

# *Human Capital and FDI in Central and Eastern Europe*

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The aim of this paper is to assess the role of human capital in attracting FDI in the light of selected empirical studies conducted in Poland and globally. The literature on factors determining FDI location, including those relating to the importance of human capital, is dominated with studies at national or supranational level. Attracting foreign investment has become a key component of national strategies for the CEE countries. The paper makes an attempt to assess the relevance of human capital for FDI inflow at regional and local levels in Poland. At the same time, results of analyses were contrasted with quantitative surveys conducted in Central and Eastern Europe. Investing in education and human capital is important for creating good climate for investment. Evidence shows that achieving a certain minimum level of education is the precondition for a country to attract and maintain foreign direct investment and maximise indirect effects connected with human capital and resulting from the presence of businesses with foreign capital and maximise indirect effects connected with human capital and resulting from the presence of businesses with foreign capital. We should also stress that such a minimum is different for different sectors of the economy. Results of the study conducted in the Lodz Region demonstrated that human capital is an important factor, which attracts FDI to the region.

*Key Words:* human capital, FDI, CEE countries, Lodz Region

*JEL Classification:* F21, F23, O15

## **Introduction**

International capital flows have an increasing impact on the performance of the world's economy. These flows take various forms and one of them is foreign direct investment (FDI), whose aim is to gain control over a business entity based in one country by residents of another country. FDI is seen as an essential factor in stimulating economic growth, expanding

capital, and increasing productivity, employment, innovation and technology transfer.

The European Attractiveness Survey 2013 by Ernst&Young (2013) suggests that the performance of all countries of Central and Eastern Europe has been the best for years. According to investors from across the world, the attractiveness of the region is higher than that of Brazil, Russia or India. Globally, China is still the most attractive. It is followed by Western Europe and North America, while Central and Eastern Europe ranks fourth. The CEE countries seek to attract and promote foreign investment to liberalise their economies to ensure free movement of capital and profits. Attracting foreign investment has become a key component of national strategies for the CEE countries. Even small regions can compete strongly for investments if they can provide sufficiently favourable investment conditions. This has created a potential to use FDI as an instrument to support the development of countries and regions that have earlier lagged behind in income and development.

With this idea in mind, we consider that a possible specific determinant of FDI inflows in Central and Eastern Europe could be human capital in the host country. Human capital has become an important factor for a location decision of multinational enterprises (MNE).

Hence knowledge, in its broader sense, is considered decisive for economic growth and we are looking for new ways of acquiring it. One of the channels of knowledge transfer, which gained in importance at the turn of the 20th and 21st centuries is FDI. On the other hand, research shows that human capital helps attract FDI. The paper focuses on the second aspect, that is why we want to assess the role of human capital in attracting FDI in the light of selected empirical studies conducted in Poland and globally. The literature on factors determining FDI location, including those relating to the importance of human capital, is dominated with studies at national or supranational level. The paper makes an attempt to assess the relevance of human capital for FDI inflow at regional and local levels in Poland. At the same time, results of analyses were contrasted with quantitative surveys conducted in Central and Eastern Europe.

The paper consists of four main parts. The first one is an overview of literature and studies exploring the links between human capital and FDI. The second part focuses on the assessment of investment attractiveness of the CEE countries. Further considerations relate to the assessment of human capital in CEE. Final part of the paper discusses selected results of questionnaire-based studies, which enabled the assessment of the at-

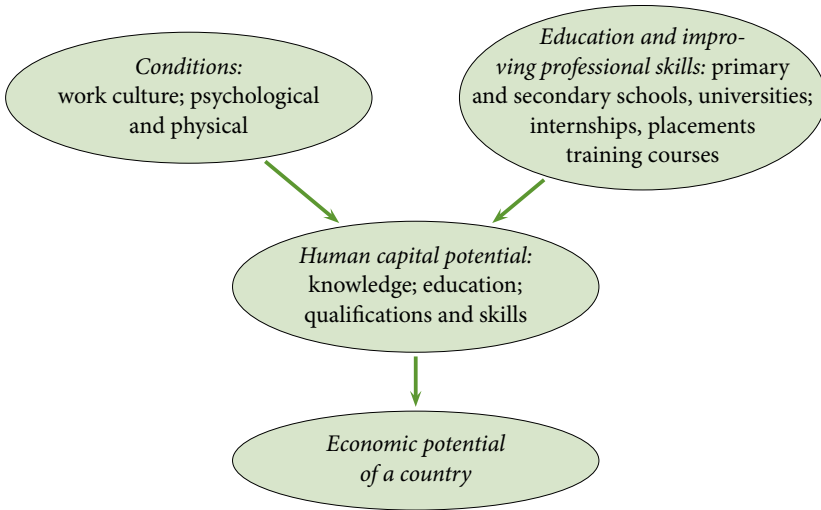


FIGURE 1 Conditions Shaping the Potential of Human Capital

tractiveness of human capital in the Lodz region as perceived by foreign investors. Conclusions from the study and analyses of links between human capital and FDI provide a deeper insight into regional studies since the review of literature has shown that usually studies are conducted at the level of a country.

### Relationship between Human Capital and FDI

The term 'human capital' was coined by Schultz (1961) and Becker (1962). They defined it as a set of characteristics, natural talents, predispositions, attitudes, respected values, acquired abilities and knowledge of people, which may be enriched through investment (Niklewicz-Pijaczyńska and Wachowska 2012, 45). Since the 1960s, the term evolved and has been carefully analysed by many researchers. That is why in literature we may come across many definitions.

For the needs of this paper, human capital is defined as a set of knowledge, education, qualifications and skills of a given society. It is created through education and improving professional skills, taking account of work culture aspects as well as psychological and physical conditions. This is how resources of valuable and useful knowledge can be used to foster economic potential (figure 1).

At international scale, knowledge transfer takes place through a variety of channels, e.g., through the exchange of goods, services, technolo-

gies and also as a result of FDI inflow. At microeconomic level, human capital impacts, e.g., salaries while at macroeconomic level it influences business location decisions or may determine innovation transfer as well as adaptation capabilities of technologies developed in other countries (Golejewska 2012, 29–30). Prospects of development for economies, especially the emerging markets and the developing world, are dependent on their potentials to make profitable investments and to accumulate capital. The Benhabib and Spiegel's (1994, 143; 2005) argument is that the countries with a high level of human capital are able to achieve higher growth rates through their ability to attract foreign enterprises and assimilate new technologies with efficacy.

It is stylised in the literature on foreign direct investment that a country's stock of human capital is one of the most important determinants of its inward FDI flow. Many countries see attracting FDI as an important element of their economic development strategies. FDI is one of the main avenues for the movement of technology across national borders. FDI can increase competition in the host economy, making domestic companies more efficient and stimulates sectoral and product diversification. A well-educated workforce is perceived as an important incentive for foreign investment location decision (Eicher and Kalaitzidakis 1997, 22–28).

Regarding CEE, Beavan and Estrin (2004) proved that foreign investors, when making an investment location decision in a particular region, consider economic factors, such as:

- unit labour costs,
- gravity factors,
- market size and proximity.

Talpas and Enache (2010) took up the task of analysing whether human capital positively correlates with FDI inflows in CEE. Their survey shows that 'FDI inflows in CEE have specific patterns and human capital determinants, different from the ones specific to the rest of developing countries. For CEE the quality of human capital matters in attracting FDI inflows. It seems that foreign investors in these countries are seeking quick and smooth technological transfer and hence, they value the most the level and the quality of human capital.'

The above quoted results confirm that many authors empirically confirmed significant role of human capital as a factor, which attracts FDI. However, we must point out that the role of human capital in FDI is not clear in the literature. Borensztein et al. (1998) state that FDI is positively

TABLE 1 The World's Most Attractive Regions for FDI in 2006–2014

Region	2006	2010	2014
Western Europe	68%	38%	45%
CEE	52%	24%	29%
North America	48%	22%	31%
India	18%	22%	17%
China	41%	39%	44%
Brazil	5%	12%	13%
Russia	5%	14%	19%

NOTES Adapted from Ernst&Young 2014, 11.

TABLE 2 The Most Attractive Countries for FDI in CEE

CEE	2014	(1)
Poland	31%	-6 pts
Czech Republic	11%	-4 pts
Romania	9%	+2pts
Hungary	8%	+3 pts
Ukraine	7%	+2 pts
Turkey	6%	+4 pts
Latvia	3%	+1 pts
Slovakia	2%	-1 pts

NOTES (1) Change from 2013. Adapted from Ernst&Young 2014, 12.

associated with economic growth but it depends on human capital. Countries with a low level of human capital do not benefit from FDI investment. Blomstrom, Lipsey and Zejan (1992) haven't found a positive impact of education on FDI. Hanson (1996) finds that the adult literacy rate was not a significant determinant of FDI. Narula (1996) indicates that the number of people with tertiary education was not a statistically important variable for FDI inflows. Hence, the above mentioned studies from different countries let us conclude that human capital is not necessarily one of important factors which attract foreign investors.

### Investment Attractiveness of the CEE Countries As FDI Locations

Market preferences for FDI are changing. In 2014 investors participating in an Ernst and Young study identified the countries of Western Europe as the most attractive FDI location in the world. China ranked second followed by North American countries and the CEE countries running fourth.

CEE ranked fourth (29%) slightly below North America. Moreover, there is a growing divergence in the perceived attractiveness of European countries. In 2014 discrepancies among the CEE countries when it comes to their investment attractiveness were rather substantial (table 1). Respondents considered Poland to be the most attractive FDI location (31%). The Czech Republic ranked second (11%) while the last places in the ranking were occupied by Latvia (3%) and Slovakia (2%). The over-

all attractiveness score of Poland and Czech Republic has declined by 6 and 4 percentage points, respectively. These countries are losing out to economies of South-East Europe (e.g. Turkey, Romania) (table 2). The foreign direct investment (FDI) inflows into the Central and Eastern European economies were a vital factor in the first stage of the privatisation process during the transition period. FDI has increased in the past twenty years, to become the most common type of capital flow needed for the reconstruction, stabilisation of the CEE economies and economic growth.

Table 3 presents FDI inflows into some of the CEE countries between 1990 and 2012. The size and increasing FDI inflows to CEE countries in-transition were impressive. Poland, Hungary, and the Czech Republic have become the most attractive destinations for foreign investments.

The inward FDI inflow as a percentage of GDP has been the highest in Hungary (reaching its maximum of 51.9% in 2007) and in the Czech Republic (reaching its maximum 10.8% in 2002). As Poland is the largest economy among the CEE countries, FDI expressed as a percentage of GDP in Poland is relatively low. In 2013 Poland reported net FDI inflow expressed as a percentage of GDP of -1.1% (table 5).

The FDI inflow measures the amount of FDI incoming into a country during a year. The FDI stock is the total amount of production capacity owned by foreign investors in the host country. This indicator has been high in Hungary, the Czech Republic, Slovakia, and constitutes respectively 81%, 69%, 60%. High share of stock in the GDP indicates that FDI are highly important for the economies of the CEE countries and are one of the principal indicators, which acknowledge the involvement of these countries in globalisation. It is worth adding, that the indicators for most of the CEE countries are higher than globally (table 4). The overall indicator for Europe reaches ca. 50% and Poland, together with Latvia, are approaching the European average.

Countries of Central and Eastern Europe experienced a series of deep transformations in the 1990s, as a result of which they shifted from centrally planned economy to market-based allocation of resources. The transformations were, and still are, taking place with different intensity and efficiency in individual countries.

The volume of FDI inflows has grown rapidly, as the Governments of the CEE countries have officially encouraged FDI and developed FDI promotion programs providing substantial incentives for foreign companies. After privatisation, local authorities in the CEE countries launched

TABLE 3 Inward FDI Flows in Millions of USA Dollars, in 1990–2012

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Slovenia	0	0	111	113	117	154	175	334	218	106	133	369	1620	305	826	588	644	1514	1947	659	360	998	59
Slovakia	0	0	0	179	255	2587	370	231	707	429	2720	2275	5865	2976	4029	3110	5803	4017	4868	6	1770	3491	2826
Romania	0	40	77	94	341	419	263	1215	2031	1027	1057	1158	1141	2196	6436	6483	11367	9921	13909	4844	2940	2522	2748
Poland	88	359	678	1715	1875	3659	4498	4908	3698	7271	9445	5701	4123	4588	12874	10293	19603	23561	14839	12932	13876	20616	6059
Latvia	0	0	32	44	213	178	382	522	356	346	413	132	253	304	637	707	1663	2322	1261	94	380	1466	1109
Hungary	554	1470	1477	2443	1143	5103	3300	4167	3355	3312	2764	3936	2994	2137	4266	7709	6818	3951	6325	1995	2202	6290	13983
Czech Rep.	0	0	0	653	868	2562	1428	1301	3716	6330	4985	5642	8482	2103	4974	11653	5463	10444	6451	2927	6141	2318	7984

TABLE 4 FDI Inward Stock As a Percentage of Gross Domestic Product in the World, and CEE Comparison, 1990–2012

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	9.70	10.40	9.90	10.30	10.50	11.50	13.10	14.80	18.70	22.30	22.90	23.30	22.50	25.10	26.10	26.30	25.30	28.80	32.00	25.30	31.30	31.70	29.70
Europe	10.60	11.30	10.30	11.50	12.70	13.10	14.50	16.10	20.60	23.90	27.60	29.00	32.00	34.80	37.20	34.60	41.30	45.10	37.50	46.90	46.80	44.30	50.30
Czech Rep.	2.50	4.70	6.30	8.70	10.00	12.70	13.20	15.50	22.50	28.20	36.80	42.10	49.30	47.50	50.20	46.60	53.80	62.30	50.20	63.80	64.70	55.80	69.50
Hungary	1.60	6.20	9.00	14.20	16.70	24.80	28.90	38.60	43.20	48.20	49.30	52.00	54.60	57.90	60.40	55.40	71.20	70.20	57.10	78.00	71.20	62.20	83.10
Latvia	0.00	0.00	3.40	4.80	9.00	12.40	16.50	20.20	22.50	24.50	26.80	28.30	29.80	29.40	33.00	30.90	37.70	37.80	34.50	44.90	44.60	42.50	47.80
Poland	0.20	0.50	1.50	2.50	3.50	5.60	7.30	9.30	13.00	15.50	20.00	21.70	24.40	26.70	34.30	29.90	36.80	42.00	31.00	43.00	45.90	39.40	48.00
Romania	0.00	0.10	0.60	0.80	1.30	2.20	3.00	6.80	10.80	15.80	18.60	20.50	17.10	20.50	27.00	26.00	37.00	36.90	33.20	43.80	42.60	39.10	46.10
Slovakia	0.00	0.00	0.00	0.00	4.80	5.70	6.60	9.70	13.00	15.80	34.20	38.50	50.80	65.40	66.80	61.80	69.10	63.60	53.50	60.20	57.70	54.20	61.10
Slovenia	0.00	0.00	13.90	14.60	8.80	8.40	9.40	10.80	12.80	12.00	14.50	12.70	17.80	21.60	22.40	20.30	23.10	30.40	28.90	31.10	31.10	30.20	34.10
Turkey	5.50	5.90	6.00	5.50	8.00	6.60	6.40	6.40	6.50	7.30	7.10	10.40	8.10	11.00	9.80	14.80	17.90	24.00	11.00	23.40	25.60	17.60	23.80

TABLE 5 Foreign Direct Investment, Net Inflows As a % of GDP in 2000–2013

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Czech Rep.	8.5	8.8	10.8	2.1	4.4	8.9	3.7	5.9	2.9	1.5	3.1	1.0	4.1	2.5
Poland	5.5	3.0	2.1	2.1	5.0	3.6	6.3	6.0	2.6	3.3	3.6	3.4	1.4	-1.1
Romania	2.8	2.9	2.5	3.1	8.5	6.9	9.3	6.0	6.8	3.0	1.9	1.4	1.6	2.0
Hungary	6.0	7.5	4.5	2.6	4.2	7.7	16.6	51.9	48.6	-2.3	-16.4	-1.4	1.6	2.0
Slovakia	7.1	No data	11.8	1.2	5.4	4.9	5.9	4.6	4.2	1.8	2.4	3.8	1.7	No data
Slovenia	0.7	2.5	7.2	1.0	2.5	2.7	1.8	4.0	3.3	-0.7	1.4	1.6	-0.5	No data
Latvia	5.3	1.6	2.7	2.7	4.6	5.1	8.5	9.4	4.3	-0.2	1.8	5.3	3.8	No data

NOTES Based on data from UNCTAD (<http://unctadstat.unctad.org>).

TABLE 6 The Human Capital Index for Selected CEE in 2013

Country	Overall index		Education		Health and wellness		Workforce and empl.		Enabling environment	
	Rank*	Score	Rank*	Score	Rank*	Score	Rank*	Score	Rank*	Score
Poland	49	0.087	42	0.376	47	0.173	63	-0.139	57	-0.064
Czech Rep.	33	0.387	36	0.452	36	0.310	36	0.210	31	0.576
Romania	69	-0.176	57	0.077	61	0.048	85	-0.364	83	-0.463
Hungary	54	0.000	33	0.530	73	-0.064	77	-0.275	62	-0.190

NOTES \*The index covers 122 countries. Adapted from World Economic Forum (2013).



activities to improve the productivity, employment and transfer of new technologies to ensure sustainable economic growth.

Besides, the accession of the countries of Central and Eastern Europe to the European Union improved the image of the region, which is now perceived as open and stable for foreign investors, and contributed to bigger inflow of FDI. Empirical literature suggests that European economic integration has been accompanied by a rising level of foreign direct investment within the EU, and increased FDI flows from third countries (Kokko and Gustavsson 2004, 125).

Despite the fact that foreign investors consider Central and Eastern Europe one area, the countries in the region differ significantly with respect to economic achievements, FDI absorption capacity, and the approach to investment incentives. So, the developing of a labour force, knowledgeable and properly trained in demanded skills, may become a significant distinguishing element in attracting foreign investors, in particular in the face of intensifying competition of the developing countries (e.g. China, India, Brazil).

### **Human Capital in CEE**

One of the characteristics of rich industrial economies is the availability of workforce representing a high level of human capital. Because the level of human capital has been a crucial factor for FDI, it is necessary to evaluate host CEE countries' effort to develop it with a view to attract FDI. One can use The Human Capital Index for the purpose, which is a new measure for capturing and tracking the state of human capital development around the world (table 6). The Index includes four the following pillars (World Economic Forum 2013, 6–8):

- education,
- health and wellness,
- workforce and employment,
- enabling environment.

From the group of the CEE countries we selected the most attractive ones from the viewpoint of FDI in the region (Poland, Czech Republic, Romania and Hungary).

In 2013, the Czech Republic ranked first in the group of analysed countries, both for the overall Index, which measures the level of human capital development and for the majority of its pillars (i.e. Health and Wellness, Workforce and Employment, Enabling environment). Poland

TABLE 7 Ranking of Education Levels of the Society in Selected CEE Countries in 2013

Country	Tertiary education attainment*		Secondary education attainment*		Primary education attainment*	
	(1)	(2)	(1)	(2)	(1)	(2)
Czech Rep.	48	16	1	100	5	99
Hungary	38	20	5	98	1	100
Poland	34	21	27	82	11	99
Romania	62	12	21	87	15	98

NOTES Column headings are as follows: (1) rank/122 countries, (2) country value.

\* Percentage of population aged 25+.

ranked second with its 49th rank. Taking account of the education ranking, Hungary ranked high (33) while Poland managed to overtake just Romania. The following pillars scored the lowest: Workforce and Employment and Enabling environment in three countries: Romania, Hungary, and Poland.

Considering the level of education of people in the age group above 25 in individual CEE countries, in 2013 Poland ranked the highest in tertiary education while the Czech Republic in secondary education (table 7).

In conclusion we need to stress that in order to become a more attractive location for an investment project, it is necessary to invest in education. The data, in this part, show that in all the countries further initiatives should be launched to support human capital development by opening up perspectives of tertiary education, which has become increasingly demanded by high-value added multinational enterprises.

### **Human Capital Attractiveness in the Lodz Region in the Eyes of Foreign Investors (Case Study)**

The assessment of human capital role in attracting FDI to the Lodz Region was based on the results of a direct study conducted in 2011 among 188 companies.<sup>1</sup> Companies included in the sample represented two sectors: industry and services and all were partially financed with foreign capital. The size of their employment varied and they were divided into groups in accordance with binding classification of businesses. The most numerous were companies employing 10–49 and 50–249 people. The population of big businesses, which employ more than 249 people, was two times smaller than that of small or medium-sized companies. The group of micro-companies was the smallest.

The question concerning the reasons, which made a foreign investor

TABLE 8 Impact of Selected Factors on FDI Location Decision in the Case of Poland

No. Factor	(1)	(2)	(3)
1. Availability of workforce with adequate qualifications	5.054	1.780	3.182
2. Low salaries and labour-related costs	4.909	1.633	2.667
3. Big domestic market	4.829	2.067	4.272
4. Little competition	3.613	1.987	3.947
5. Good infrastructure	3.602	1.756	3.084
6. Entry into the single EU market	3.594	2.224	4.946
7. Availability of Polish subcontractors and suppliers	3.299	1.928	3.719
8. Availability of foreign subcontractors and suppliers	3.156	3.156	3.156
9. Vicinity of markets of the Community of Indep. States	3.154	1.868	3.490
10. Tax allowances	2.454	1.757	3.086
11. High quality, stable legal regulations	2.341	1.289	1.661

NOTES Column headings are as follows: (1) average answer, (2) standard deviation, (3) variance. Ranking based on average answers, The points on the scale were as follows: very big (7), big (6), quite big (5), neither big nor small (4), small (3), very small (2), none (1).

invest in Poland was answered by assessing 12 factors on a seven-point scale. Analysis of results, besides the distribution of answers, employed averages and dispersion measures. The analysis was preceded by the estimation of measurement reliability using the Cronbach's alpha coefficient. Its value informs about the correlation between answers to individual questions and the total result of the measurement. It demonstrates to what extent the items (factors) on the scale are homogenous and represent the same interpretation of questions by respondents. The value of Cronbach's alpha coefficient of 0.736 confirms high reliability of the measurement.

As shown by the study and data in table 8, one of the major reasons for locating FDI entities in Poland is the availability of the workforce with adequate qualifications. Another valid reason was low cost of labour.

Next part of the study was designed to identify the reasons why entities with foreign capital decided to locate their investments in the Lodz Region. Companies assessed the degree to which selected factors encouraged or discouraged them from doing so. They rated 27 reasons on a seven-point scale. Like in the part of the study concerning motivations behind investors' decisions to establish a FDI business in Poland, we used distributions of answers and statistical indicators: average answer, variance and standard deviation. Cronbach's alpha coefficient was 0.884 in this case, meaning a very reliable measurement.

Foreign investors were the most encouraged to locate their businesses

in the Lodz Region by factors relating to costs and employment. These were:

- relatively low salaries,
- low total costs of business activities,
- availability of workforce with adequate qualifications,
- availability of professionals with adequate qualifications.

In the following stage of analysis, reasons why investors selected the Lodz Region as the destination of their FDI we distinguished the most encouraging and the most discouraging factors.

Afterwards, we could rank the most important factors influencing foreign investors' location decisions:

- costs of production (services),
- salaries and wages,
- availability of professionals with adequate qualifications,
- availability of workforce with adequate qualifications.

When making location decisions, foreign investors also assessed the system of education, mostly secondary schools and universities. They are important factors as they supply skilled employees. In the opinion of companies, availability of professionals and workforce with adequate qualifications and appropriate profile of schools are key factors, which encourage foreign companies to invest in a region. High assessment of education means investors are convinced the system of education is capable of teaching skills consistent with their preferences. More than a half and 40% of companies, respectively, considered higher and secondary education 'very important' and 'quite important' in making their investment decisions.

#### FOREIGN INVESTORS' PREFERENCES

One of the factors deciding about the location of a foreign investment in the region is human capital. The following analysis refers to foreign investors' preferences from the voivodeship of Lodz with respect to recruiting Polish employees as managers and at lower positions and next to enhance their skills by training. Most companies have clear expectations vis-à-vis Poles recruited to managerial positions. This is confirmed by the majority of single selections in preference categories.

A Pole employee in managerial position desired by most of FDI companies is a person with the following profile:

TABLE 9 Preferences of FDI Companies with Respect to Recruiting Poles to Managerial and Non-Managerial Positions

<i>Level of education</i>				
Vocational	2	1.06	48	25.53
Secondary	24	12.77	89	47.34
Higher	164	87.23	56	29.79
Post-graduate	14	7.45	4	2.13
Not important	15	7.98	51	27.13
Total	219	116.49	248	131.92
<i>Education profile</i>				
Technical	113	60.11	108	57.45
Economics	100	53.19	54	28.72
Law	14	7.45	5	2.66
IT	29	15.43	21	11.17
Not important	24	12.77	49	26.06
Other	18	9.57	15	7.98
Total	298	158.52	252	134.04
<i>Age</i>				
19–25	7	3.72	40	21.28
26–35	77	40.96	80	42.55
36–50	56	29.79	25	13.30
51 and more	6	3.19	–	–
Not important	78	41.49	98	47.87
Total	224	119.15	243	125.00
<i>Work experience</i>				
None	6	3.19	35	18.62
1–5 years	62	32.98	74	39.36
Over 5 years	78	41.49	26	13.83
Over 10 years	18	9.57	11	5.85
Not important	37	19.68	75	39.89
Total	201	106.91	221	117.55
<i>Command of foreign languages</i>				
Very good	154	81.91	47	25.00
Intermediate	34	18.09	76	40.43
Not important	7	3.72	80	42.55
Total	195	103.72	203	107.98

- higher education,
- technical or economic background,
- age: 26–50 years,
- with work experience not longer than 10 years,
- fluent in foreign languages.

Among 164 companies preferring university graduates only 17 allowed

also for the possibility of a person in managerial position to have secondary education. The importance of post-graduate studies was stressed only by 14 respondents. Technical education is especially important in the industrial sector (over 66% of answers). In services, economic and IT faculties that were more often selected. Over 15% of the respondents preferred IT education and slightly fewer (ca. 13%) did not take account of education profile when recruiting a person to a managerial position.

56% of enterprises are looking for candidates at the age of 26–50 years. Young people are preferred but at the age of 25 years and more. Interestingly enough, more companies are ready to recruit a person of 26–35 years (50) than someone at the age of 35–50 years (29) to a managerial position. For over 40% of respondents the age was not important. There is little chance of employment for people below 25 and over 51 years of age.

An essential factor for foreign investors is the period of previous employment. Data show that they preferred people with work experience exceeding 5 years. FDI companies in general require fluent command of foreign languages from the managerial staff. It is especially important in the service sector and a little less important in industry.

Similar analysis was conducted for foreign investors' preferences with respect to hiring Polish workers to non-manual positions (table 9).

Respondents' answers indicate that a suitable Polish employee in non-manual position for most the FDI companies is a person with the following profile:

- secondary education,
- technical or economic,
- at the age of 26–35,
- with work experience not longer than 5 years,
- having intermediate command of foreign languages.

Technical background is preferred by FDI companies in industry. Command of foreign languages was not important for about 40% of companies, especially in industry. Fluency in foreign languages was, however, very important in the service sector. Age and work experience of potential employees were irrelevant to respectively 48% and 40% of FDI companies. Other preferred mostly young people with work experience up to 5 years and aged up to 35.

FDI companies attach great importance to professional training, giving their employees an opportunity to enhance and improve their skills.



FIGURE 2 Employees of FDI Companies Participating in Training

TABLE 10 Employees of FDI Companies Participating in Vocational Training by Business Sectors (%)

Sector	(1)	(2)	(3)	(4)
Industrial sector	3.13	5.21	79.16	12.50
including manufacturing	3.49	4.65	80.23	11.63
Service sector	10.87	4.35	73.91	10.87
including trade	9.43	3.77	73.59	13.21

NOTES Column headings are as following: (1) only staff, (2) only workers, (3) staff and workers, (4) lack of data.

Almost each surveyed company organised training in Poland and almost half of them also abroad.

The rule was to organise training both for managerial staff as well as for employees in non-managerial positions. The structure of training by sectors did not reveal bigger differences. In the service sector the share of training courses for managerial staff was higher and for managerial staff and workers lower than in industry. The differences, however, are minor.

Subjects of training courses organised by FDI companies were very differentiated. Most often, however, concerned three aspects:

- management and marketing, including production, quality and company management, attracting and servicing customers, negotiations,
- finance and banking, including accounting, taxes, personnel, salaries, audits, controlling,
- procedures, including health and safety at work, technical, construction, chemical procedures.

Two thirds of all training courses were connected with these areas. There were fewer professional, computer, foreign languages and soft skills courses. Clear majority of FDI analysed in the Lodz Region decided the changes were very positive. The output of production and services increased, together with the number of products placed on the market, employment, productivity, and value of assets; distribution networks also de-

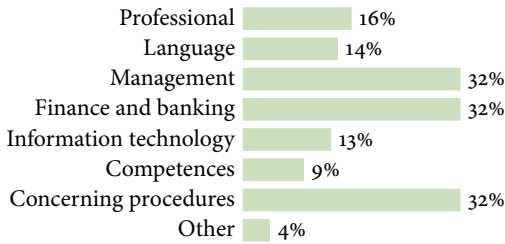


FIGURE 3 Subjects of Training Courses Organised by FDI Companies

veloped. The smallest positive changes were reported for advertising. In a small group of studied businesses negative phenomena occurred, such as a decrease in production and employment.

Innovation of companies with foreign capital in the Lodz Region was assessed based on the turnover in licenses, implementations of innovative solutions and R&D activities. Certificates, patents and protection rights were also analysed.

The majority of foreign investors (more than 60%) transferred solutions relating to products, technology and organisation developed in their parent companies or daughter companies to FDI companies. Importantly enough, half of businesses implemented also their own innovations. Every fourth FDI company has got an R&D unit and almost 1/3 collaborate with research institutes in developing and implementing innovative solutions. By improving the quality, lowering costs and better matching between the offer and market needs such activities improve competitiveness of businesses. On the other hand, however, their scope, in most cases, is quite limited. Only very few FDI companies sold licenses and most of them have no certificates, protection rights or patents, which is indicative of their low innovativeness.

#### INTERDEPENDENCE ANALYSIS OF THE SIZE OF EMPLOYMENT AND COMPANIES' PREFERENCES

In order to analyse interdependence between the size of a company reflected in employment or revenue and preferences vis-à-vis recruited persons in the area of professional experience or foreign languages we used the independence test  $\chi^2$ . The test may be used to study the compresence of variables scaled in orderly way as in the case of the survey in question.

In all analysed cases the value of  $\chi^2$  statistics was much lower than the threshold values. It means there are no grounds for rejecting the hypothesis about stochastic independence of variables. Cramer's V was also



TABLE 11 Interdependence Analysis between the Size of a Company and Preferences with Regard to Professional Experience and Languages for Persons Recruited to Managerial and Non-Managerial Positions (Calculations for the Independence Test  $\chi^2$ )

First variable	Preferences with regard to			
	Professional experience of persons recruited to managerial positions	Languages for persons recruited to managerial positions	Professional experience of persons recruited to non-managerial positions	Languages for persons recruited to non-managerial positions
Second variable	Employment	Employment	Revenue	Revenue
Categories of the first variable	3 <sup>1</sup>	2 <sup>2</sup>	3 <sup>1</sup>	3 <sup>3</sup>
Categories of the second variable <sup>4</sup>	4	4	4	4
No. of companies included in the survey	187	189	178	175
No. of degrees of freedom	6	3	6	6
$\chi^2$ – calculated	8.0622	2.655	1.060	3.1654
$\chi^2$ – theoretical	12.592	7.815	12.592	12.592
Significance level	0.05	0.05	0.05	0.05
Cramer's V	0.1468	0.1185	0.0646	0.0951

NOTES <sup>1</sup> Required professional experience: a – no experience or less than 5 years, b – professional experience exceeding 5 years, c – professional experience is irrelevant. <sup>2</sup> Required language skills: a – very good b – moderate, c – irrelevant. <sup>3</sup> Required language skills: a – very high, b – moderate, c – irrelevant. <sup>4</sup> Category of operators (based on the employment and revenue): micro, small, medium and big enterprises.

very low. The results do not suggest any dependence between the studied variables. It means that when it comes to professional experience and languages for persons recruited to managerial and non-managerial positions, human capital is an incentive for locating FDI in the region, irrespective of the size of a business. Similar dependence can be traced for costs and workforce qualifications. Micro, small, medium and big companies consider these factors in a similar way when looking for a location.

### Conclusion and Policy Implications

Investing in education and human capital is important for creating good climate for investment. It is stressed that achieving a certain minimum

TABLE 12 Interdependence Analysis of the Remuneration, Availability of the Workforce and the Size of Employment (Calculations for the Test of Independence  $\chi^2$ )

First variable	Remuneration as an incentive or deterrent for FDI location in the Lodz Region	Availability of adequately skilled workforce as an incentive or deterrent for FDI location in the Lodz region
Second variable	Employment	Employment
Categories of the first variable	4	4
Categories of the second variable <sup>1</sup>	4	4
No. of companies included in the survey	186	187
No. of degrees of freedom	9	9
$\chi^2$ – calculated	11.801	10.1
$\chi^2$ – theoretical	16.919	16.919
Significance level	0.05	0.05
Cramer's V	0.145	0.134

NOTES Category of Operators (Based on the Employment): Micro, Small, Medium and Big Enterprises.

level of education is the precondition for a country to attract and maintain foreign direct investment and maximise indirect effects connected with human capital and resulting from the presence of businesses with foreign capital. We should also stress that such a minimum is different for different sectors of the economy.

On top of that, care should be taken to avoid the so called educational gap between foreign investors and the host country as that might substantially reduce positive externalities. Access to skilled labour has been the main motive for various types of resource-seeking MNEs. Many companies now consider access to qualified and creative manpower an important factor of competitiveness.

Hence we should take steps to support and improve the quality of human resources at regional and local levels by:

- improving the skills of workers through vocational training schemes, language and IT technology courses;
- applying effective methods of human resource management;

- developing curricula and courses to meet the needs of foreign investors;
- changing the structure of employment and skills in the host country (to promote areas preferred by foreign investors);
- developing schemes and instruments that could attract highly skilled professionals into the region and reduce the outflow of graduates from the Lodz Region.

Results of the study conducted in the Lodz Region demonstrated that human capital is an important factor, which attracts FDI to the region. The presence of foreign investors has contributed to the improvement of the quality of the staff and workforce in the region. It is a consequence of the implementation of new organisational solutions and creation of a pressure on educational sector. Almost all FDI companies organised training for employees, some of them many times and abroad.

Human capital is especially important from the point of view of benefits that may be achieved by the economy of the Lodz Region from FDI. This factor, which, in the eyes of investors, improves the competitiveness of the region is the effect of favourable price to quality relation for human capital combined with high marginal efficiency of capital characteristic for all the Central and East European region.

### Notes

- 1 In this paper we used the partial outcomes of a research project Role of FDI in shaping current and future economic profile of the voivodeship of Lodz co-financed by the European Union under the European Social Fund.

### References

- Beavan, A. A, and Estrin S. 2004. 'The Determinants of Foreign Investment into European Transition Economies.' *Journal of Comparative Economics* 32 (4): 775–87.
- Becker, G. S. 1962. 'Investment in Human Capital: A Theoretical Analysis.' *The Journal of Political Economy* 70 (5): 9–49.
- Benhabib, J., and M. Spiegel. 1994. 'The Role of Human Capital in Economic Development Evidence from Aggregate Cross-Country Data.' *Journal of Monetary Economics* 34 (2): 143–73.
- . 2005. 'Human Capital and Technology Diffusion.' In *Handbook of Economic Growth*, edited by P. Aghion and S. Durlauf, 1A:935–66. Amsterdam: Elsevier.

- Blomstrom, M., R. Lipsey, and M. Zejan. 1992. 'What Explains Developing Country Growth.' NBER Working Paper 4132, National Bureau of Economic Research, Cambridge, MA.
- Borensztein M., J. De Gregorio, and J. Lee. 1998. 'How does Foreign Direct Investment Affect Economic Growth?' *Journal of International Economics* 45:115–35.
- Eicher, T. S., and P. Kalaitzidakis. 1997. 'The Human Capital Dimension to Foreign Direct Investment: Training, Adverse Selection and Firm Location.' <http://faculty.washington.edu/te/papers/infoasym.pdf>
- Ernst&Young. 2013. 'Europe 2013: Coping with the Crisis, the European Way.' EY's Attractiveness Survey. [http://www.ey.com/Publication/vwLUAssets/European-Attractiveness-Survey-2013/\\$FILE/European-Attractiveness-Survey-2013.pdf](http://www.ey.com/Publication/vwLUAssets/European-Attractiveness-Survey-2013/$FILE/European-Attractiveness-Survey-2013.pdf)
- . 2014. 'Europe 2014: Back in the Game.' EY's Attractiveness Survey. [http://www.ey.com/Publication/vwLUAssets/EY-2014-european-attractiveness-survey/\\$FILE/EY-2014-european-attractiveness-survey.pdf](http://www.ey.com/Publication/vwLUAssets/EY-2014-european-attractiveness-survey/$FILE/EY-2014-european-attractiveness-survey.pdf)
- Golejewska, A. 2012. *Kapitał ludzki, innowacje i instytucje a konkurencyjność regionów Europy Środkowo-Wschodniej*. Warsaw: Centrum Europejskie Natolin.
- Hanson, G. 1996. 'U.S.-Mexico Integration and Regional Economies: Evidence from Border-City Pairs.' NBER Working Paper 542, National Bureau of Economic Research, Cambridge, MA.
- Kokko, A., and P. Gustavsson. 2004. 'Regional Integration, Foreign Direct Investment, and Regional Development' *EIB Papers* 9 (1): 110–35.
- Narula, R. 1996. *Multinational Investment and Economic Structure*. London: Routledge.
- Niklewicz-Pijaczyńska, M., and M. Wachowska. 2012. *Wiedza – Kapitał ludzki – Innowacje*. Wrocław: Uniwersytet Wrocławski.
- Schultz, T. W. 1961. 'Investment in Human Capital.' *American Economic Review* 51 (1): 1–17.
- Talpas, I., and C. Enache. 2010. 'Searching for Human Capital: Determinants of Foreign Direct Investment Inflows in the EU New Member States.' *Annales Universitatis Apulensis Serie Oeconomica* 12 (1): 483–94.
- World Economic Forum. 2013. *The Human Capital Report*. Geneva: World Economic Forum. [http://www3.weforum.org/docs/WEF\\_HumanCapitalReport\\_2013.pdf](http://www3.weforum.org/docs/WEF_HumanCapitalReport_2013.pdf)



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