Investment and Mergers and Acquisitions: Feedback and Macroeconomic Effects [Online] World bank Elibrary [accessed from] http://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-3192
13. Craigwell, R. (2006), "FDI and Employment in the English and Dutch Speaking Caribbean" [online] *International Labor Organization, available from:* http://www.ilocarib.org.tt/cef/background%20papers/FDI_.pdf [accessed on 29.01.2014]
14. CzechInvest Report (2009), Automotive Industry In the Czech Republic, accessed online http://www.czechinvest.org/data/files/automotive-industry-97-jp.pdf
15. Czech National Bank (2013), "Inflow of Foreign Direct Investment" [online], accessed from: http://www.czechinvest.org/data/files/fs-02-inflow-of-fdi-66-en.pdf [accessed on 16.01.2014]

16. De Mello, L.R. (1999), "Foreign direct investment-led growth: evidence from time series and panel data", [online] *Oxford Economic Papers. No. 51 (1):133-151 available from:* http://dept.ku.edu/~empirics/Courses/Econ915/papers/FDI_panel.pdf [accessed on 29.01.2014]
17. Dinga, M. and Munich, D. (2008), "The Impact of Territorially Concentrated FDI on Local Labor Markets: Evidence from the Czech Republic", *Labor Economics, Volume Number. 17 354–367*
18. Dunning. John. H (2002), "Global Capitalism, FDI and Competitiveness", *Vol. 2 Edgar Publishers* [online] [accessed from] http://performance.ey.com/wp-content/uploads/downloads/2012/06/Performance-4.3-April-2012-Journal-v16-p7079.Czech-Republic.pdf [accessed on 11.03.2014]
19. Eckel, C. (2003), "Fragmentation, Efficiency-Seeking FDI and Employment", *Review of International Economics, Volume No. 11, 317-331*
20. Gorodnichenko,Y. Svejnar, J. and Terrell, K. (2007), "When Does FDI Have Positive Spillovers? Evidence from 17 Emerging Market Economies", [online] *IZA DP No. 3079 available from: http://ftp.iza.org/dp3079.pdf [accessed on 29.01.2014]*https://www.facebook.com/photo.php?v=10151424211673300&set=vb.417318818341319&type=2&theater
21. Hansen. H and Rand. J (2004), "On the Causal Links between FDI and Growth in developing Countries" *Discussion Paper Institute of Economics University of Copenhagen*
22. Herzer. D, Klasen. S and Lehmann. D. F. N (2008), "In search of FDI-led growth in developing countries: The way forward" *Economic Modelling 25 (2008) 793–810*
23. Horvat, T. and Irsova, Z. (2011), "Estimating Vertical Spillovers from FDI: Why Results Vary and What the True Effect Is?", *Journal of International Economics, Volume No. 85(2), 234-244*

24. Horvat, T. and Irsova, Z. (2013), "Determinants of Horizontal Spillovers from FDI: Evidence from a Large Meta-Analysis", *World Development, Volume No 42, 1-15*

25. Hsiao, F.S.T, Hsiao. M.C.W (2006), "FDI, exports, and GDP in East and Southeast Asia—Panel data versus time-series causality analyses", *Journal of Asian Economics 17 (2006) 1082–1106*

26. Hunya, G. and Geishecker, I. (2005), "Employment Effects of Foreign Direct Investment in Central and Eastern Europe" [online] *The Vienna Institute for International Economic Studies, Research Report 321,* available from: http://www.wiiw.ac.at/employment-effects-of-foreign-direct-investment-in-central-and-eastern-europe-dlp-348.pdf [accessed on 30.01.2014]

27. Javorcik, B.S. and Spatareanu, M. (2011), "Does it Matter Where You Come From? Vertical Spillovers from Foreign Direct Investment and the Origin of Investors", *Journal of Development Economics, Volume No. 96, 126-138*

28. Jay, S. M (2010), "Foreign Direct Investment Inflows and Economic Growth of China", *Journal of Policy Modeling 32, 155–158*

29. Jayaraman, T.K. and Baljeet, S. (2007), "FDI and Employment Creation in Pacific Island Countries: An Empirical Study of Fiji", *Asia-Pacific Research and Training Network on Trade Working Paper Series No. 35 available from:* http://www.unescap.org/tid/artnet/pub/wp3507.pdf [accessed on 29.01.2014]

30. Jenkins, R. (2006), "Globalization, FDI and employment in Viet Nam", [online] *Transnational Corporations Journal, Volume No. 15, 1 available from:* http://biblioteca2012.hegoa.efaber.net/system/ebooks/15903/original/Globalization__FDI_and_Employment_in_Vietnam.pdf [accessed on 29.01.2014]

31. Keller. W and Yeaple. R. S (2004), "Multinational Enterprises, International Trade, and Productivity Growth: Firm-Level Evidence from the United States", [online] *Deutsche Bundesbank Discussion Paper Series 1, No. 7/2005 [accessed from] http://www.econstor.eu/bitstream/10419/19515/1/200507dkp.pdf [accessed on 11.03.2014]*

32. Krizek. M, (2010), "How the Czech Republic is Attracting Overseas Investors", *Performance, Volume 4, Issue 3*
33. Kyung, S.I, Pesaran, M.H. and Shin, Y. (2003), "Testing for Unit Roots in Heterogeneous Panels", [online] *Journal of Econometrics, 115, 73-54,* accessed from http://ac.els-cdn.com/S0304407603000927/1-s2.0-S0304407603000927-main.pdf?_tid=195d2c20-9c9d-11e3-b69e-00000aab0f6c&acdnat=1393168610_26198ec1c756f24ed5e8e56de41c6da5 [accessed on 22.02.2014]
34. Masron. T.A, Zulkafli. A.H and Ibrahim. H (2012), "Spillover Effects of FDI within Manufacturing Sector in Malaysia" *Procedia Social and Behavioral Sciences 58, 1204 – 1211*
35. Mickiewicz, T., Radosevic, S., Varblane, U (2000) "The Value of Diversity: Foreign Direct Investment and Employment in Central Europe during Economic Recovery", *Working Paper 05. Economic and Social Research Council*
36. Olusanya, Samuel. Olumuyiwa (2013), "Impact of foreign Direct Investment Inflow on Economic Growth in a Pre and Post Deregulated Nigeria. A Granger Causality Test 1970-2010)", *European Scientific Journal September 2013 edition vol.9, No.25*
37. Palat, M. (2011), "The Impact of FDI on Employment in Japan", *Acta Universtatis Agriculturae ET Silviculturae Mendelianae Brunesis, Volume 27*
1. Pardeep, K. (2011), "Impact of FDI on GDP-A Critical Evaluation", [online], *VSRD International Journal of Business and Management and Research, Volume 1(2), 2011,* accessible from: *http://www.vsrdjournals.com/MBA/Issue/2011_4_April/4_Pradeep_Kr_Research_Article_April_2011.pdf*