TECHNOLOGICAL AND ECONOMIC DEVELOPMENT OF ECONOMY

2010
16(4): 717–735

INVESTMENTS OF GERMAN MNEs INTO PRODUCTION NETWORKS IN CENTRAL EUROPEAN AND BALTIC STATES

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Received 15 April 2010; accepted 20 October 2010

Abstract. In the first part of the paper, which is dedicated to the theories related to MNEs, strategic management, FDI and global production networks, a variety of theoretical and empirical literature is examined. The main ideas related to MNEs and FDI are based on Dunning, whereas Dicken and Mellahi contributed to the topics related to strategic management and global production networks. Furthermore papers of the European Investment Bank (EIB) about the internationalisation of production in Europe give some basic ideas. Many other scholars are used to illustrate the topic as well. In the empirical part data from sources such as the German Central Bank, EU, United Nations Conference on Trade and Development (UNCTAD) and the German chamber of commerce (DIHK) will be analyzed together with academic papers of various writers like Marin or Nordas.

Keywords: foreign direct investment, multinational enterprises, production networks, business environment, push/ pull factors.

Reference to this paper should be made as follows: Miškinis, A.; Reinbold, B. 2010. Investments of German MNEs into production networks in Central European and Baltic states, *Technological and Economic Development of Economy* 16(4): 717–735.

1. Introduction

During last two decades international production in the world economy received a considerable importance. Not long ago the main form of international economic activities was trade when today global sales of foreign affiliates of multinational enterprises (MNE) are almost double of the size of global exports (UNCTAD 2008). The boost of foreign direct investments (FDI) and related sales were fuelled first of all by trade liberalization and easiness to carry out geographically spread activities. German MNEs are the major participants in the internationalisation process with huge FDI to other EU and third countries. Statistics indicate that the Czech Republic, Slovakia or Hungary had been more favourable for German investments than the Baltic States (Marin 2005).

ISSN 2029-4913 print/ISSN 2029-4921 online
http://www.tede.vgtu.lt
doi: 10.3846/tede.2010.44

The focus of paper on German MNEs is because most investments from Germany go to the EU countries, Germany is a large exporting country and has a big potential for international production transfer when German MNEs face a high cost level and a stagnating demand at home. Growing German investments into production abroad raise the question which factors determine the choice of a foreign location. Although there are studies of German FDI abroad they focus either on FDI in general or on investments to the Central European (CE) countries during their transitional to EU period. The factors determining German investments into production networks in the CE and the Baltic States as in EU members are not thoroughly analysed. The aim of this paper is to determine the rationale of German MNEs to invest into production networks in specific CE and Baltic states and to disclose the reasons behind unequal distribution of German FDI into manufacturing units across the region and on the basis of these findings to draw up proposals for the Baltic States on how to improve their attractiveness for German FDI.

In most recent Lithuanian economic literature some analysis of factors influencing FDI to host country is made but authors haven't found any paper with a research on the behaviour of German MNEs. One paper elaborates on factors of FDI by comparing India and the Baltic States (Tvaronavičienė *et al*. 2008), another paper compares FDI factors in Lithuania and other Central and Eastern European Countries (Miškinis and Lukaševičiūtė 2009). A paper of the impacts of FDI on national wealth also can be mentioned (Tvaronavičienė and Kalašinskaitė 2010).

2. Multinational enterprises and their global production networks

During last decades trade and capital movement liberalisation and the transition of countries to a market economy increased the possibilities for production transfer abroad. MNEs now face such concerns as to whether invest abroad or not, how and where to invest.

The most frequently a MNE is defined as an enterprise that engages in FDI and owns (or controls) value-added activities in more than one country (Dunning and Lundan 2008). Although some authors like Bartlett and Ghoshal (1990) see the difference between multinational, global, international and transnational enterprises in most cases these terms are used as synonyms. In 2007, about 79,000 MNEs with around 790,000 foreign affiliates held an FDI stock of more then $15 trillion. The value added of foreign affiliates in 2007 accounted for 11% of the global GDP (UNCTAD 2008). MNEs are considered to be a key vector in the globalization process (Ravenhill 2005).

The most headquarters of MNE's are in the EU, the USA or Japan, the main industries of the non-financial corporations are manufacturing, energy, retail and telecommunications. The degree of internationalization of some MNEs is very high. The transnational index, which is calculated as the average of three ratios (foreign assets to total assets, foreign sales to total sales, foreign employment to total employment), of the top 100 non-financial MNEs reaches from 27% up to 94%. The index is especially high in telecommunications and petroleum as well as in European MNEs (UNCTAD 2009).

FDI is a long-term investment reflecting a lasting interest of the MNE into another country's economy in the form of equity capital, reinvested earnings and intra company loans (UNCTAD 2009a). The main objective of FDI is to increase company's profitability. Three

main factors are referred in the literature when driving forces behind FDI are discussed. Uppenberg and Riess (2004) holds that regulatory and policy environment now is much more favourable for FDI than a few decades ago, the technological progress increases the importance of economies of scale, and that a decline in communication costs made it much easier to organise the work on a global basis.

The first studies of MNEs and their foreign activities were made in 1960s. Hymer (1960) was one of the first researchers transferring focus from international trade to international production. He stressed that foreign production assets themselves can be a source of competitive advantage. Other important theories of that time include the concept of the product life cycle by Vernon (1966), the risk diversification hypothesis of Lessard (1976), behavioural theory of Johanson and Vahlne (1977). A broader microeconomic approach to explain foreign activities was applied by the internalisation theory developed in the mid-70s according to which companies invest abroad whenever they expect that the net benefits of their common domestic and foreign activities will be higher compared to benefits arising from external trade (Mellahi *et al.* 2005). From macroeconomic perspective two other theories explaining the FDI activities of MNEs should be named. One theory (Kojima) focuses on investment location on the basis of comparative advantages of home and host countries, the second theory (Palloix) is attempting to explain FDI on the basis of the internationalisation of the circuits of capital (Dunning and Lundan 2008). The main drawback of these theories is that they focus either on micro or macroeconomic aspects while usually both aspects have an impact on MNEs decisions to invest abroad.

The most comprehensive approach to understand the various reasons behind investments of MNEs was developed by Dunning in his eclectic OLI paradigm (Dunning and Lundan 2008). According to Dunning, a firm will engage itself in international production if it has certain ownership-specific advantages; it will be more preferable for her to use these advantages internally but through location abroad. The decision to invest abroad is defined not only by existing advantages but also by additional cost incurred when a company is operating abroad, or so called transaction costs, which are caused by difficulties in communication over distances and the control of many global units. To encourage a company to invest abroad the firm specific advantages must offset transaction costs (Ravenhill 2005). Dunning's model gives a general framework to explain the reasons for a company's engagement abroad, but it does not tell about the importance of one set of advantages compared to another. The extent on how much the advantages are exploited depends on the type of company, the industry as well as other factors which we will try to take into consideration.

The literature makes a difference between market seeking horizontal investments and cost seeking vertical investments (Caves 2007). Horizontal FDI are market-seeking FDI serving the demands of the host country. In this case MNEs establish a similar production unit abroad. Vertical FDI are cost minimizing ones locating abroad different phases of the vertical production chain. Market seeking companies produce the same or similar goods in different countries while cost seeking companies spread particular stages of their production process over different countries to achieve lower costs at each stage (Riess and Uppenberg 2004). Both forms of FDI exist in pure forms and mixtures. If a new location offers both advantages it could be even more beneficial for a MNE to invest (Marin *et al.* 2002). In our article we will try to identify which type of German FDI is characteristic for CE and Baltic countries.

2.1. Global production networks

Most FDI of MNEs is invested into production networks spread over several countries. The single production chains for a product or service are embedded in this broader production network. Two main types of production networks can be distinguished – a producer driven and a buyer driven (Gereffi 1994). FDI are more related to the first type of networks and are associated with the fragmentation of production processes. How a national company goes globally depends on decisions affected by a general orientation of a company related to firm's culture and its international experience (Mellahi *et al.* 2005). When a company decides to externalize production several alternatives are discussed: licensing, purchasing or strategic alliances, partnerships and cooperation without any FDI (Dicken 2003). When investing abroad special strategic considerations are necessary regarding the governance, spatiality and territorial integration of a single transferred production site. For any decision related to the transfer of production sites abroad economic, socio-political, institutional and cultural contexts are of great importance. Cultural context may have a significant impact on work attitudes and should be taken into consideration when transferring abroad a labour intensive production. In addition to above mentioned factors very important are transportation and communication costs, technological changes, growing competition and economic liberalisation in result of which companies integrate production processes across countries to a much higher extent than before (Zimny 2004). The plunging communication and transportation costs especially affected vertical production integration where the links across countries need to be tied up much closer. EU Eastern enlargement facilitated access to new locations for horizontal as well as for vertical investments.

The geographical orientation of production networks is widely discussed in the literature (Dicken 2003; Knox *et al*. 2008). FDI across the world are not spread equally and are more concentrated in so called localised geographical clusters. FDI in R&D intensive activities are likely to be located in countries or regions with a high standard of technology and educated workforce while labour intensive production sites tend to be transferred to low wage destinations. Knox *et al.* (2008) distinguish four types of geographical location strategies – centralised production, host-market production, regional product specialisation and transnational vertical integration (Fig. 1). In all types of these strategies, except the central production, foreign production units are spread over different countries. Under host-market production strategy companies produce only for the host market. Such strategy can be applied in industries with high distribution costs (e.g. beverages), low economies of scale or high market entry barriers. The main drivers for spreading the particular production units over different countries under regional product specialisation strategy are cost advantages in result of international economies of scale. A typical form of this network related to a regional market is the single EU market. The market can be served either from one production unit, taking the cost advantages of producing for a huge market, or exploit the differences in factor endowments among member nations, e.g. lower wages in the new EU member states (Dicken 2003). The fourth strategy is related to vertical cost-seeking FDI, where the production process of a single product is spread over different nations. The production units across nations are linked in a chain, where the output of one production unit is the input of the following unit. This kind of location strategy is often used in automotive or electronic industry, where single parts of production can be split up easily.

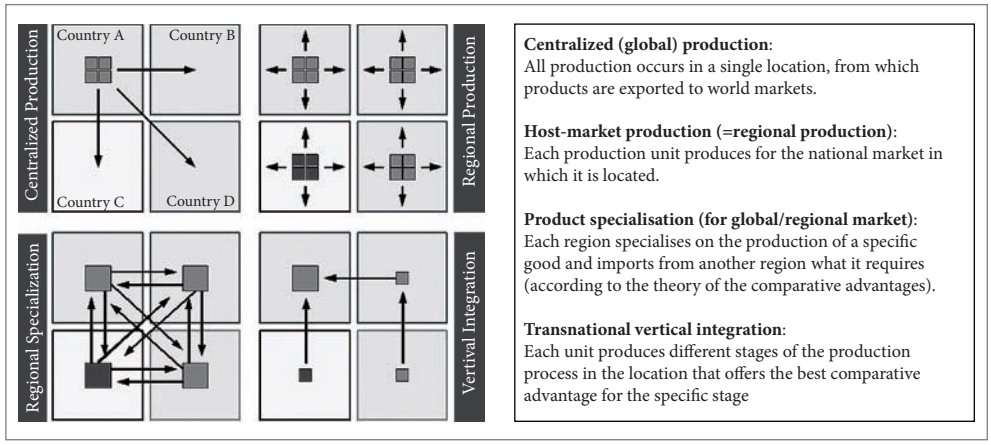

Fig. 1. Geographical organisation of production Units. Source: adapted from Knox *et al.* (2008)

In economic literature FDI are often analysed from a production chain perspective (Dicken 2003). Particular phases of production chain often are spread between companies of a MNE over different nations to reduce costs and increase the value added. The production chains become more and more fragmented and decentralized (Nordas 2005). Decreasing transaction costs on one hand and increasing FDI friendly environment provide many MNEs opportunities to invest into a global value chains but as the production processes are more and more fragmented the distance and time aspects become significant factors. The higher is a degree of a global spreading within a production chain the more communication, logistical input and time are required to ensure a smooth productions flow.

The production value chain might be viewed not only from the perspective of a company but also from country point view. The better a country is established within a value chain the more FDI and trade is generated. As Marin (2005) states Europe is reorganizing its international value chains with Eastern Europe becoming a new member in the international division of labour. Some countries provide cheap, unskilled workforce for labour intensive production stages while other states attract high technology investments and hence rank higher in the value added chain. The factors defining the success of a production transfer from old to new EU members encompass, on one hand, push factors at home pressing a company to look for better business locations abroad. These include growing costs and a lack of demand at home countries. On the other hand, pull factors at host countries are important to make investments attractive. They include infrastructure, business environment, culture, geographical location etc. The lack of some factors might offset other advantages.

2.2. Factors making countries attractive for FDI

In Dunning's OLI paradigm the location factor is one of three FDI drivers. In the literature various determinants are listed to identify the best location. One of those approaches is based on internal strategy and companies' own resources (Mellahi *et al*. 2005), another one – on external environment, f. e. customer needs. Porter (1990) developed a framework (Porter's

diamond) to explain the influence of specific conditions on nation's competitive advantage. These factors include: factor conditions, demand conditions, related and supporting industries, firm strategy, structure and rivalry. Additional factors of secondary importance are a chance and the government. The role of the government is not seen as determining factor for a nation's competitive advantage but as having impact on other factors (Dicken 2003). Porter's model has been adopted by many governments as a means to improve their competitive positions in attracting FDI. Dicken (2003) assumes that more than four determinants have an impact on country's competitiveness for FDI and emphasizes the role of state. Dunning in his recent work (2008) agrees that MNEs already located in the country influence the "diamond" of both home and host country. The state has an impact through its fiscal, monetary, trade or industrial policies as well as explicit policies towards FDI in terms of regulation and control of economic activities and investments. Further impact on FDI is made by different regional trade agreements.

Some researchers refer to such FDI factors as natural and human resource endowments, physical, financial and technological infrastructure, agglomeration effects (e.g. clusters), institutional, regulatory and policy framework, openness to international trade, access and geographical distance to international markets, investment protection and promotion (Riess and Uppenberg 2004). Authors analysing FDI to transition economies include additional factors such as market size and its growth prospects, the scope and methods of privatisations, the share of private sectors or developed infrastructure (Sass 2004).

3. Research Methodology

The main question of the article is to disclose the factors determining investments of German MNEs into production networks in the CE (namely Poland, Hungary, Czech Republic, Slovakia, Slovenia) and the Baltic States (Estonia, Latvia, Lithuania). The answer will reveal why German MNEs transfer production units abroad, what kind of investments (horizontal or vertical) are transferred to above mentioned countries, what are the main differences in business environments among listed countries, and eventually why the flows of German FDI into the CE countries is higher than into the Baltic States.

To answer these questions first of all a descriptive statistics is used to reveal the flows of German FDI into these countries, the reasons for production transfers and the forms of investments as well as to find out differences in business environments in all these countries. In addition, a regression analysis is applied to determine the priority factors influencing the investments into a specific country. The research is based on macroeconomic data as aggregated data gives a better overview of trends compared to single company data (Sergi *et al.* 2007). As sources for quantitative data indicators of German Central Bank, Eurostat, UN/UNCTAD were applied as dependent variable of stock and flows of FDI of German MNEs into a specific CE and Baltic country is employed. Although not all FDI go explicitly into production units, it will be used as a proxy as most FDI are actually invested in production units. To measure explicitly investments into production networks such indicators as the number of foreign affiliates with their employees and their sales as well as the investments into the manufacturing sector are used. As independent variables we use the demand conditions, labour costs, state policies and the location of a single CE and Baltic country. Table 1 lists indicators which where used as measures of these variables.

Table 1. Indicators and their sources

Variable		Indicators	Source	Editor
Dependent variable: FDI into production networks	FDI from German MNEs into their production networks in CE + the Baltic	FDI stock from German MNEs in CE + Baltic states (total, per capita and % to GDP)	Statistical online data-base / external sector	German Central Bank (Deutsche Bundesbank)
		Number of German companies and employees in CE + the Baltic	Statistical online data-base / external sector	German Central Bank (Deutsche Bundesbank)
		Sales of German MNEs affiliates in CE + the Baltic	Statistical online data-base / external sector	German Central Bank (Deutsche Bundesbank)
		German FDI in manufacturing in CE + the Baltic	Statistical online data-base / external sector	German Central Bank (Deutsche Bundesbank)
Independent variable: The business environment	Demand conditions in CE + the Baltic	Total GDP and inhabitants	Eurostat	European Commission
		Real GDP growth rates	Eurostat	European Commission
		GDP per capita in PPS	Eurostat	European Commission
	Local labour conditions in CE + the Baltic	Labour costs (average per hour)	Eurostat	European Commission
		Labour productivity (per person)	Eurostat	European Commission
		Skilled work force (years of education)	Human Development Report 2009	United Nations
		Ease to employ workers	Doing Business database	World Bank
	State policies in CE + the Baltic	Corporate tax level	Eurostat	European Commission
		FDI incentives	FDI database	UNCTAD
		Ease of doing business index	Doing Business database	World Bank
	Location	Distance from Germany to CE + the Baltic countries	Google Maps	Google
		Quality of infrastructure index	Global Competitive Report	World Economic Forum
		Market size index of surrounding economies	Global Competitive Report	World Economic Forum

In our research demand conditions are measured by applying total GDP and its growth rates, number of inhabitants and their purchasing powers in terms of GDP per capita in each country. Local labour market conditions were measured by applying such indicators as an average wage and salary, productivity, availability of skilled workforce and an ease to contract workers. The focus of research is on labour factor while other factors like raw materials, intermediate goods and costs for financing are not taken into account in this research as in most cases German MNEs rely on imported raw materials purchased at world prices. On other hand, a lot of inputs are provided from Germany and hence only the time and space factors have an impact on the cost level. To take these factors into account a variable "location" is applied to measure the impact of proximity and infrastructure on FDI flows. The distance to Germany and an ease of reach a foreign production unit has an impact on costs. A better strategic location of an affiliate can meet a bigger demand market. As workforce is usually locally bound to a country or even to a certain region, the labour conditions are the key issue when shifting production abroad. The state policy in this research refers only to corporate tax level, FDI incentives and the ease of doing business as differences in other policies are minor. Although cultural differences often is a disaster (Sergi *et al.* 2007) they are not included in this analysis because of difficulties to measure. The time frame of research corresponds to the time of the EU membership of the states, i.e. from 2004 to 2008. To show long term trends the statistical data for a period starting in 2000 is taken into consideration.

4. Push factors for German FDI

A most recent survey of 2.400 German MNEs active abroad identified that export is still the main form of foreign activity in 87.3% of companies (DIHK 2008). In comparison, the sourcing of production factors (37.8%), running distribution offices (29.6%) and foreign production units (26.3%) make up a smaller share. This indicates that there is a big room for further German FDI. The DIHK study discovered that the main motive guiding German FDI is the search for new markets. These horizontal investments go in line with export destinations and take place as a profit maximising alternative to a centralized production. German vertical FDI are determined by state policies, financing or exchange rates. Although this type of investments is increasing but still lag behind.

As Eurostat figures indicate German demand market shows small growth perspectives. The population growth is almost zero, whereas growth rates of real GDP and purchasing power since 2006 demonstrate a decreasing trend. This means that home market does not offer sales growth prospects and in order to grow MNEs either have to take over market shares from competitors at home or to find new markets abroad.

German MNEs at home face a quite high cost pressure. German labour is one of the most expensive in the EU and when EU average labour costs are slightly decreasing since 2004 EU enlargement the German costs are still increasing. In 2006 hourly labour costs in EU-27 accounted for 19.85 euros while in Germany they reached 27.60 euros (in 2007 27.80 euros). Although productivity in Germany is still 8% above the EU-27 average but its comparative level is decreasing while wages and salaries continue to grow. As the ratio of labour costs to productivity in Germany is declining so is declining its competitiveness. Not only labour

costs are pushing German MNEs abroad. As DIHK survey (2008) discovered there is a lack of skilled personnel especially in automobile and sectors supplying these industries. It should be also mentioned that German labour regulations are inflexible in dismissal of employees and strong trade unions put further pressure on cost structure.

Another major difference among EU members lies in tax level. Although corporate income tax in Germany was reduced from 51.6% in 2000 to 29.8% in 2008 the tax level there is still above the EU-27 average at 23.5%. When compared to new EU member states, where tax rates are between 15% and 21% the gap is even higher.

Above mentioned factors answer to the first research question why German companies are forced to transfer production abroad. Especially companies with labour intensive production are forced to look for alternatives to stay competitive. Referring to Dunning's OLI paradigm production units will be located abroad as soon as it is more profitable compared to home production. Due to worsening business environment in Germany at least in comparative terms more MNEs in the future will have to shift production abroad as other countries can offer better competitive advantages.

5. Pull factors for German FDI

After EU enlargement in 2004 attractiveness of new member states for German FDI increased. The transfer of production units from Germany is influenced by such pull factors as sales prospects, cost reduction possibilities, availability of skilled workforce, FDI incentives or country location. As figures of the German Central Bank (2009) indicate the world German FDI stock at the end of 2007 reached almost 880 billion euros, 26% of which to manufacturing sector. The German FDI stock in the EU raised steadily and their share increased from 46% in 2000 to 57% at the end of 2007. Our analysis focuses only on manufacturing sector and excludes such sectors as trade, banking, financing or others. In the German manufacturing sector the most active industries in FDI are automobile and related industries (43% of FDI in manufacturing) followed by chemical industry (18%), machinery (11%) and electrical/electronical equipment (9%). German FDI stock in the EU-27 in 2007 reached 503 billion Euros out of which only 13% (67,1 billion million Euros) is located in CE and Baltic countries. Within this group 32% are invested in Czech Republic followed by Poland (28%), Hungary (26%), and Slovakia (10%). Germany is one of the leading foreign investors in four Visegrad countries when German FDI stock in Slovenia and each of three Baltic States reaches only between 1.4% and 0.6% of total German FDI stock in the region.

The main German industry investing into CEE countries is the automotive (more than 70% of all FDI to Slovakia) with electrical/electronical industry being second. Only Poland attracted a substantial amount of FDI into machinery and chemical industries. Most jobs by German companies were created in Slovakia followed by Czech Republic, Poland and Hungary. The sales of German companies are the highest in Hungary, Slovakia, Czech Republic. In Czech Republic, Hungary and Slovakia German FDI are of a vertical nature and hence low labour costs are of a big importance for those cost-seeking investments. In Poland a large share of German FDI are of horizontal form while small countries including

the Baltic States are not attractive for German investors neither for vertical or horizontal investments.

Actual destinations of German FDI are in some contradiction with findings of DIHK survey on business expectations in CE and Baltics countries which identified that Poland has the biggest prospects in the region while Slovakia and Slovenia have already reached full potential. According to DIHK survey (2008) the prospects for the Baltic States are overall positive although the current stock of German FDI is on a comparatively low level.

In our further analysis we will attempt to find out why some countries are more attractive for German FDI than others in terms of their business environment. With this aim we tried to identify the differences in business environment among countries using such variables as demand conditions, labour market, state policies and the location of each country.

Poland is the biggest economy in the region followed by the Czech Republic and Hungary, while Estonia is the smallest economy out of eight countries. The GDP growth rates demonstrate an upwards trend in all these countries and only 2008 shows a downward trend. Although GDP per capita was growing fast all these countries are still below EU-27 average. Slovenia ranks first, followed by Czech Republic, Hungary, Slovakia and Estonia. Although Poland is the biggest economy her GDP rate per capita is one of the lowest in the region, similar to Latvia and Lithuania. The range of GDP per capita in these countries ranks from only 55% of EU-27 average in Latvia to 90% in Slovenia. Low incomes make sales prospects for specific products limited as more money are spend on goods of daily needs rather than on purchase e.g. lifestyle products. In terms of horizontal investments smaller economies in the region may not generate enough sales to ensure profitability. In this respect the assumptions that demand conditions may be influencing German investments into the CE and Baltic countries can not be supported and that investments to these countries are generated through vertical integration.

Because of high cost level in Germany low labour costs are of major importance for German companies when transferring production units abroad. In 2007, according to Eurostat data average hourly cost in Germany was 27.80 euros, several times higher than in CE and the Baltics (6.78 euros in Poland, 7.88 in Czech Republic, 7.13 in Hungary, 6.60 in Estonia, 5.09 in Lithuania). Low wages and salaries in these countries should allure German companies to shift a labour-intensive production to CE and especially Baltic States. However, labour costs need to be assessed in conjunction with productivity level which in CE and the Baltics is much lower than in Germany. To large extent this is a result of the shortage of modern high tech industries that usually stand for higher productivity levels. The highest productivity is in Slovenia, Slovakia, Czech Republic which attract more investments into higher value added industries when most FDI into manufacturing in the Baltics are channelled to low-tech industries (Hunya 2004) where in result of low productivity labour costs become relatively high.

When investing abroad companies take into consideration availability of skilled labour and here is a quite big difference among CE and the Baltic States (Figure 2). Czech Republic, Slovakia and Latvia can be characterised as countries with abundance of medium education level while Estonia and Lithuania as countries with high percentage of people having high level of education. The comparison of FDI and education level demonstrates a surprising

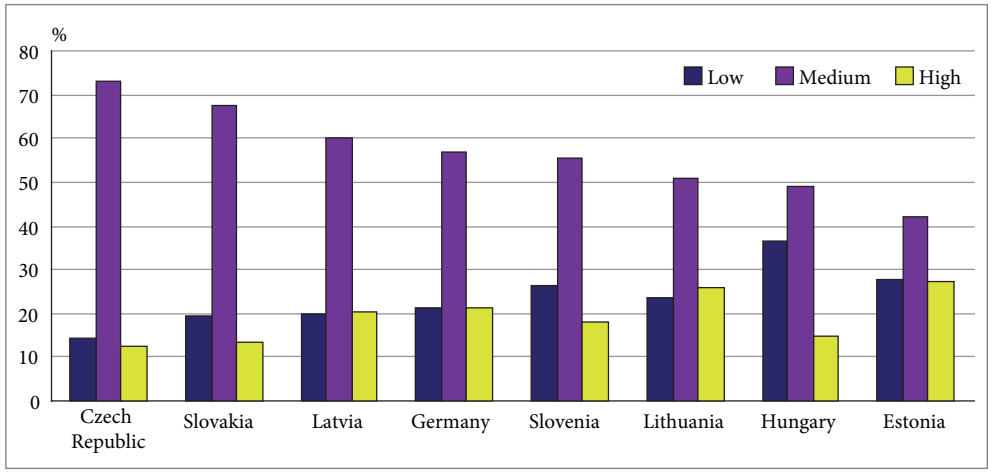

Fig. 2. Education level

Source: UNDP (2009). Low – less than upper secondary education level, medium – upper secondary or post secondary education level, high – tertiary education level. Values are in % of population aged 25 an above, percentages may not sum 100% as there are persons with unknown education levels. Figures are taken as an average for 2000–2007. Data from Poland is not available.

trend that the countries with higher percentage of medium level of education are more attractive than those with a higher percentage in a high education level. Therefore Hungary which has the highest share of low education population (almost 40%) is an attractive location for such labour intensive production units as an assemblage of goods. The Baltic States are less attractive for German investors because of a lack of medium level educated people.

Labour market regulations also matter for FDI as an ease to employ workforce has an impact on company costs. Our comparisons are based on the indicator "employing workers" that measures regulation of employment, specifically as it affects the hiring and redundancy of workers, and rigidity of working hours (World Bank 2009). The regulations in Germany compared to CE and the Baltics are very unfavourable for the companies. Germany is only 158th out of 183 countries when Czech Republic ranks 25th and offers the most flexible and easiest way for the employment of workers in the region. Poland, Hungary, Slovakia are following with good rankings (between 76 and 81) when four small countries demonstrate a more rigid labour regulations (Lithuania ranks 119 th, Latvia – 128th, Estonia – 161st).

The analysis of labour market conditions indicate being of a determining factor for investment decisions. The availability of unskilled and skilled workforce as well the ease to employ workers shows a correlation to the German investments. The Baltic States although having the lowest wage levels in the region but also low productivity, lack of medium education level workforce and apply more rigid labour regulations and therefore are less attractive for vertical German FDI than Czech Republic, Hungary or Slovakia.

Decision to choose the location for setting a production unit is also based on host country state policies. One of the main issues here is the corporate income tax level. While average tax level in the EU steadily decreased over the last years there are still big differences among

countries. According to Eurostat data while German corporate income tax level in 2008 was almost 30% the German companies in Latvia and Lithuania in 2008 enjoyed 15% tax rate, in Poland and Slovakia – 19%, Czech Republic – 21%, Hungary – 21.3% (European Commission 2009)[1]. A comparison of corporate income taxes with inflow of German FDI indicates that tax level is an important factor in attracting investments to CE countries except Latvia and Lithuania where detracting factors are quite strong.

Other stimulus having impact on FDI inflow are investment incentives. According to UNCTAD data the Baltic States generally have fewer incentives compared to Czech Republic, Hungary or Slovakia. Although some incentives exist within free economic zones and in Latvia in form of partial tax holidays dependent on the form of investment, they always apply to both foreign and domestic investors. Incentives (tax holidays, financial support, industrial parks etc.) in CE countries offset negative impact of slightly higher taxes and were instrumental in attracting huge German FDI. It is obvious that here is a correlation between more favourable FDI incentive programmes in CE and the amount of German FDI.

Other state policies which can be attractive or detractive for FDI include regulations of business environment indicating the level of bureaucracy in the country. We compared countries through application of UN index on ease of doing business (rankings 2008–2009) in CE and the Baltics (World Bank 2009). The index ranks the Baltic States very high (Lithuania – 26th place, Estonia even higher than Germany – correspondingly 24th and 25th) in comparison to Slovakia (42nd) and Hungary (47th). The lowest ranks were received by Poland (72nd) and Czech Republic (74th). Once again we see that business environment (namely bureaucracy) does not have a major impact on German investments into production units: the Baltic States have better business environment but generated less German FDI.

From analysis of German FDI an important conclusion can be drawn that good central location also matters a lot for FDI. Location by us was understood as a distance from Germany to CE or Baltic country and its infrastructure. Studies state that most FDI are coming from more developed neighbouring economies (Hunya 2004). Our comparisons of distance[2] and FDI indicate that here is a great correlation between distance and volumes of FDI. The countries closest to Germany, namely Czech Republic (363 km) and Slovakia (691 km) attracted more investments than the most distanced Baltic States (more than 1000 km). Czech Republic as the closest country received the highest amount of German FDI into production units. The exception is Poland which did not attract sufficient amount of FDI as could expect from good geographical location while Hungary outperformed its potential. Hence in both cases other factors played a higher role than a distance.

Not only is the distance important for doing business in another country but also the quality of infrastructure. Quality of infrastructure was assessed applying the rankings of the World Economic Forum (2008). All countries in CE and the Baltics ranked below Germany (6.5) with Slovenia (5.2) and Estonia (5.1) having the best infrastructure. Rankings for other countries are very close except for Poland (2.6) which to some extent can explain low investments from Germany.

[1] For most countries - corporate income tax, for Germany and Hungary a combined rate (all-in rate).

[2] As fix point for the measurement of the distance to Germany the city Erfurt was chosen as the middle of all economic centres and close to geographical centre. Distance measured as road distance from Erfurt to the capital of each country.

Strategic location is determined not only by a distance but also by a number of surrounding countries with good FDI and trade potential. World Economic Forum (2008) uses a market size index which we applied to identify the best location. Market size index is measured as a sum of GDP plus a balance imports and exports. In this ranking Hungary and Poland are identified as the best strategic locations with Slovakia and Czech Republic ranking second and third. The Baltic States have the worst strategic location indicating that they are not favourable locations for FDI compared to other countries (market size index for Hungary reaches 27.0 while for Lithuania only 13.5).

Central location of a country and its distance to Germany is influencing the investment decision but to which extend we will find from the following regression analysis.

6. Determinants of German FDI – a regression analysis

To give further insight into FDI of German MNEs to CE and Baltic countries and their factors a regression analysis has been carried out. Four hypotheses were launch to facilitate analysis:

1. Investments of German MNEs into their production units in CE and the Baltic countries are caused by demand market conditions in host country.
2. Local labour market conditions in host country has an impact on German FDI into production units to a specific CE or Baltic country.
3. State policies supporting FDI in host country have a positive impact on German investments into production units in CE and Baltic countries.
4. Country location has an impact on German investment decisions to transfer production units to a specific CE or Baltic country.

To identify the determinants of a production transfer of German MNEs to CE and the Baltic States a concept of variables was applied by authors allowing a direct measurement of the most significant factors. The analysis based on data of the years 2000 to 2008 (taken from the online databases of the Eurostat, the German Central Bank, UNCTAD, World Bank and World Economic Forum) brought the following results (see Table 2).

The first hypothesis focuses on demand conditions and applies first of all for market seeking investments as larger economies usually attract higher amounts of horizontal investments. Contrary, the demand conditions have less impact when companies invest for a cost reducing purpose as larger share of products is exported. The regression results demonstrate that most investments from Germany to CE and the Baltics are of vertical nature. Regression coefficients do not show any significant correlation between market size factors and investments. Hence the first hypothesis is not confirmed as bigger economies in the region do not attract larger German FDI as compared to small countries.

A perception exists that low local wages have a positive impact on vertical FDI, however, this was not supported by regression analysis as the coefficient does not show any dependency neither to the wage level or to the productivity level in a country. This can be explained by the fact that all CE and Baltic countries have more than twice lower average hourly labour costs in comparison to Germany and all are sufficiently attractive as production locations. The regression analysis, however, shows an expected relation between education level and investments to a specific country. Due to a lack of skilled workforce in Germany for main

Table 2. Determinants of production transfer of German MNEs

Independent variable	Factors	Regression Coefficient	Signi-ficance*	Correlation Coeffficient
Demand conditions	market size (in total GDP)	0.050		
	market size (in total inhabitants)	0.102		
	market growth (GDP growth)	0.010		
	purchasing power (GDP per capita in PPS)	0.062		
Local labour market	wages (hourly labour costs)	0.020		
	productivity (per person employed)	0.083		
	low educational level	0.007		
	medium educational level	0.180		
	high education level	0.658	0.03	–0.811
	low + medium education level	0.618	0.04	0.649
	ease to employ workers	0.615	0.02	–0.783
State policies	corporate income tax (2007)	0.180		
	corporate income tax (average 2000–2007)	0.041		
	FDI incentives	0.742	0.01	0.861
	ease of doing business (bureaucracy)	0.204		
Location	***distance to Germany***	0.422	0.08	0.650
	infrastructure	0.030		
	central location (ranking)	0.483	0.06	0.695

*Significance <=0,05: the relationship between independent and dependent variable is significant (is a probability of the test results occurring by chance is 5 in 100); significance >0,05: the relationship is not significant (although there might be a relationship, but not with certainty).

investing industries the availability of skilled workers with a medium education level or even with low level for labour intensive operations is important (significance level 0.04). To proof the result a high education level is regressed with a highly negative correlation coefficient which confirms the impact of education level. Last item related to the labour market to be regressed is an ease to employ workers which is perceived as having a positive impact on German FDI. Results confirm a dependency with a high significance of 0.02.

FDI friendly state policies are expected to have a positive impact on investment decisions. Analysis identified that FDI incentives have a positive impact on German FDI into production units being a determinant for the choice of a country with a significance level of 0.01 (see Figure 3), however, the regressed tax level is not a determining factor for German investments. Two reasons can be behind this. On one hand, because generally tax levels in CE and Baltic countries are significantly lower than in Germany and, on other hand, because the countries with exhaustive FDI incentive programmes (Czech Republic, Hungary and Slovakia) granted tax holidays for up to 10 years which make a tax level a less important determinant. A high

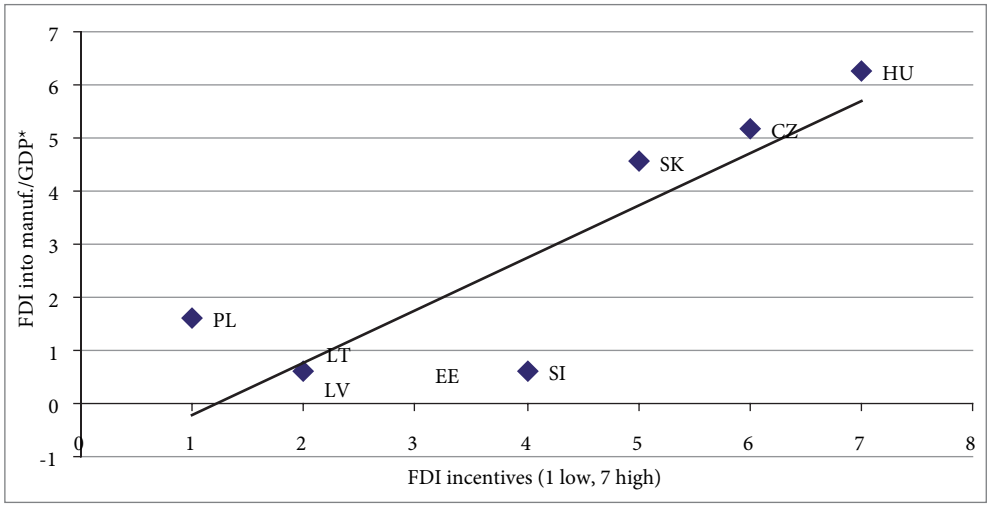

Fig. 3. Impact of FDI incentives on German investments into production units

*German total FDI stock into production units (in mill. Euros) as share of total GDP for each country (in mill. Euros), year 2007.

level of bureaucracy is expected to have a negative impact on FDI but this was not confirmed by regression result. This might be caused by the fact that the costs associated with bureaucracy to some extent are offset by overall cost advantages of these countries.

The perception that a distance from Germany to investment location abroad has adverse effect on investments was confirmed by the analysis, although with quite low certainty as significance level is only 0.08 and regression coefficient is slightly below 0.5. This might be explained by the fact that differences in distances are not very high and that because the smallest economies in the region are the most distanced from Germany and have fewer FDI incentives compared to the bigger economies. It was confirmed that here is a dependency between central location of country and transfer of production units abroad but significance again is not very high (0.06). Regression analysis did not confirm that a high level of overall infrastructure has a significant impact on investment decisions, maybe, because all countries except Poland have very similar levels of infrastructure and it is constantly improving. Thus most of expectations from regression analysis of determinants for German investments into production units are confirmed except the first hypothesis. However further testing with more factors (e.g. culture) and countries is necessary to have a more reliable framework for FDI factors.

7. Conclusions

The main research objective was to determine the factors having impact on German investments into production units in the CE and Baltic countries. The research revealed that the main motive for worldwide German FDI is a search for new demand markets as the local

market in Germany demonstrates a slow development and growth prospects are limited. Cost reduction has lower but increasing importance. The reasons for cost reducing vertical investments are high labour cost, the lack of skilled workforce in main investing industries and strict labour market regulations. In addition, unfavourable tax rates force German companies to invest abroad and to exploit cost advantages of other countries.

German investments into production units in CE and Baltic countries in contrast to worldwide investments are mainly of vertical integration to exploit the cost advantages of those countries. Horizontal investments in these countries are less prevalent as companies tend to export to the region instead of investing in production units serving local markets. This can be explained by the comparatively small size of countries (except Poland) and good proximity to Germany making horizontal investments less profitable.

German investments into production units abroad are carried out mainly by a few industries, namely automotive, electronic/electrical and chemical as well as machinery industry. Most of these types of investments were channelled to Czech Republic, Hungary and Slovakia with the highest share by the automotive sector.

The determining factors for the transfer of production units by German MNEs to a specific country in CE and Baltic countries are state policies, local labour markets and location. Among state policies the availability of FDI incentive programmes is the most influencing factor for the choice of a specific location. Tax level surprisingly is not influencing German investment decisions into a specific country within the region as in all these countries the tax level is lower than in Germany.

The availability of skilled workforce and an ease to employ workers also determine German FDI. A low wage level is not the main driving force across the CE and Baltic countries as wages in all these countries are far below the one in Germany, but the availability of appropriate workforce together with uncomplicated regulations of labour markets has a tangible impact.

The host country location is a third factor determining German investments into manufacturing though of a secondary rank. As the research disclosed a distance to Germany as well as the central location of a host country determines German investment decisions and therefore more investments are attracted by countries with a better location, namely the Czech Republic, Slovakia and Hungary while the Baltic States which are the most distanced countries and the countries with the least attractive location received the lowest amount of German FDI. But at the same time they are the smallest countries and do not provide appropriate workforces for the main investing German industries. Hence the influence of location factor is interrelated with other factors as well.

The analysis identified that German FDI into CE and Baltic States are spread unevenly. Czech Republic, Hungary and Slovakia and to some extend Poland provide the needed workforce together with low regulation of labour market and FDI incentives. Coupled with low wages and low tax rates they are the most attractive locations for German MNEs. In contrast the Baltic States although offering the lowest wage levels in the region do not offer necessary workforce and have stringent employment regulations. In addition, their FDI incentives are limited to low tax rates and do not offer significant cost saving prospects.

The Baltic States seeking to attract more German FDI have to liberalise labour markets as well as to adjust their FDI related state policies. A long term education development pro-

gramme towards more technical related professions is also required. Small Baltic countries need to focus on the development of other than automotive sectors, e.g. the electronical sector, R&D or services, and industries where the geographical proximity is less relevant.

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VOKIETIJOS TARPTAUTINIŲ BENDROVIŲ INVESTICIJOS Į GAMYBOS TINKLUS VIDURIO EUROPOS IR BALTIJOS ŠALYSE

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Santrauka. Vokietijos tarptautinių bendrovių investicijos į gamybos tinklus naujose ES narėse Vidurio Europoje bei Baltijos šalyse pasiskirsto labai netolygiai, todėl pagrindinis šio tyrimo tikslas – nustatyti pagrindinius veiksnius, lemiančius Vokietijos investicijas šiose šalyse. Autoriai naudoja aprašomąją statistiką bei regresinę analizę verslo aplinkoms skirtingose šalyse palyginti ir nustatyti jų poveikį tiesioginių užsienio investicijų mastui. Tyrimo metu nustatyta, kad Vokietijos investicijose į tirtas šalis dominuoja vertikalios investicijos, o daugiausia jų pritraukia Čekijos Respublika, Vengrija ir Slovakija dėl palankios

investicijų skatinimo politikos, pakankamos vidutinės kvalifikacijos darbo jėgos, lankstesnės darbo politikos, geografinės padėties ir kitų veiksnių.

Reikšminiai žodžiai: tiesioginės užsienio investicijos, tarptautinės bendrovės, gamybos tinklai, verslo aplinka.

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