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PECULIARITIES OF FDI PERFORMANCE IN DEVELOPED, DEVELOPING AND UNDERDEVELOPED COUNTRIES

Manuela Tvaronavičienė[1], Toma Lankauskienė[2]

Vilnius Gediminas Technical University, Saulėtekio al. 11, LT-10223 Vilnius, Lithuania
E-mails: [1]manuela@vgtu.lt; [2]tomute8@yahoo.com

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Abstract. The aim of this article is to evaluate impact of FDI on sustainable development indicators of differently developed countries during two periods of time: a time span before (2000–2007) and a time span embracing the global economic crisis period (2000–2009). Reviewed ample supply of relevant scientific literature made a presumption to arise that the impact of FDI differs in developed, developing and underdeveloped countries, i.e. depends on the level of development: developed countries benefit most, developing less and underdeveloped least. Countries are attributed to respective groups according to their level of development and indicators are chosen for investigation. The following indicators capable of reflecting FDI impact on enhancing wellbeing in unevenly developed countries are: GDP, exports, inflation, population, life expectancy at birth, primary school pupils, infant mortality, total health expenditure per capita, total tax rate, internet users, residential consumption of electricity , and differences between developed and underdeveloped countries in the field of economic, social, business environment are taken into account. Several other hypotheses have been formulated and FDI impact on sustainable development indicators has been estimated with the help of empirical research in order to test the initial presumption. Obtained results enabled to compare peculiarities of FDI performance during two periods of time.

Keywords: foreign direct investment (FDI), development, sustainable development indicators, gross domestic product (GDP), developed, developing and underdeveloped countries.

TIESIOGINIŲ UŽSIENIO INVESTICIJŲ VEIKLOS YPATUMAI IŠSIVYSČIUSIOSE, BESIVYSTANČIOSE IR NEIŠSIVYSČIUSIOSE ŠALYSE

Manuela Tvaronavičienė[1], Toma Lankauskienė[2]

Vilniaus Gedimino technikos universitetas, Saulėtekio al. 11, LT-10223 Vilnius, Lietuva
El. paštas: [1]manuela@vgtu.lt; [2]tomute8@yahoo.com

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Santrauka. Šio straipsnio tikslas – įvertinti tiesioginių užsienio investicijų įtaką skirtingai išsivysčiusių šalių tvariosios plėtros rodikliams per du laikotarpius: prieš pasaulinę ekonominę krizę (2000–2007 m.) ir po jos (2000–2009 m.). Peržiūrėta didelė mokslinės literatūros imtis iškeldino hipotezę, kad tiesioginių užsienio investicijų įtaka skiriasi išsivysčiusiose, besivystančiose ir neišsivysčiusiose šalyse, pvz., priklauso nuo išsivystymo lygio: išsivysčiusios šalys pasipelno daugiausiai, besivystančios – mažiau ir neišsivysčiusios – mažiausiai. Šalys suskirstytos į atitinkamas grupes ir rodikliai pasirinkti toliau tirti. Pasirinkti rodikliai atspindi ir išryškina tiesioginių užsienio investicijų galimybę didinti skirtingai išsivysčiusių šalių gerovę (bendrasis vidaus ūkio produktas, eksportas, infliacija, gyventojų skaičius, gyvenimo trukmė, pradinių klasių mokinių skaičius, kūdikių mirtingumas, bendrosios sveikatos išlaidos, tenkančios gyventojui, mokesčių rodiklis, elektros suvartojimas gyventojui) ir priklauso ekonomikos, socialinių bei verslo aplinkos sritims. Suformuluojamos kelios kitos hipotezės, empirinio tyrimo būdu įvertinama tiesioginių užsienio investicijų įtaka pasirinktiems rodikliams. Gauti rezultatai leidžia palyginti tiesioginių užsienio investicijų įtakos savitumus skirtingai išsivysčiusioms šalims per du laikotarpius.

Reikšminiai žodžiai: tiesioginės užsienio investicijos (TUI), išsivystymas, darnaus išsivystymo rodikliai, bendrasis vidaus produktas (BVP), išsivysčiusios, besivystančios ir neišsivysčiusios šalys.

1. Introduction

The role of foreign direct investment (FDI) has been a contentious issue since the inflows of foreign direct investments had increased rapidly during the late 1980s and the 1990s. Almost every region of the world is revitalizing the long and contentious debate about the costs and benefits of FDI inflows (Hansen and Rand 2006). On the one hand, given appropriate policies and a basic level of development, FDI can play a key role in the process of creating a better economic environment (Armbruster 2005; Lee and Tcha 2004). On the other hand, potential drawbacks do exist, including a deterioration of the balance of payments, as profits are repatriated having negative impact on competition in national markets (Tvaronaviciene and Kalasinskaite 2010). Some countries even eased restrictions on repatriation of dividends by foreign companies (Tarzi and Shah 2005).

There are many attitudes towards performance of foreign direct investments and their determinants (Bedell 2005; Head *et al.* 2005; Hoi Ki Ho and Tze Yiu Lau 2007; Ismail and Burak 2009; Jackson and Markowski 1996; Robertson 2006; Tvaronaviciene and Grybaite 2007). Furthermore, if FDI seems to be beneficial in one country that does not mean it will be beneficial in another (Pečarić *et al.* 2005; Vissak and Tõnu Jun2005). In this article we will not go deep into discussions about negative or positive impact of foreign direct investments on host countries' development, the topic, on which a vast amount of relevant scientific literature could be found (e.g. Tvaronaviciene and Kalasinskaite 2010). We are interested in overall developmental impact of foreign direct investments on differently developed countries (Changwen and Jiang 2007; Hermes and Lensink 2003; Jensen 2006; Lall and Bora 2002; Sumner 2005; Sylwester 2005). Our objective is to evaluate the influence of foreign direct investment on sustainable development indicators of differently developed countries during two periods of time: a time span before and a time span embracing the global economic crisis.

2. Impact of foreign direct investment on various facets of differently developed countries

Scientists and politicians unanimously admit that the objective of all economies worldwide is to ensure the developmental impact of FDI. In order to reveal consistent patterns and peculiarities of processes related to FDI impact on host economies, a vast amount of relevant scientific literature has been critically reviewed.

Ample experience of developed countries lead to the following ideas. A fairly comprehensive survey had been made by De Mello and he concluded that in order that foreign direct investment had a beneficial impact on growth, the country must have attained a sufficiently high level of development. Several other studies (Hermes *et al.* 2003; Alfaro *et al.* 2004) investigated the role of economic markets in FDI and economic growth and discovered that countries well-developed economically gained significantly from FDI (Jackson and Markowski 1996). Impact of FDI depends on the development stage of the country in which FDI take place. Blomström *et al.* (1994) find that the positive impact of FDI on economic growth is confined to higher-income developing countries. Borensztein *et al.* (1998) conclude that FDI enhances growth only in countries with a sufficiently qualified labour force, while other researchers claim that countries with cheaper labour force are more competitive in attracting FDI (Tvaronaviciene *et al.* 2008). Research performed by Alfaro *et al.* (2001) suggests that FDI is associated with faster growth in host countries with comparatively well- developed economic markets. Likewise, Hermes and Lensink (2003) observe positive growth effects of FDI only after developing host countries have improved their domestic economic systems (Nunnenkamp 2004).

The following ideas are most commonly spread while talking about countries with lower level of development. Blomstrom *et al.* (1994) state that FDI does not have a positive impact on growth mostly in what these authors define as `low-quality data' countries (Campos and Kinoshita 2002).

The main insight is that for poor developing countries, in particular, it appears much more difficult to derive macroeconomic benefits from FDI than to attract FDI. Consequently, it has to be mainly African countries, where FDI may have limited effects on economic growth and poverty alleviation (Nunnenkamp 2004).

From above- presented statements some consistency can be noticed. *We presume that foreign direct investment's influence differs in developed, developing and underdeveloped countries, i.e. depends on the level of development: developed countries benefit most, developing less and underdeveloped least.*

3. Foreign direct investment's influence on sustainable development indicators evaluation model

In order to test the raised hypothesis, groups of countries have to be attributed to respective groups. For operational and analytical purposes, the World Bank's main criteria for classifying countries are income categories. With reference to the above-mentioned criteria countries will be grouped for further research. High- income economies will be ascribed to developed countries; upper-middle-income, lower-middle-income economies to developing and low- income economies to underdeveloped (World Bank).

The effectiveness of FDI policies also depends on whether they are part of a broader strategy to improve the developmental impact of FDI. Critical elements include the development of local complementary factors of pro-

duction (e.g. education and skills, local suppliers, infrastructure and business services, approach to innovations (Tvaronaviciene and Degutis 2007) and institutional performance (Tvaronaviciene *et al.* 2009)). Before we start testing of the raised hypothesis, indicators of sustainable development, which would be considered in this particular investigation have to be distinguished. Here an important note has to be made: sutainable development is a complex and diffrently treated notion. On the one hand, it is very broad as may be related to competitiveness of a country (Balkyte and Tvaronaviciene 2010), and on the other hand, if to adopt a very practical approach, sustainable development is being estimated by a broad array of indicators (Grybaitė and Tvaronavičienė 2008). We will consider sustainable development in terms of economic viewpoint, as an entity ensuring the elaboration of environment which meets the human needs at present not reducing human wealth opportunities in the future. Maintaining this approach the sustainable indicators reflecting the betterment of humanity should improve. Hence, for our research we selected indicators, which are sensitive to development level of the country and obtain rather differing values in developed, developing and underdeveloped countries. For selected, listed below indicators, which in our case, would let introduce differences in countries' development through particular sustainability facets, hypotheses are to be formulated and tested.

Furthermore, the following indicators have been chosen as ones capable of reflecting FDI impact on enhancing well-being in unevenly developed countries: GDP, exports, inflation, population, life expectancy at birth, primary school pupils, infant mortality, total health expenditure per capita, total tax rate, internet users, residential consumption of electricity. As it was indicated above, selected indicators are seen as being of vital importance while reflecting the differences between developed and underdeveloped countries in the field of economic, social and business environment.

Relations were tested in the following sequence and indicated time periods (Fig. 1).

In order to adopt presented in Fig. 1 approach towards research how FDI flows directed into countries of different development level affect selected indicators, countries – representatives have to be selected. FDI flows into countries, which are to be considered in current research, are reflected in Fig. 2.

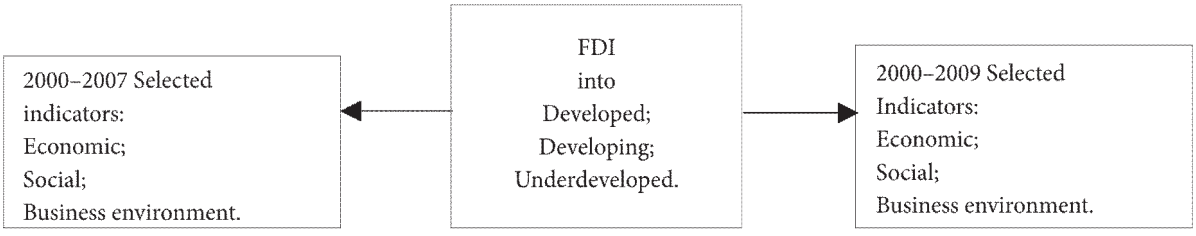

Fig. 1. Research sequence

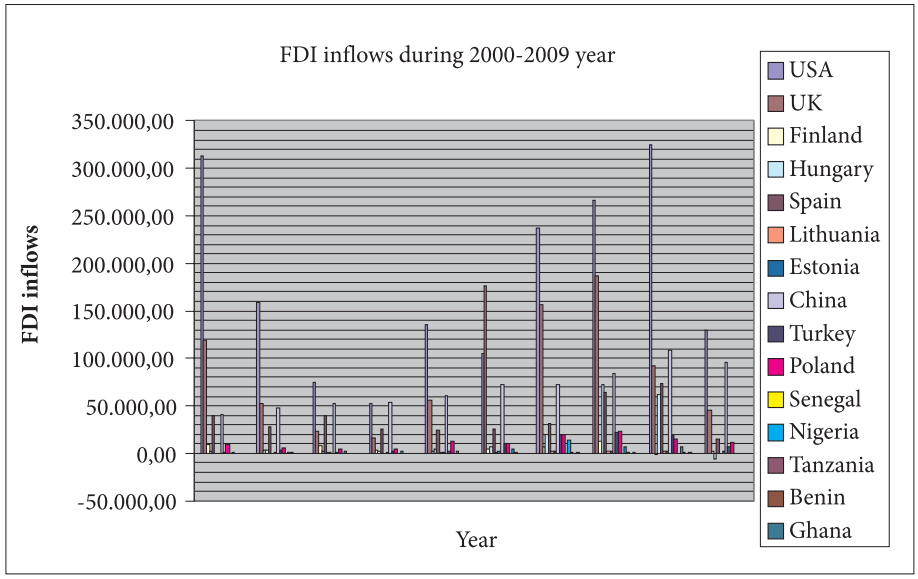

Fig. 2. FDI inflows during the period of 2000–2009 into countries chosen for the research

USA, UK, Finland, Hungary, Spain represent developed countries. Lithuania, Estonia, China, Turkey, Poland represent a group of developing countries and Senegal, Nigeria, Tanzania, Benin, Ghana – underdeveloped countries, respectively.

As presented-below data suggest USA and UK are recipients of the largest FDI inflows. Then China, Spain, Hungary, Poland, and Turkey go. To generalize, the recipients of the largest FDI inflows are developed and developing countries. Underdeveloped countries attracted significantly lower flows of FDI.

4. Presumptions about foreign direct investment's impact on differently developed countries

FDI more or less contribute to developed, developing and underdeveloped countries' economic growth.

According to Asheghian FDI had a significant impact on the United States' economic growth (Asheghian 2004). The positive influence of FDI on growth in Spain has been revealed as well (Rodriguez and Pallas 2008). Moreover, foreign direct investments affect Lithuanian economic growth (Tvaronaviciene 2006). The effect of FDI on economic growth in transition economies is positive and statistically significant in Europe (Hannula *et al.* 2004). Several other literature sources indicate, that growth from FDI in developing countries is generally not significant, and is less than in developed countries (Wu 2001). Moreover, the rules created in developed economies can not be efficiently applied in the developing economies (Akhter 1993). Next scientific article states that FDI does not have an obvious booster effect on the development of China's economy (Changwen and Jiang 2007).

Eventually, FDI may have limited effects on economic growth and poverty alleviation in underdeveloped countries (Nunnenkamp 2004).

From above- presented affirmations a hypothesis can be raised.

Hypothesis 1: *We hypothesize that economic growth most generally is perceived as GDP growth. Moreover, impact of FDI on GDP growth differs in developed, developing and underdeveloped countries. Summing up, developed countries benefit most, developing less and underdeveloped least.*

From our point of view sustainable development is being estimated by an array of upgrading indicators. If the sustainable development progressed, sustainable development indicators should revive and enhance the wellbeing in each group of differently developed countries. Maintaning the adopted approach, other hypothesis will be raised and obtained results will enable to reveal the pecularities of FDI performance in developed, developing and underdeveloped countries.

Exports reflect the competiveness of the country to an international extent and is a constituent of GDP. The bigger inflows of FDI force expansion of labour resources amount and quality, capital amount and quality and can be effective for export growth. Moreover, most of literature sources indicate the positive FDI impact on export growth, what can be detected in each of country groups: FDI played an important role in leading Chinese export growth (Haishun 1999), it contributed to competiveness of Polish exports (Tiits 2007).

We assume that FDI has a strong impact on export growth.

There is an implication that lowering the inflation rate would advance economic growth and bigger FDI inflows in countries (Makki and Somwaru 2004).

We assume that FDI inflows have a solid influence on lowering the inflation rate.

Overall, the evidence tends to suggest a potentially important role of FDI in the country's living standards benevolence (Ting 2004). Country's living standards will be expressed in terms of population and life expectancy rates.

We assume that FDI has a positive impact on population augmentation.

We assume that FDI inflows have a beneficial influence on elongation of life expectancy rates.

The Millennium Development Goals commit the international community to an expanded vision of development, one that vigorously promotes social development as the key to sustaining social and economic progress in all countries, and recognizes the importance of creating a global partnership for development. The goals have been commonly accepted as a framework for measuring the development progress.

The second Millennium Development Goal encourages to "Achieve universal primary education" (World Bank). Under usual circumstances if FDI contributes to benevolence of people's living, it should also contribute to number of primary school pupils increase.

We assume that FDI has a benevolent impact on number of primary school pupils' increase.

The fourth Millennium Development Goal implies "Reduce child mortality" (World bank). Under normal circumstances the betterment of living should be expressed in the given way as well.

We assume that FDI inflows have a beneficial impact on fewer occurrences of infant deaths.

Combining the fifth Millennium Development Goal which states "Improve maternal health" and the sixth which encourages to "Combat HIV/AIDS, malaria and other diseases" we make the following hypothesis arise (World Bank). Total health expenditure indicator is decided to be taken for another hypothesis testing to see how FDI affects this sphere of people wellbeing.

We assume that FDI inflows have a positive influence on total health expenditure increase.

The theoretical and empirical evidence stressed out three main qualitative relations between FDI and growth (UN Commission for Europe 2000a, 2000b): FDI-led growth, growth-driven FDI and bi-directional causal process (Akhter 1993).

Business environment is one of the location factors taken into account by investors while investing abroad [40]. We will test if there is a growth-driven FDI or bi-directional causal processes, that is if FDI helps business environment to improve. The bigger estimated FDI should make total tax rates diminish under normal circumstances.

We assume that FDI inflows have a beneficial impact on total tax rate diminution.

Also, the created wellbeing should force people make more business or communicate with each other. The above- mentioned operations can not be conceived without Internet.

The bigger FDI inflows, the bigger number of internet users is expected to be.

Reached welfare should force more consumption of energy.

We assume that the bigger FDI inflows contribute to residential electric power consumption increase.

From above- presented statements the 2nd hypothesis can be proposed.

Hypothesis 2: *We hypothesize that maintaining adopted theoretical approach, in terms of sustainable development listed aspects, the indicators of sustainable development improve in developed, developing and underdeveloped countries.*

In order to detect strength of FDI impact on selected sustainable development indicators, the following approach is being adopted. For each of the country groups (developed, developing and underdeveloped) a number of strong relationships between FDI and selected indicators is being indicated. According to adopted view, the more strong relationships, the stronger impact of FDI on sustainable development is observed. In case the number of strong relationships is not considerable or non-existent, it is considered that FDI does not affect sustainable development in target countries group.

2.1 *FDI has a positive impact on export growth.*

2.2 *FDI inflows have a benevolent influence on lowering inflation rate.*

2.3 *FDI has a positive impact on population augmentation.*

2.4 *FDI inflows have a beneficial influence on elongation of life expectancy rates.*

2.5 *FDI has a benevolent impact on number of primary school pupils increase.*

2.6 *There is a connection between FDI inflows and fewer occurrences of infant deaths.*

2.7 *FDI inflows have a positive influence on total health expenditure increase.*

2.8 *Bigger FDI inflows contribute to total tax rate diminution.*

2.9 *The bigger FDI inflows, the bigger number of internet users is expected to be.*

2.10 *The bigger FDI inflows contribute to residential electric power consumption increase.*

Summing up, developed countries benefit most, developing less and underdeveloped least.

5. Impact of foreign direct investments on sustainable development indicators during a time span before the global economic crisis

With the intention to test the raised hypothesis research has been done. The method of research is correlation regression analysis. Conveyed research method will allow to determine strong connections between FDI and selected indicators.

While testing the first hypothesis, a number of strong connections between FDI and GDP will be summed up in each of the country groups. While testing the second hypothesis, a number of strong connections between FDI and selected sustainable development indicators will be summed up in each of the country groups. According to our both hypothesis the biggest number of strongly affected indicators should be in developed, less in developing and least in developed countries group.

Statistical data from 2000 till 2007 have been used for analysis (euro monitor international). With the help of correlation regression analysis connections have been investigated between FDI and GDP while testing the first hypothesis and between FDI and 10 indicators while testing the second (indicators used for analysis are presented in Table 1 and countries in Table 2). In case when $0,5 < r < 0,75$ there is a medium connection and when $0,75 < r < 0,95$ there is a strong connection, only those indicators have been chosen, which $r>|0,7|$(Appendix A). For the following indicators r has to be positive: GDP, exports, population, life expectancy at birth, primary school pupils, total health expenditure per capita, internet users, residential consumption of electricity and respectively negative for the given: inflation rate, infant deaths and total tax rate in order to have a beneficial influence on sustainable development. Furthermore, in order to see if the correlation coefficient is significant, calculated estimated t observed has to be bigger than t statistics (by 5 degrees of deg freedom using 0,05% probability) (Appendix A). Sorted out strong connections, considered to have a beneficial impact on sustainable development and which r is significant , are presented in Table 3. The results of research while testing the 1st hypothesis indicate (Table 3) that developing countries benefited

most (5 strong relations of FDI with GDP), underdeveloped less (4 strong relations) and developed least (none of the strong relations) during the 2000–2007 period. Hence, this is a converse implication in our hypothesis, because according to our initial hypothesis there should be most FDI affected indicators in developed, less in developing and least in underdeveloped groups of countries.

While testing the 2nd hypothesis a finding could be made that the biggest number of affected indicators is in developing countries group (27 indicators), then underdeveloped countries group goes (19 indicators) and eventually the group of developed countries (11 indicators). The finding is converse to our hypothesis, because according to our hypothesis there should be most FDI affected indicators in developed, less in developing and least in underdeveloped group of countries.

6. Impact of foreign direct investments on sustainable development indicators over a time span embracing the global economic crisis period

Using the same method of research an investigation has been done during the period of 2000–2009, time after global economic crisis struck all the economies over the world (Tables 1, 2 and Appendix A). Provided that t observed is bigger than t statistics (by 7 degrees of deg freedom using 0.05% probability)(Appendix A), let us have a deeper sight what the results indicate.

The results of research indicate (Table 4) that developing (4 strong relations of FDI with GDP) and underdeveloped (4 strong relations) countries benefited most and developed least (none of the strong relations) during the 2000–2009 period. This finding is opposite to our initial hypothesis, according to which there should be most positively affected number of FDI on GDP in developed, less – in developing and least – in underdeveloped group of countries.

While testing the 2nd hypothesis in group of developed countries we can observe an astonishing view- neither in USA, UK, Finland nor in Spain there are strong connections between FDI and sustainable indicators. Only in Hungary there is a strong relation between FDI and exports (Table 4). In developing and underdeveloped group of countries the results are more prolific.

While testing the 2nd hypothesis an implication could be made that the biggest number of affected indicators is in underdeveloped countries group (27 indicators), then developing countries group goes (19 indicators) and eventually the group of developed countries (1 indicator). This is an inverse assessment to our hypothesis, according to which there should be most strongly affected indicators in developed, less – in developing and least – in underdeveloped group of countries.

Table 1. Indicators used for analysis

Y FDI (US $ mill.)
X_1 GDP (US$ mill.)
X_2 Exports (US $ mill.)
X_3 Inflation (% growth)
X_4 Population (mill.)
X_5 Life expectancy at birth: total population (years)
X_6 Primary school pupils (‘000)
X_7 Infant mortality (deaths per ‘000 live births)
X_8 Total health expenditure ($per capita)
X_9 Total tax rate (% of profit)
X_{10} internet users (number per ‘000 people)
X_{11} Residential consumption of electricity (‘000 Gwh)

Table 2. Countries used for analysis

Developed	
1	USA
2	UK
3	Finland
4	Hungary
5	Spain
Developing	
6	Lithuania
7	Estonia
8	China
9	Turkey
10	Poland
Underdeveloped	
11	Senegal
12	Nigeria
13	Tanzania
14	Benin
15	Ghana

Table 3. Strong and significant connections between FDI and selected indicators over a time span before the global financial crisis period

	Countries														
	Developed					Developing					Underdeveloped				
Ind.	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	10.	11.	12.	13.	14.	15.
X_1						▪	▪	▪	▪	▪	▪	▪	▪		▪
X_2		▪		▪		▪	▪	▪	▪	▪					▪
X_3															
X_4								▪	▪		▪		▪		▪
X_5							▪	▪	▪		▪		▪		
X_6					▪							▪			▪
X_7	▪	▪	▪	▪	▪	▪		▪	▪	▪	▪		▪	▪	
X_8						▪	▪	▪	▪	▪		▪	▪		▪
X_9		▪	▪			▪					▪			▪	▪
X_{10}				▪		▪	▪	▪	▪			▪			▪
X_{11}						▪		▪	▪						

In a group of developed countries infant mortality indicator is generally positively affected by FDI. It can be distinguished that from developing countries group the most general indicators, which are positively influenced by FDI, come: GDP, exports, infant mortality, life expectancy, total health expenditure, residential consumption of electricity. In the group of underdeveloped countries it is perceived that the following indicators are most general: GDP, population, infant mortality, total health expenditure, total tax rate.

The normally positively influenced indicator by FDI is infant mortality in each of the country groups. It can be stated, that FDI inflows contribute to infant mortality decrease in those countries. FDI also contributed to GDP growth but only in developing and underdeveloped countries. Presumption that FDI has a positive impact on lowering inflation rate is absolutely denied, because during that period of time in none of the countries this had proved.

In the group of developed countries there can be noticed none of general FDI positively affected indicators in terms

Table 4. Strong and significant connections between FDI and selected indicators over a time span embracing the global financial crisis period

	Countries														
	Developed					Developing					Underdeveloped				
Ind.	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11.**	**12.**	13.	14.	15.
X_1						▪	▪	▪	▪		▪	▪	▪		▪
X_2				▪		▪	▪	▪	▪	▪	▪	▪	▪	▪	▪
X_3															
X_4								▪	▪		▪		▪		▪
X_5							▪	▪	▪		▪		▪		
X_6											▪	▪	▪		▪
X_7								▪			▪		▪		
X_8							▪	▪	▪		▪	▪	▪		▪
X_9											▪			▪	▪
X_{10}							▪	▪			▪		▪		▪
X_{11}						▪		▪	▪						▪

that there is only one positively affected indicator at all. In the developing countries group we can notice some most common FDI positively affected indicators: GDP, exports, life expectancy, total health expenditure, residential consumption of electricity. In the group of underdeveloped countries the following indicators are most general: GDP, exports, population, primary school pupils, total health expenditure, total tax rate and internet users. As in the period before a global economic crisis, the underdeveloped countries are undeniably improving the same spheres: economic, social and business environment, but the FDI positive influence to those spheres is more prolific.

During a time span embracing the global financial crisis period the most positively influenced indicator by FDI is exports in each of the country groups. It can be stated, that FDI inflows contribute to the increase of exports in those countries. Also, impact on GDP and total health expenditure increase can be noticed but only in developing and underdeveloped countries. Presumption that FDI has a positive impact on lowering inflation rate is absolutely denied, because during that period of time in none of the countries this had proved.

7. Conclusions

It is not sufficient for countries to attract more foreign direct investments (FDI). Even for host countries with high attractiveness of FDI, the challenge remains to ensure that FDI foster economic development.

During the 2000–2009 period the biggest FDI recipients from countries, selected for investigation, have been USA and UK. Also vast FDI flows were attracted by China, Spain, Hungary, Poland and Turkey. All those above-mentioned countries are from developed and developing countries groups. Underdeveloped countries got significantly lower flows of FDI.

Critically reviewed ample supply of relevant scientific literature made the following presumption to arise: *foreign direct investments influence differs in developed, developing and underdeveloped countries, i.e. depends on the level of development: developed countries benefit most, developing less and underdeveloped least.*

In the middle of 2007 and into the year 2008 a global economic crisis struck all the economies worldwide. In case all economic researches are precise when other conditions stay the same (*ceteris paribus)*, it was decided to take two periods of time (a time span before(2000–2007) and a time span embracing the global economic crisis period (2000–2009) to make the research more reliable. Obtained results enabled to compare peculiarities of FDI performance during two periods of time. Taken research method is correlation regression analysis, significance evaluation method is Student's criterion.

15 countries, selected for investigation, are ascribed to respective countries groups: developed, developing and underdeveloped (5 countries for each group) referring the World Bank's main criteria for classifying countries under income categories. Selected indicators of sustainable development have been used for research and are seen as being of vital importance while reflecting the differences between developed and underdeveloped countries in the field of economic, social and business environment.

The results of research are as follows:

*** Time span before the global economic crisis period (2000–2007)**

The 1st hypothesis: the results of research indicate that developing countries benefited most, underdeveloped less and developed least. Hence, this is an opposite finding to our hypothesis.

The 2nd hypothesis: group of developing countries benefited most, underdeveloped less and developed least. Consequently, this is an inverse implication to our hypothesis.

*** Time span embracing the global economic crisis period (2000–2009)**

The 1st hypothesis: the results of research indicate that underdeveloped and developing countries benefited most and developed least. Hence, this is an inverse finding to our hypothesis.

The 2nd hypothesis: results of research indicate that group of underdeveloped countries benefited most, developing less and developed least. Accordingly, this is an opposite finding to our hypothesis.

Summarizing the findings of research we can indicate that obtained results differ in taken two periods of time. A time span embracing the global economic crisis period displayed the beneficial role of FDI on sustainable development for underdeveloped countries group.

Comparing two periods of time (2000–2007 and 2000–2009) with the last period of time (after the global economic crisis struck the economies worldwide) underdeveloped countries closed to developing in discussion of positive FDI impact on GDP growth. The opposite adverse appearance referring to literature sources indications could be stated. Hence, the relevant literature enhanced the role of FDI on GDP growth in developed countries and understated in underdeveloped.

Comparing two periods of time, in a time span embracing the global economic crisis period underdeveloped countries exceeded developing in discussion of positive FDI impact on sustainable development indicators in selected countries.

In conclusion, we can deny overall prosperous impact of FDI in developed countries in terms of results of invisible GDP connections with FDI. In underdeveloped and developed groups of countries contribution of FDI to sustainable indicators improvement has been noticed.

Even though the inflows of FDI that underdeveloped countries attract are least, the impact of them on host countries' wellbeing is generally obvious. We can state that FDI during a time span embracing economic crisis period (2000–2009) significantly contributed to improvement of economic, social and business environment alleviating poverty. We can presume, if the things will proceed in the same manner through the coming years, underdeveloped countries researched in our investigation are likely to be rapidly developing.

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Appendices

Appendix A
Correlation regression analysis results

Results of analysis before global economic crisis period: correlation coefficients

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}
1.	0,21	0,55	0,65	0,08	0,28	–0,11	–0,92	0,06	0,45	–0,2	0,01
2.	0,69	0,78	0,69	0,71	0,72	–0,18	–0,89	0,67	–0,76	0,31	0,14
3.	0,34	0,5	0,63	0,66	0,25	–0,66	–0,88	0,28	–0,76	0,14	0,14
4.	0,72	0,84	0,15	–0,39	0,67	–0,73	–0,90	0,62	–0,12	0,76	0,47
5.	0,36	0,39	–0,49	0,35	0,36	0,84	–0,85	0,32	0,99	0,16	0,31
6.	0,90	0,92	0,93	–0,78	–0,90	–0,83	–0,99	0,90	–1	0,87	0,94
7.	0,87	0,88	0,38	–0,93	0,89	–0,85	–0,65	0,86	0,27	0,87	0,66
8.	0,97	0,97	0,71	0,98	0,95	–0,96	–0,98	0,99	0,83	0,96	0,98
9.	0,91	0,91	–0,64	0,86	0,78	0,13	–0,86	0,88	–0,62	0,85	0,96
10.	0,90	0,90	–0,17	–0,62	0,65	–0,80	–0,86	0,88	0,73	0,75	0,71
11.	0,78	0,61	0,71	0,77	0,79	0,73	–0,95	0,68	–0,96	0,75	–0,08
12.	0,78	0,75	–0,41	0,72	0,71	0,80	–0,57	0,82	0,59	0,80	0,33
13.	0,79	0,74	0,68	0,78	0,78	0,67	–0,96	0,85	0,75	0,54	0,07
14.	0,67	0,73	–0,38	0,63	0,62	0,54	–0,79	0,70	–1,00	0,61	0,52
15.	0,87	0,90	–0,56	0,77	–0,54	0,92	0,74	0,90	–0,99	0,88	0,66

t statistics of FDI and sustainable indicators interrelationship

t statistics	2,5705818

t observed values before global economic crisis period

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}
1.	0.47	1.49	1.89	0.17	0.66	0.25	6.34	0.13	1.14	0.45	0.01
2.	2.11	2.63	2.15	2.26	2.35	0.40	4.38	2.02	2.64	0.73	0.31
3.	0.82	1.29	1.81	1.97	0.57	1.98	4.22	0.65	2.60	0.31	0.31
4.	2.33	3.46	0.34	0.95	1.99	2.36	4.58	1.76	0.26	2.61	1.20
5.	0.86	0.96	1.26	0.83	0.86	3.51	3.59	0.75	16.23	0.37	0.73
6.	4.58	5.10	5.56	2.78	4.75	3.27	21.01	4.7	22.42	3.88	5.93
7.	3.88	4.14	0.91	5.50	4.41	3.57	1.93	3.83	0.63	3.94	1.98
8.	8.61	9.30	2.24	10.61	7.03	7.70	10.11	13.26	3.30	8.13	11.57
9.	4.80	4.98	1.84	3.61	2.78	0.29	3.82	4.17	1.75	3.66	8.13
10.	4.56	4.62	0.38	1.75	1.90	2.95	3.78	4.08	2.39	2.55	2.26
11.	2.82	1.71	2.25	2.71	2.89	2.42	7.02	2.07	7.75	2.56	0.17
12.	2.83	2.55	1.01	2.32	2.27	2.99	1.56	3.20	1.65	2.94	0.78
13.	2.87	2.44	2.07	2.81	2.79	2.04	6.07	3.62	2.55	1.43	0.16
14.	2.02	2.41	0.93	1.83	1.77	1.44	2.89	2.18	26.7	1.71	1.37
15.	3.92	4.53	1.51	2.72	1.42	5.08	2.45	4.57	14.48	4.13	1,96

Results of analysis including global economic crisis: correlation coefficients

	X_1	**X_2**	**X_3**	**X_4**	**X_5**	**X_6**	**X_7**	**X_8**	**X_9**	**X_{10}**	**X_{11}**
1.	0.31	0.62	0.53	0.19	0.33	–0.19	–0.47	0.20	0.40	–0.05	0.19
2.	0.57	0.63	0.34	0.28	0.42	0.04	0.16	0.48	0.10	0.11	0.16
3.	–0.27	–0.11	0.03	–0.01	–0.28	0.20	–0.03	–0.28	–0.03	–0.24	–0.29
4.	0.66	0.75	0.18	–0.36	0.49	–0.54	–0.39	0.59	–0.10	0.55	0.42
5.	0.37	0.49	0.47	0.27	0.29	0.40	–0.29	0.34	0.38	0.17	0.35
6.	0.70	0.72	0.73	–0.35	–0.73	–0.59	–0.04	0.69	0.31	0.60	0.70
7.	0.76	0.79	0.22	–0.88	0.70	–0.78	–0.22	0.77	0.62	0.76	0.62
8.	0.95	0.97	0.54	0.95	0.93	–0.92	–0.87	0.97	–0.45	0.94	0.97
9.	0.83	0.82	–0.62	0.72	0.70	0.20	–0.10	0.84	–0.02	0.64	0.86
10.	0.67	0.72	–0.15	–0.54	0.53	–0.66	–0.15	0.66	–0.33	0.61	0.66
11.	0.86	0.77	0.54	0.83	0.83	0.82	–0.80	0.80	–0.94	0.81	–0.21
12.	0.70	0.71	–0.41	0.65	0.66	0.81	–0.22	0.75	0.39	0.69	0.39
13.	0.83	0.85	0.74	0.86	0.86	0.79	–0.95	0.86	0.76	0.71	0.48
14.	0.65	0.72	0.06	0.62	0.61	0.55	–0.46	0.66	–0.75	0.61	0.58
15.	0.87	0.94	–0.27	0.87	–0.42	0.94	–0.21	0.88	–0.87	0.94	0.70

t statistics of FDI and sustainable indicators interrelationship

t statistics	2.364624

t observed values including global economic crisis period

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}
1.	0.85	2.10	1.66	0.51	0.91	0.51	1.43	0.55	1.14	0.14	0.52
2.	1.85	2.15	0.94	0.77	1.23	0.11	0.43	1.46	0.27	0.28	0.42
3.	0.74	0.29	0.08	0.03	0.76	0.55	0.07	0.77	0.09	0.65	0.79
4.	2.35	2.97	0.48	1.01	1.47	1.70	1.12	1.93	0.27	1.74	1.23
5.	1.06	1.5	1.42	0.75	0.79	1.16	0.80	0.97	1.1	0.46	1.00
6.	2.60	2.74	2.79	1.00	2.83	1.95	0.10	2.49	0.88	1.96	2.57
7.	3.09	3.36	0.60	4.87	2.57	3.35	0.60	3.16	2.08	3.12	2.11
8.	8.43	11.49	1.70	7.96	8.90	6.10	4.75	11.27	1.33	7.07	9.84
9.	3.97	3.84	2.11	2.74	2.59	0.55	0.27	4.09	0.04	2.22	4.48
10.	2.40	2.76	0.39	1.70	1.66	2.35	0.41	2.31	0.92	2.06	2.3
11.	4.43	3.17	1.71	4.00	3.92	3.85	3.47	3.52	7.02	3.69	0.56
12.	2.62	2.67	1.19	2.25	2.35	3.61	0.59	2.98	1.13	2.51	1.13
13.	3.96	4.20	2.04	4.51	4.50	3.39	7.68	4.46	3.09	2.68	1.44
14.	2.25	2.71	0.17	2.10	2.03	1.76	1.36	2.31	2.97	2.04	1.87
15.	4.75	7.42	0.75	4.66	1.24	7.15	0.56	4.86	4.66	7.63	2.56

Appendix B

Current characteristics of researched countries

Developed

USA

Economic growth has resumed but fears of a double-dip recession are mounting. The government has pledged to reduce the fiscal deficit to 3% of GDP by 2015. Even if it meets this goal, public debt is projected to have nearly doubled by that time, amounting to almost 75% of GDP.

UK

The economic recovery in 2010 will be an anaemic one. The economy will not return to its trend growth rates before 2012. Spending is depressed by weak earnings, uncertainty over the job markets and a fall in consumer confidence.

Finland

The Finnish economy experienced a sharp recession in 2009 and little or no growth is expected in 2010. Economic performance should slowly improve through 2014. Growth will probably have to exceed 3% per year in the long term if Finland's welfare system is to survive intact.

Hungary

Hungary's economy will see little or no growth in 2010. Unemployment is high and will rise in 2010. The government will spend €7.5 million on job creation and job preservation in 2010 and the jobless rate is expected to trend downward beginning in 2011. The rate of growth is not expected to reach economic potential before 2011.

Spain

Spain's recession will continue through 2010 and the eventual recovery will be weak, in part owing to the austerity package imposed in 2010. Huge spending cuts are planned with the goal of reducing the budget deficit to 6% of GDP by 2011. Unemployment continues to rise and is already the second highest in the EU.

Developing

Lithuania

Lithuania's recession is expected to last through 2010 with a recovery beginning in 2011. Real rates of growth will not reach prerecession levels before 2020. Unemployment is in double digits and the unemployment rate among young adults is especially high. Corruption in some parts of economy is regarded as significant. The business environment remains challenging for small and medium enterprises. In order to raise FDI inflows, further improvements in business environment is needed.

Estonia

Estonia's recession was among the worst of any European country and only shallow growth is anticipated for 2010. The recovery will be hindered by the decision of Gazprom, the Russian energy supplier, to raise prices over the medium term. The real value of private consumption will continue to drop through 2010. Long-term demographic trends are not favourable for Estonia.

China

The Chinese economy should see double-digit growth in 2010. China could surpass Japan to become the world's second largest economy in 2010. Private consumption will gradually emerge as a more important contributor to growth in the medium term. Investors are attracted because of the cheap, unskilled labour, which is about a third of the cost of that in most other Asian countries.

Poland

Poland was able to avoid a recession in 2009 and a stronger economic performance is expected in 2010. Poland's long-term attractions to foreign investors will continue to hold appeal. It is a very large and underdeveloped market with a solid export base and labour that costs only a quarter of that in Western Europe.

Turkey

The Turkish economy began a strong recovery in 2010. However, the country could face serious power shortages now that the recovery is underway. As many as half of all employed workers hold jobs in the informal sector. Unemployment remains a serious problem. Half a million new jobs need to be created every year just to keep unemployment from rising. The business environment suffers from various weaknesses- in particular the lack of comprehensive legal and legislative system that protects the rights of foreign investors.

Underdeveloped

Senegal

Real growth slowed in 2009 but a modest recovery is forecast. Senegal has investment opportunities such as unexploited iron ore deposits and the potential for gold mining. The country's population is growing by around 2% per year and the economy cannot generate a sufficient number of jobs. The government believes that real growth of at least 7% per year is needed to reduce poverty. Administrative barriers inhibit foreign business interests. Foreigners argue that procedures in such areas as customs, ports and patents are cumbersome and prone to corruption. Furthermore, contracts can be difficult to enforce.

Nigeria

The economy should rebound in 2010 but rates of growth will still not be sufficient to reduce poverty or unemployment. Power shortages and a large housing deficit are other problems. An estimated 40% of today's population is under 15 years and poorly educated. About 57% of Nigerian households live in poverty. Growth in the non-oil sector must be accelerated in order to achieve the desired degree of diversification. Despite some improvements under the present administration, the cost disadvantage of business operating in Nigeria is considerable. Red tape, customs delays, a lack of skilled labour and power shortages all push to operating costs. Recent banking reforms have helped increase private sector growth and investment. The costs of starting business have been cut, but poor infrastructure raises the cost of doing business.

Tanzania

The rate of real growth fell in 2009 but an incipient recovery is expected in 2010. However, an energy shortage caused by drought-induced cuts in hydroelectric power and higher oil prices limits growth prospects. Tanzania's low levels of savings dilapidated infrastructure are the main drags on growth. There is a huge potential for tourism but the sector lacks hotels and infrastructure. More than a third of the country's population lives in poverty.

Benin

The economy is weakening owing to a combination of including energy shortages and a fall in cotton exports. An estimated 40% of the population lives in poverty. The stated goal of diversifying the economy away from cotton production remains elusive. Relatively large investments in the production and distribution of electric power are planned in order to eliminate energy bottlenecks.

Ghana

Ghana has fared better than most economies during the global recession and rates of growth should accelerate in the medium term. Recent oil discoveries could provide a significant boost to the economy. The budget deficit has soared but officials hope to reduce it by 2011. Both unemployment and underemployment are in double-digits. Policy makers hope to encourage participation of private sector and infrastructure development (euromonitor international).

Manuela TVARONAVIČIENĖ. PhD, works as Associate Professor at Vilnius Gediminas Technical University, Department of Economics and Management of Enterprises. Her research interests involve tax systems reforms in transition economies, investigation of legal tools for conditioning of business environment and factors stimulating investment processes in transition economies.

Toma LANKAUSKIENĖ. Master student at Vilnius Gediminas Technical University, Department of Economics and Management of Enterprises. Research interests: foreign direct investments.