7th International Scientific Conference
"Business and Management 2012"
May 10-11, 2012, Vilnius, LITHUANIA

ISSN 2029-4441 print / ISSN 2029-929X online
ISBN 978-609-457-116-9 CD
doi:10.3846/bm.2012.067
http://www.bm.vgtu.lt

THE IMPACT OF DIRECT FOREIGN INVESTMENT ON INTERNATIONAL TRADE IN LITHUANIA

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Abstract. Direct foreign investment, regarded as one of the factors of economic development, has always been considered an important condition, encouraging productivity, international trade and economic growth. Under the conditions of globalisation, direct foreign investment is becoming one of the most important factors, determining economic integration of the country in global markets. The volume of direct foreign investment in the country reveals attractiveness of the country for international market and economic relations with other countries that determine the volume of international trade. Direct foreign investment enables reduction of the lack of capital or other resources and provides the access to advanced technologies, new market niches for a particular product and innovative work organization and management methods. Despite that, scientific literature proposes different explanations of the benefits of direct foreign investment. Possible influence and links between direct foreign investment and international trade (export and import) is still being debated.

Keywords: direct foreign investment, factors, international trade, efficiency, economic development.

Jel classification: E22, F14, F21

1. Introduction

In 2008, Swedish National Board of Trade, explaining the links between international trade and direct foreign investment, stated that global economics is becoming increasingly integrated because of international trade and direct foreign investment during the recent years of globalisation (The National Board of Trade 2008). One of the main results of the new economic environment is that companies now are much more flexible producing and providing goods and services.

Problem of the research. There is a lack of the studies to analyse how direct foreign investment influence international trade and if the increase of direct foreign investment determines the growth of export and import volume.

Object of the research. Dependence of export and import on direct foreign investment.

Goal of the research. To analyse the influence of direct foreign investment on international trade.

Objectives of the research:

– To present theoretical propositions about the links between direct foreign investment and international trade.

– To determine the influence of direct foreign investment on Lithuanian international trade (export and import).

– To reveal the impact of direct foreign investment on the main economic indicators of Lithuania.

Methodology of the research. The methodlogy of the article includes analysis of the scientific literature, systematic comparative analysis of the scientific articles, correlation and regression analysis of the statistical data.

2. The theories of international trade and direct foreign investment

Scientific studies of direct foreign investment and international trade play an important role in the modern world of globalisation with disappearing barriers for free movement of capital, increasing international co-operation and more intensive international competition. The issues of international trade and direct foreign investment have been discussed since the 18th century, when scientists noticed that international trade and direct foreign investment influence welfare of the country. This led to the appearance of the first theories of international trade and direct foreign investment (Table 1).

Table 1. Theories of international trade and direct foreign investment

Theory	Description of the theory	Authors
Theories of international trade		
Classical trade theory	Countries should direct their resources to the production of the goods and services for which they have a comparative advantage.	Ricardo 1817; Smith 1776
Factor proportion theory	A country has a comparative advantage in production of the goods, for which it has comparatively abundant resources.	Ohlin 1933
Product life cycle theory	Market is saturated with the products that can be exported; the export starts; the product becomes competitive in foreign markets; import competition increases.	Vernon 1966
Theories of direct foreign investment		
Market imperfections theory	Decision to invest in foreign countries is a strategy to use particular potential of the country without any co-operation with competitors in foreign countries.	Hymer 1970
International production theory	Disposition of the company to make investments in other countries depends on the ability of the home country to attract investment or on the resources and other advantages available in foreign countries.	Dunning 1988; Fayerweather 1982
Internalization theory	Internalization is an expansion of direct operations internationally. The reason of internalization is that the company can reduce its costs through international operations. Companies choose different foreign markets for each activity so that they could reduce their costs being closer to customers.	Buckley *et al.* 1976; Buckley 2002; Bianchi *et al.* 2006

The link between international trade and direct foreign investment is indisputable. The authors of the analysed articles agree with the statement that direct foreign investment creates a base for international trade or otherwise encourages it. After the theoretical analysis of the influence of direct foreign investment on international trade, it has been noticed that most authors (Dunning 1958; Dunning *et al.* 1985; Petri 1994; Fontagné *et al.* 1997; Cuadros *et al.* 2001; Driffield *et al.* 2007; Šečkutė *et al.* 2007) discover a direct positive effect of direct foreign investment on international trade (i.e. the increase of direct foreign investment causes the increase of international trade, which is usually determined by the fact that international companies that directly invest in foreign markets are more export-orientated).

Lithuanian investments have been analysed from different perspectives by Snieška and Šimkūnaitė (2009), Norvaišienė, Stankevičienė and Krušinskas (2008), but the influence of direct foreign investment on international trade has been analysed only by Laskienė (2010). According to the author, direct foreign investments, depending on their quality and other characteristics, have a positive link with international trade. However, the influence on direct foreign investments on the balance of international trade is not unambiguous because direct foreign investments not only enable export volume increase, but at the same time they increase flows of imports into the country. Evaluation of the links between international trade and direct foreign investment has been presented in Table 2.

In summary, it can be stated that direct foreign investments enable reduction of the lack of strategic resources and capital and also provide the fast and effective access to advanced technologies, sophisticated projects, new niches for products and innovative work organization and management methods. Despite that, scientific literature proposes different explanations of the benefits of direct foreign investment. The analysis of the scientific literature has revealed that the link between direct foreign investment and international trade is not unambiguous, and the issue of the influence of direct foreign investment on international trade still remains debatable.

Table 2. Evaluation of the links between direct foreign investment and international trade

No.	Author	Title of the article	Year	Research results	Link	Conclusion
1	Petri	The regional clustering of foreign direct investment and trade	1994	There is a strong correlation between DFI and international trade; businessmen choose DFI because due to geographical distance it is easier than in case of export.	Direct positive	International trade is encouraged by direct foreign investment.
2	Fontagné, Pajot	How FDI Affects International Trade and Competitiveness: an Empirical Assessment	1997	Direct foreign investments directly influence international trade, but subsidiaries export less and import more than parental companies; direct foreign investments increase competition among investors.	Direct positive	International trade is encouraged by direct foreign investment.
3	Kaminski	How Accession to the European Union Has Affected External Trade and Foreign Direct Investment in Central European Economies	2001	Direct foreign investments promote increase of personnel qualification and adaptation of technologies, which leads to the increase of international trade, i.e. export; the increase of international trade is encouraged because foreign companies are more export-orientated than home companies.	Indirect positive	The increase of international trade is encouraged by direct foreign investment.
4	Cuadros, Orts, Alguacil	Openness and Growth: Re-Examining Foreign Direct Investment, Trade and Output Linkages in Latin America	2001	Direct foreign investments influence the growth of export because most of them are export-orientated; this way direct foreign investment enables more efficient integration of local markets into global economics than it could be achieved using only traditional trade flows	Direct positive	Direct foreign investments are orientated towards the increase of international trade.
5	Šečkutė, Tvaronavičius	The Research of Direct Foreign Investment in the Baltic States	2007	All three Baltic States show very strong links between direct foreign investment and international trade (export). The assumption was confirmed in all cases – Lithuanian, Latvian and Estonian, so the results of the research propose that direct foreign investments in the country have positive effect on its export.	Direct positive	The increase of international trade is encouraged by direct foreign investment.
6	Laskienė	The Links between Direct Foreign Investment and International Trade in the Host Country: Lithuanian Case	2010	The link between international trade and foreign investment is direct; DFI can supplement trade with the services that are attractive for the export from the investing country; direct foreign investment attract import, usually from the investing country; foreign-owned companies can start exports to other companies located in the country of the parental company and so increase international trade.	Direct not always positive	Direct foreign investments create a base for international trade.

3. The influence of direct foreign investments on Lithuanian economic indicators

In order to establish what influence direct foreign investments have on other economic indicators, the methods of statistical, correlation, Student's *t* analysis and special software (SPSS package) have been used. Direct foreign investment was compared with the main economic indicators: GDP, GVA, exports and GW (Table 3).

Table 3. Correlation of Lithuanian direct foreign investment and other economic indicators

	Economic indicators			
	GDP	Exports	GW	GVA
DFI	0.853	0.838	0.858	0.854

Table 3 shows a strong positive link of DFI with all main economic indicators, because the correlation coefficients are very similar.

Direct foreign investment per capita was also compared with GDP per capita (Table 4).

Table 4. Correlation of direct foreign investment and GDP per capita

	GDP per capita
DFI per capita	0.863

Data in Tables 3 and 4 shows that there exists very strong correlation between GDP and direct foreign investment (DFI), so it can be assumed that direct foreign investment has influence on GDP. Student's *t* criterion has revealed that direct foreign investment is an important factor influencing country's economic indicators because the level of its importance is high. This proposes that direct foreign investment has a positive effect on GDP both total and per capita because correlation coefficients and Student's t criterions are very similar. Statistical data has also revealed that the main Lithuanian economic indicators react to the changes of the direct foreign investments with an approximate time lag of 3–6 months.

Direct foreign investments contribute to the development of global economics – they attract foreign capital to the projects which could not be funded from the local capital (Katsikeas *et al.* 1997; Dunning 1998; Ginevičius *et al.* 2005; Driffield *et al.* 2005; Driffield *et al.* 2009).

GDP is defined as market value of the goods and services created in the country within a particular period of time, and direct foreign investment directly influence creation of goods and services (Boddewyn 1994; Boddewyn *et al.* 1994; Katsikeas *et al.* 1994).

GDP growth rates in Lithuania over the analysed period have revealed economic revival (Fig 1).

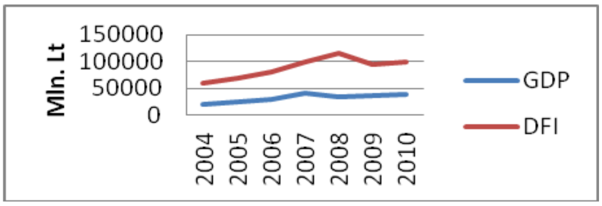

Fig.1. Dynamics of GDP and DFI

Figure 1 shows GDP growth up to the year 2008. It fell by ~17 % during the period of the financial crisis. Since 2010, it has grown ~8.22 % (it should be noted that during the period from 2004 to 2008, GDP growth was ~14.42 %). The dynamics of GDP and DFI has been similar during all the analysed period. It also speaks about a close link between DFI and GDP.

The data of GDP and DFI per capita also shows similar tendencies (Fig. 2).

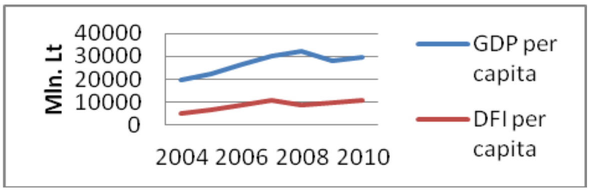

Fig.2. Dynamics of GDP and DFI per capita

GDP per capita reached 26180 Lt, and DFI per capita reached 8740 Lt (on average 0.33 ct of DFI for 1 Lt of GDP) in 2010, which also points to economic revival in Lithuania.

On balance, the research has revealed strong positive links of direct foreign investment with the main economic indicators such as GDP, Exports, GW and GVA. Tendencies of GDP and DFI dynamics are very similar which confirms the assumption that direct foreign investment can contribute to country's economic development.

4. The influence of direct foreign investments on Lithuanian export and import

In order to establish the impact of direct foreign investment on Lithuanian international trade, the methods of correlation and regression analysis have been used. The data of the direct foreign investment, export and import volumes in Lithuania during the period 2004-2010 was used for the research. Correlation analysis was used to estimate the strength of the link between the variables, and regression analysis was used to estimate the causal nature of the link. Pearson correlation coefficient was used to estimate the strength of the link.

Distribution of the direct foreign investment values was analysed on the basis of linear regression which proposes that values of a dependent variable (export and import volumes) for each fixed value of an independent variable (direct foreign investment) must be distributed according to a normal distribution. The results are presented showing their statistical reliability. The levels of reliability are as follows: if $p>0.05$ – it is statistically unreliable; if $p<0.05$ – it is statistically reliable. It has been established that the values of the dependent variable (export and import volumes) are distributed according to normal distribution because normal criterion $p < 0.05$ (p(Sig.)=0.000). It means that linear regression is reliable enough for further research.

Firstly, dependence between direct foreign investment and export has been researched. The level of importance $\alpha=0.05$. Since Pearson correlation coefficient is equal to 0.935, it can be stated that it is a strong positive correlation. The following hypotheses have been raised:

H_0: correlation coefficient of direct foreign investment and export is equal to 0.

H_1: correlation coefficient of direct foreign investment and export is not equal to 0.

The data of the correlation between direct foreign investment and export in Lithuania is presented in Table 5.

Table 5. Data of the correlation between direct foreign investment and export

		DFI	Lithuanian export
DFI	Pearson Correlation	1	0.935
	Sig. (2-tailed)		0.000
	N	10	10
Lithuanian export	Pearson Correlation	0.935	1
	Sig. (2-tailed)	0.000	
	N	10	10

In the analysed case, p-level=0.000 is lower than the chosen level of importance, so H_0 has been rejected, and H_1 has been confirmed (H_1 : correlation coefficient of direct foreign investment and export is not equal to 0).

On balance, changes of DFI have a significant impact on export changes.

Researching the interdependence between direct foreign investment and imports, the chosen level of importance $\alpha=0.05$. Since Pearson correlation coefficient is equal to 0.904, it can be stated that it is a strong positive correlation. Hypotheses:

H_0: correlation coefficient of direct foreign investment and import is equal to 0.

H_1: correlation coefficient of direct foreign investment and import is not equal to 0.

The data of the correlation between direct foreign investment and import in Lithuania is presented in Table 6.

Table 6. Data of the correlation between direct foreign investment and import

		DFI	Lithuanian import
DFI	Pearson Correlation	1	0.904
	Sig. (2-tailed)		0.000
	N	10	10
Lithuanian import	Pearson Correlation	0.904	1
	Sig. (2-tailed)	0.000	
	N	10	10

In the analysed case, p-level=0.000 is lower than the chosen level of importance, so H_0 has been rejected, and H_1 has been confirmed (H_1: correlation coefficient of direct foreign investment and import is not equal to 0).

On balance, changes of direct foreign investment have a significant impact on import changes.

5. The results of the empirical research and their analysis

Summarizing the results of the empirical research, it can be stated that there is a direct link between direct foreign investment and international trade, i.e. the increase of direct foreign investment causes the increase of both export and import volumes (Table 7).

Table 7. Data of correlation and determination between direct foreign investment, export and import

Indicators	Correlation coefficient	Determination coefficient
The influence of DFI on export	0.935	0.874
The influence of DFI on import	0.904	0.817

Determination coefficient shows that changes of export volumes can be 87.4 % explained by the changes of direct foreign investment, and only 12.6 % is the impact of other unconsidered variables. For import, changes of DFI determine the changes of import volumes by 81.7 %. Dependence between direct foreign investment and export as well as foreign investment and import is shown in Figures 3 and 4.

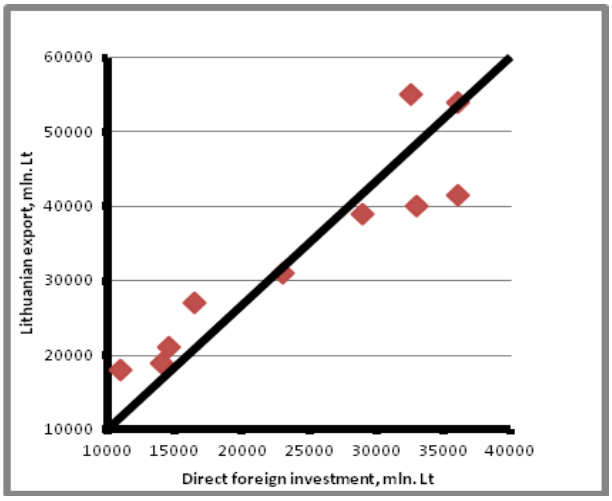

Fig.3. Correlation between DFI and export

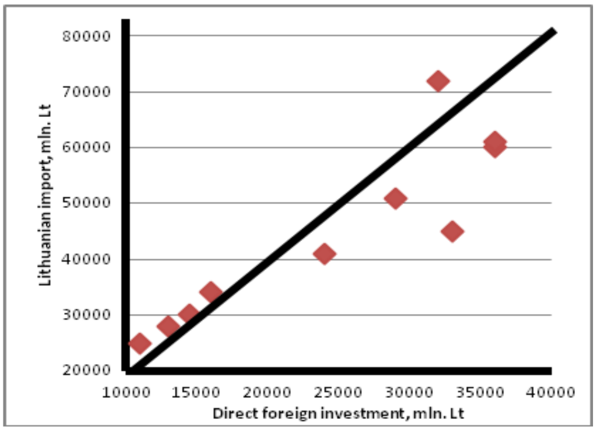

Fig.4. Correlation between DFI and import

The impact of direct foreign investment on the host country's international trade balance is not unambiguous. Considering the absolute terms of exports and imports, it can be seen that direct foreign investments increase the volumes of imports more than the volumes of exports in absolute terms. So it proposes that direct foreign investments, having a bigger impact on import, slightly reduce the volume of Lithuanian GDP through net exports.

6. Conclusions

The analysis of the scientific literature has revealed that the increase of direct foreign investment leads to the increase of international trade. This tendency is mostly determined by the fact that international companies that directly invest in foreign markets are more export-orientated. Comparative analysis of the scientific articles has revealed that the increase or decrease of direct foreign investment forms the basis for the changes in international trade.

The analysis of the direct foreign investments in Lithuania has shown that they are constantly growing, considering both the flows and the cumulative amounts. The biggest direct foreign investments come from the EU countries. Low diversification makes it possible to lose big amounts of DFI during the periods of decline in the EU. That is why is necessary to increase the volumes of DFI from other contingents. Considering activity spheres, the big part of the DFI is channelled to the manufacturing sector.

Since direct foreign investments have strong correlation with exports and imports, it means that the increase of DFI determines the increase of international trade.

Correlation analysis has revealed that direct foreign investments have strong links with the main economic indicators of Lithuania (GDP, GVA, Exports and GW), so the level of the influence is high. It has also been noticed that the main economic indicators of Lithuania react to the changes of the direct foreign investments with an approximate time lag of 3–6 months.

References

Bianchi, P.; Labory, S. 2006. *International Handbook on Industrial Policy*. Edward Elgar, Cheltenham, United Kingdom.

Buckley, P. J. 2002. Is the International Business Agenda Running out of Steam? *Journal of International Business Studies* 33(2): 365–373. http://dx.doi.org/10.1057/palgrave.jibs.8491021

Boddewyn, J. J. 1994. Political resources and markets in international business: beyond porter's generic strategies, *Research in Global Strategic Management* 4: 83–99. http://dx.doi.org/10.1016/1064-4857(93)04007-X

Boddewyn, J. J.; Brewer, L. T. 1994. International-business political behaviour: new theoretical directions, *Academy of Management Review* 19: 119–143.

Buckley, P. J.; Casson, M. C. 1976. *The Future of Multinational Enterprise*. Macmillan, London, United Kingdom.

Cuadros, A.; Orts, V.; Alguacil, M. T. 2001. *Openness and Growth: Re-Examining FDI, Trade and Output Linkages in Latin America*. University of Nottingham, United Kingdom. Available from Internet: http://www.tandfonline.com/doi/abs/10.1080/00220380410001673238

Driffield, N. L.; Love, J. H. 2005. Intra–industry FDI, uneven development and globalization, *Contributions to Political Economy* 24(1): 55–78. http://dx.doi.org/10.1093/cpe/bzi003

Driffield, N. L.; Love, J. H. 2007. Linking FDI motivation and host economy productivity effects: conceptual and empirical analysis, *Journal of International Business Studies* 38: 460–473. http://dx.doi.org/10.1057/palgrave.jibs.8400268

Driffield, N. L.; Love, J. H. 2009. Productivity and labour demand effects on inward and outward FDI on UK industry, *The Manchester School* 77(2): 171–203. http://dx.doi.org/10.1111/j.1467-9957.2008.02093.x

Dunning, J. H. 1958. *American Investment in British Manufacturing Industry*. Allen and Unwin, London, United Kingdom.

Dunning, J. H. 1988. The eclectic paradigm of international production: a restatement and some possible extensions, *Journal of International Business Studies* 19: 1–31. http://dx.doi.org/10.1057/palgrave.jibs.8490372

Dunning, J. H. 1998. Location and the multinational enterprise: A neglected factor? *Journal of International Business Studies* 29(1): 45–66. http://dx.doi.org/10.1057/jibs.2008.74

Dunning, J. H.; Rugman, A. 1985. The influence of Hymer's dissertation of the theory of foreign direct investment, *American Economic Review* 75: 228–239.

Fayerweather, J. 1982. *International Business Strategy and Administration*. Ballinger, Cambridge, United Kingdom.

Fontagné, L.; Pajot, M. 1997. *How FDI Affects International Trade and Competitiveness: an Empirical Assessment*. CEPII. Available from Internet: http://www.cepii.fr/anglaisgraph/workpap/pdf/1997/wp97-17.pdf

Ginevičius, R.; Rakauskienė, G. 2005. *Eksporto ir investicijų plėtra Lietuvoje*. Technika, Vilnius, Lithuania.

Hymer, S. H. 1970. The Efficiency (Contradictions) of Multinational Corporations, *American Economic Review Papers and Proceedings* 60: 441–448.

Katsikeas, C. S.; Morgan, R. E. 1994. Differences in perceptions of exporting problems based on firm size and export market experience, *European Journal of Marketing* 28*:* 17–35. http://dx.doi.org/10.1108/03090569410062014

Katsikeas, C. S.; Morgan, R. E. 1997. *Theories of international trade, FDI and firm internationalization*. MCB University. Available from Internet: http://www.st-andrews.ac.uk/business/distance/Economics/Reading/Critique_trade_theories.pdf

Kaminski, B**.** 2001. *How Accession to the EU Has Affected External Trade and FDI in Central European Economies*. University of Maryland, USA. Available from Internet: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=632647

Laskienė, D. 2010. *Ryšys tarp tiesioginių užsienio investicijų ir investicijas priimančios šalies tarptautinės prekybos: Lietuvos atvejis*. Kaunas University of Technology. Available from Internet: http://www.ktu.lt/lt/mokslas/zurnalai/ekovad/15/1822-6515-2010-140.pdf

Norvaišienė, R.; Stankevičienė, J.; Krušinskas, R. 2008. The Impact of Loan Capital of the Baltic Listed Companies' Investment and growth. *Inžinerinė Ekonomika* [Engineering Economics] 2(57): 40–47.

Ohlin, B. 1933. *Interregional and International Trade*. Harvard University Press, Cambridge, United Kingdom.

Petri, P. A. 1994. *The regional clustering of FDI and trade*. Brandeis University. Available from Internet: http://www.unctad.org/en/docs/iteiitv3n3a2_en.pdf

Ricardo, D. 1817. *On The Principles of Political Economy and Taxation*. John Murray, London, United Kingdom.

Smith, A. 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations*. University of Chicago Press, Chicago, USA.

Snieška, V.; Šimkunaitė, I. 2009. Socio–Economic Impact of Infrastructure Investment, *Inžinerinė Ekonomika* [Engineering Economics] 3: 16–25.

The National Board of Trade. 2008. *The relationship between international trade and FDI for Swedish multinational enterprises*. Kommerskollegium. Available from Internet: http://www.kommers.se/upload/Analysarkiv/In%20English/New%20reports/Report%20The%20relationship%20between%20international%20trade%20and%20foreign%20direct%20investments%20for%20Swedish%20multinational%20enterprises.pdf

Šečkutė, L.; Tvaronavičius, V. 2007. *Tiesioginių užsienio investicijų Baltijos šalyse tyrimas*. Available from Internet: http://www.btpt.vgtu.lt/lt/3/NR/PUB/11224

Vernon, R. 1966. International Investment and International Trade in the Product Cycle, *Quarterly Journal of Economics* 80(2): 190–207. http://dx.doi.org/10.2307/1880689