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THE IMPACT OF FOREIGN DIRECT INVESTMENT ON UNEMPLOYMENT IN JAPAN

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Abstract

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The flow of foreign direct investment is one of the indicators of economic interconnection with the rest of the world. The paper is aimed at evaluating of inward FDI flows into Japanese economy and unemployment development. For many decades, Japan has attracted considerably lower levels of inward FDI compared to other developed countries of the world. Also the rate of unemployment in Japan was relatively low which is caused by a specific attitude of the active population of Japan towards employment issues. Methods of regression and correlation analysis (including testing the statistical significance) were used in the analysis of FDI and unemployment. The correlation has been approved between FDI and the rate of unemployment.

inward FDI, unemployment, Japan, correlation

Foreign direct investments (FDI) present an indivisible part of the global economy. An open and effectively functioning international economic system boosts investments inflows and outflows across continents or particular countries and presents a major catalyst to development. The benefits of FDI inflows do not emerge automatically and are not evenly spread across countries, regions and economic sectors of local economies. A key role is played by national policies working towards attracting foreign investors to the country. The host countries shall establish a transparent and effective policy environment for investment and improve the institutional and human capacities. The paper stresses out the importance of FDI in boosting the growth of the nation's economy and is aimed at assessing the flow of inward FDI into Japan in the frame of the economic development of the country.

METHODS AND RESOURCES

A starting point of the paper is the study of domestic and foreign specialized literature. The development patterns of foreign direct investment were dealt with, for example, by OECD (2002), Imade (2003) and Kravtsova (2009). The regression model uses data represented by the Statistical Office of the European Union (EUROSTAT) and the United Nations Conference on Trade and Development (UNCTADSTAT, 2011) where the latter presents the basic source of the collection of data. After obtaining information on the character of data a decision followed concerning the use of methods suitable for the evaluation of relationships between FDI and other economic indicators (unemployment). The evaluation of relationship between FDI and unemployment in Japan can be carried out using methods of regression and correlation analysis including testing the statistical significance. A reference period for the given analysis was selected for the period 1983–2009.

The use of statistical methods was described by Aczel (1989) or Mason, Lind (1990). The factual data processing comes from the methodology published by Hindls *et al.* (2003), Dirschedl, Osteermann (2001) and Palát (2010). Minařík (1996, p. 97) states, that the statistical dependence of two characteristics (numeric figures) can be expressed as their functional relation by a formula, table or graph. We recognize these types of statistical dependence: fix, functional alias deterministic dependence

and free, statistic alias stochastic dependence. The stochastic dependence makes itself felt like more or less significant repeatable tendency, which realizes in different form on different place and in different time. It is characteristic for its variability of individual causes and makes itself felt under a row of noteless, variously reacting factors. The stochastic dependence is referred to as a correlation dependency. For this dependency, we distinguish from dependent and independent variable. The correlation analysis of two variables is called pair or simple analysis.

The main graphical data presentation tool for examining the dependence between two variables is a point diagram, where we mark particular cases as points in a reference frame with coordinates, which are the values of particular dependent and independent variables.

The equation for a linear model is:

$$y' = b_0 + b_1 x.$$

The equation for a quadratic model is:

$$y' = b_0 + b_1 x + b_2 x^2.$$

The equation for a cubic model is:

$$y' = b_0 + b_1 x + b_2 x^2 + b_3 x^3.$$

The equations for a bisector or second-degree parabola are the same as trend determination in temporal series. In this paper, particular characteristics of tightness of the dependency of variables are calculated. Conjugate regression lines show the same values of the tightness dependency characteristics, the correlation coefficient $r_{yx} = r_{xy}$, determination coefficient $r_{yx}^2 = r_{xy}^2$ (at the first place in this index is stated variable thought to be dependent). The correlation index I_{yx} is a dependency tightness characteristics for any type of regression function (for simple as well as multiple dependencies of variables). Its second power is determination index I_{yx}^2. Determination index multiplied by 100 presents the explanation percentage of the calculated regression function - how the changes of dependent variable Y are explained by the changes of independent variable(s).

Statistical software Unistat 5.11 for Windows has been used for the calculation of following results.

Literature retrieval

FDI presents a situation when a firm invests directly in new facilities to produce a product in a foreign country. We can distinguish between the flows and stocks of FDI where the flow of FDI refers to the amount of FDI undertaken over a given period while the stock of FDI refers to the total accumulated value of foreign owned assets at a given time. We can also distinguish between outflows of FDI, meaning the flow of FDI out of a country, and inflows of FDI, meaning the flow of FDI into a country. Palát (2011) focussed on foreign direct investment with regard to the economic growth of the Japanese economy. Imade (2003) dealt with the benefits and costs of FDI, both from the perspective of a host country and from the perspective of the home country. He mentioned the assumptions of the neo-liberal discourse that FDI can make a positive contribution to a host economy by supplying capital, technology, management resources that would otherwise not be available but than based on facts from real economy explained also a different story of multinational companies stifling competition, engaging in capital flights and threatening sovereignty and autonomy of the host nations.

For his assumptions, he provides two categories of arguments: Host governments sometimes worry that the subsidiaries of multinational companies operating in their country may have greater economic power than indigenous competitors because they may be part of a larger international organization. Multinational companies may monopolize the market and raise prices above those that would prevail in competitive markets, with harmful effects on economic welfare of the host nations. The practices of multinational companies may destroy local infant industries that are not able to compete with large foreign corporations. If multinational companies have practiced capital-intensive production, unemployment may rise and employment opportunities may fade away. Thus in some cases the activities of multinational companies may destroy local entrepreneurship, local artisans and capital formation. The second category of his arguments are the consequences of profit repatriation to investors' country of origin that shows up as a debit on the current account of the balance of payments and a second concern arises when a foreign subsidiary imports a substantial number of its inputs from abroad, which also results in a debit on the current account of the host country's balance of payments. It is obvious that all of those concerns will not appear under any circumstances but can be presented as constructive arguments in discussion about the role of foreign direct investment.

RESULTS AND DISCUSSION

The paper is aimed at assessing the flow of inward FDI into Japan in the frame of the economic development of the country. Due to a specific attitude of the active population of Japan towards employment issues, the rate of unemployment in this country is relatively low (in comparison with other developed countries of the world). Only after the start of a long-lasting recession of the Japanese economy in the 1990' the unemployment grew significantly. While in 1991 the rate of unemployment was 2.1%, it reached 3.1% in 1995 which was the first time in the post-war history of Japan when unemployment exceeded 2 mil. persons. And

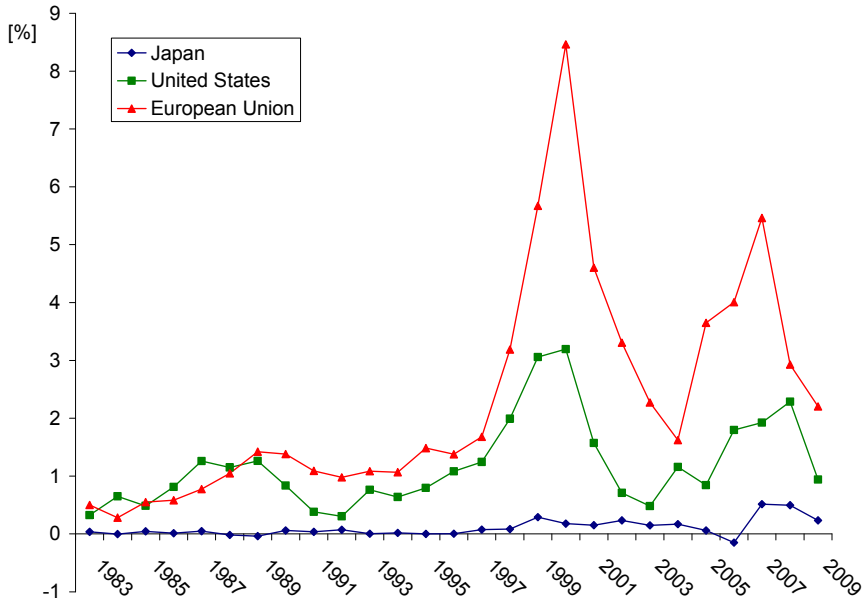
during the last global financial and economic crisis in 2009 the rate of unemployment reached 5.1%. Foreign direct investment in Japan also displayed some interesting trends in the recent decades. Many studies reflected the superior managerial efficiency and productivity of foreign business companies operating in Japan. This is considered to be an asset of inward FDI into Japan. This country witnessed augmented FDI flows since the 1990s. The FDI figures for the time period 1990 to 1996 stood at around 1 billion USD yearly, on an average. This figure climbed to 3 billion USD in 1997 and further stood at 12.7 billion USD for the year 1999. This FDI inflow suffered a moderate decline subsequently and hovered within the 6 to 9 billion USD per year. For instance in 2005, inward FDI flow for Japan recorded an enormous increase of 86%. A group of factors contributed towards this increment in inward FDI flow for Japan in that period. Deregulation lead to an opening up of the various sectors of the Japanese economy for investment of foreign capital, an increased occurrence of corporate bankruptcies resulted in foreign acquisition of many business companies in Japan, mergers and acquisitions were facilitated and the then global thrust on industry reorganization encouraged foreign firms to enter Japan. Current economic situation influenced by the last global financial and economic crisis differs significantly from the development in the previous period.

Values of the indicator of FDI inflows to Japan and other economies result from the data of UNCTADSTAT (2011). A reference period has been determined for 1983–2009. First, it is possible to meet the development of this indicator, which is evident from Fig. 1. From the same figure a completely different development in Japan and other included economies can be observed. FDI trends in the European Union and the United States refer to developmental tendencies characterized from the midst of the reference period by increasing the ratio of FDI on gross domestic product significantly and then follow-up dramatic decline. From the beginning of the reference period (with an exception of last two decades) the share of FDI on gross domestic product in Japan remained quite stable. This development is thoroughly illustrated in Fig. 2. I fitted developmental series in Japan by a logarithmic polynomial to indicate trends at this indicator.

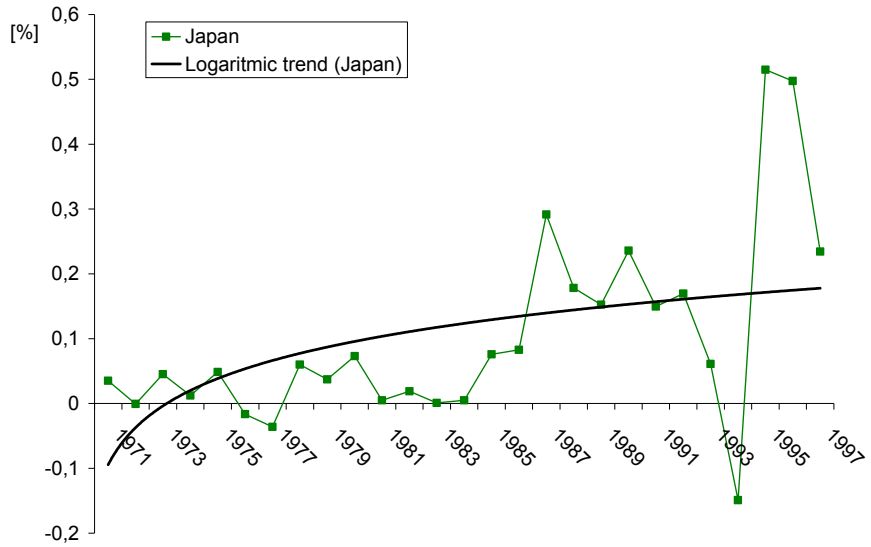
The development of FDI inflows as a percentage of gross domestic product is presented in Tab. I. This table enables to observe and compare the completely different development of examined indicator during the reference period.

For the purpose of a more profound analysis, the data available from UNCTADSTAT (2011) and EUROSTAT (2011) are repeatedly used. A time period 1983–2009 is a reference period for the following analysis. I shall try to prove statistically the existence of correlation between FDI and unemployment. To determine parameters of a regression function there were used methods of regression and correlation analysis (including testing the statistical significance) described in the part Methods. Parameters of linear, quadratic and cubic regression functions in the given reference period are presented in Tab. II.

Indices of correlation were calculated for particular types of a regression function. These results are highly statistically significant at the significance level $\alpha = 0.01$ using already the



1: *FDI inflows in the United States, Japan and the European Union in 1983–2009 (% of GDP)*
Source: own calculations, data: UNCTADSTAT (2011)



2: *FDI inflows in Japan in 1983–2009 (% of GDP)*
Source: own calculations, data: UNCTADSTAT (2011)

I: *FDI inflows in the United States, Japan and the European Union in 1983–2009 (% of GDP)*

	United States	Japan	European Union
1983	0.326477	0.035186	0.501745
1984	0.651739	–0.00079	0.280811
1985	0.48676	0.045197	0.5496
1986	0.811959	0.012132	0.582672
1987	1.260099	0.048651	0.774165
1988	1.150218	–0.01646	1.045827
1989	1.261078	–0.03604	1.422086
1990	0.836378	0.059837	1.379353
1991	0.381157	0.037209	1.091228
1992	0.303967	0.07315	0.979632
1993	0.762563	0.004867	1.084697
1994	0.638664	0.018662	1.068466
1995	0.795545	0.00079	1.485207
1996	1.081367	0.004918	1.37618
1997	1.245104	0.07573	1.679333
1998	1.993031	0.082778	3.188775
1999	3.057549	0.291663	5.671417
2000	3.192973	0.178315	8.46275
2001	1.571592	0.152435	4.601154
2002	0.710041	0.235818	3.306014
2003	0.483658	0.149544	2.273461
2004	1.159751	0.169687	1.624025
2005	0.841824	0.060969	3.64979
2006	1.79575	–0.14914	4.005146
2007	1.922368	0.514786	5.460967
2008	2.28657	0.497395	2.928722
2009	0.941138	0.234428	2.203027

: not available
Source: UNCTADSTAT (2011)

polynomial of a first degree. The use of a polynomial of a higher degree improves correlation index results. Based on these results, the existence of correlation is evident between FDI and unemployment in the monitored country.

CONCLUSIONS

Foreign direct investments present an indivisible part of the global economy and a major catalyst to development. At first, it is possible to get acquainted with the development of an indicator of FDI. Foreign direct investment in Japan displayed interesting trends in the recent decades. From the beginning of the reference period (with an exception of last two decades) the ratio of FDI on gross domestic product in Japan remained quite stable. Japan witnessed augmented FDI flows since the 1990s. A group of factors contributed towards this increment in inward FDI flow for Japan in that period. Deregulation lead to an opening up of the various sectors of the Japanese economy for investment of foreign capital, an increased occurrence of corporate bankruptcies resulted in foreign acquisition of many business companies in Japan, mergers and acquisitions were facilitated and the then global thrust on industry reorganization encouraged foreign firms to enter Japan. Current economic situation influenced by the last global financial and economic crisis differs significantly from the development in the previous period. A fitted developmental series in Japan using a logarithmic polynomial indicate this trend of FDI in Japan. FDI in the European Union and the United States refer to other developmental tendencies characterized from the midst of the reference period by increasing the ratio of FDI on gross domestic product significantly and then follow-up dramatic decline. Due to a specific attitude of the active population of Japan towards employment

II: *Parameters of a regression function for foreign direct investment and unemployment rate in Japan in the period 1983–2009*

	Model	Model parameters				I_{ytytyt}
		b_{yt0}	$b_{yt1ytyt11b}$	b_{yt2}	b_{yt3}	
Japan	1	3.1532	3.6893	-	-	0.5088++
	2	3.0632	7.5290	–9.4744	–	0.5743++
	3	2.7239	3.8979	57.7568	–120.3236	0.8322++

Source: own calculations
Note: correlation index: I_{yt}, significance level: + α = 0.05; ++ α = 0.01

issues, the rate of unemployment in this country is relatively low (in comparison with other developed countries of the world). Only after the start of a long-lasting recession of the Japanese economy in the 1990' the unemployment grew significantly. While in 1991 the rate of unemployment was 2.1%, it reached 3.1% in 1995 which was the first time in the post-war history of Japan when unemployment exceeded 2 mil. persons. And during the last global financial and economic crisis in 2009 the rate of unemployment reached 5.1%.

For the purpose of a more profound analysis, the data on FDI in Japan were repeatedly used. In a reference period 1983–2009, I tried to prove statistically the existence of correlation between FDI and unemployment. To determine parameters of a regression function there were used methods of regression and correlation analysis (including testing the statistical significance) described in the part Methods. Parameters of linear, quadratic and cubic regression functions in the given reference period are presented in Results. Indices of correlation were calculated for particular types of a regression function. These results are highly statistically significant at the significance level α = 0.01 using already the polynomial of a first degree. The use of a polynomial of a higher degree improves correlation index results. Based on these results, the existence of correlation is evident between FDI and unemployment in the monitored country.

SUMMARY

The paper is aimed at assessing the flow of inward FDI into Japan in the frame of the economic development of the country. Due to a specific attitude of the active population of Japan towards employment issues, the rate of unemployment in this country is relatively low (in comparison with other developed countries of the world). Only after the start of a long-lasting recession of the Japanese economy in the 1990' the unemployment grew significantly. While in 1991 the rate of unemployment was 2.1%, it reached 3.1% in 1995 which was the first time in the post-war history of Japan when unemployment exceeded 2 mil. persons. And during the last global financial and economic crisis in 2009 the rate of unemployment reached 5.1%. Foreign direct investment in Japan also displayed some interesting trends in the recent decades. Many studies reflected the superior managerial efficiency and productivity of foreign business companies operating in Japan. This is considered to be an asset of inward FDI into Japan. This country witnessed augmented FDI flows since the 1990s. The FDI figures for the time period 1990 to 1996 stood at around 1 billion USD yearly, on an average. This figure climbed to 3 billion USD in 1997 and further stood at 12.7 billion USD for the year 1999. This FDI inflow suffered a moderate decline subsequently and hovered within the 6 to 9 billion USD per year. For instance in 2005, inward FDI flow for Japan recorded an enormous increase of 86%. A group of factors contributed towards this increment in inward FDI flow for Japan in that period. Deregulation lead to an opening up of the various sectors of the Japanese economy for investment of foreign capital, an increased occurrence of corporate bankruptcies resulted in foreign acquisition of many business companies in Japan, mergers and acquisitions were facilitated and the then global thrust on industry reorganization encouraged foreign firms to enter Japan. Current economic situation influenced by the last global financial and economic crisis differs significantly from the development in the previous period.

Values of the indicator of FDI inflows to Japan in the reference period 1983–2009 present a completely different development from other examined economies. FDI trends in the European Union and the United States refer to developmental tendencies characterized from the midst of the reference period by increasing the ratio of FDI on gross domestic product significantly and then follow-up dramatic decline. From the beginning of the reference period (with an exception of last two decades) the share of FDI on gross domestic product in Japan remained quite stable. I fitted developmental series in Japan by a logarithmic polynomial to indicate trends at this indicator.

For the purpose of a more profound analysis, the data available from UNCTADSTAT and EUROSTAT are repeatedly used. A time period 1983–2009 is a reference period for the following analysis. I proved

statistically the existence of correlation between FDI and unemployment. To determine parameters of a regression function there were used methods of regression and correlation analysis (including testing the statistical significance). Parameters of linear, quadratic and cubic regression functions and indices of correlation were calculated for particular types of a regression function. These results are highly statistically significant at the significance level $\alpha = 0.01$ using already the polynomial of a first degree. The use of a polynomial of a higher degree improves correlation index results. Based on these results, the existence of correlation is evident between FDI and unemployment in the monitored country.

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