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THE CHANGES IN THE POSITION OF POLAND ON ITS INVESTMENT DEVELOPMENT PATH: THE RESULTS OF THE EMPIRICAL ANALYSIS

Summary

The aim of this paper was to indicate on which stage of an economic development path is probably Poland. The subject of this paper was one of the economic development paths, named usually the investment development path, which model has been shaped mainly by J. H. Dunning and R. Narula. This model is also similar to the model of the economic development path proposed by M. Porter. Therefore, were discussed the changes in the main elements of this model, which took place in the Polish economy in 1995-2012. Those elements were the trade structure diveded by the degree of technological sophistication, direct investment and indicators of economic performance. In order to verify if in the case of Poland have been occurred economic dependences assumed by the representatives of this model also was carried out correlation and regression analysis. The results of the study suggest that Poland shifted to the third stage of analyzed economic development path where more emphasis is placed on innovations as the country moves toward producing more technology intensive products.

Key words: economic development path, Poland

1. Introduction – the theoretical contributions

As presents the United Nations Development Group structural transformation for most developing countries means a transition from production and export of mineral and agricultural commodities toward more diversified and productive activities with higher value added. In emerging economies, to which Poland is still classified for instance, emphasis might be placed on increasing domestic demand, strengthening social protection, addressing inequalities and promoting innovations. Most low income countries may need to continue relying on export-led growth, as they simply do not have sufficient domestic demand, which also unfortunately occurs in Poland, inter alia, due to later underlined poverty among working. As countries attain higher development levels, the United Nations Development Group stresses the need of another kind of structural transformation – shifting toward more energy-efficient and less carbon-emitting sectors [United Nations Development Group, 2013].

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The subject of this paper is one of the economic development paths, named the Investment Development Path, which model has been shaped systematically by different authors, e.g. T. Ozawa, J. H. Dunning, R. Narula and M. Porter. Porter in his model of an economic development path, which based on the theory of competitive advantage, distinguished four basic stages: manufacturing-led, investment-led, innovation-led and prosperity. Ozawa, Dunning and Narula in their works introduced to the M. Porter's framework the additional factor – inward and outward direct investment [Porter, 1985; Porter, 1990a; Porter, 1990b, pp. 73-93; Porter, 2000, pp. 15-35].

In this theoretical approach the inward and outward investment position of a country is tied with its economic development. At the beginning a country is a net inward receiver of foreign direct investment (FDI) and with an increasing economic development a country becomes a net outward investor. As a country develops, structural changes occur in the conditions faced by domestic and foreign companies, affecting direct investment inflows and outflows, which, in turn, change the country´s economic structure. Therefore, in this approach are analyzed the dynamic relationships among levels of economic development, competitiveness and structural changes and the influence on these of inward and outward investment and foreign trade, with both export and direct investment of created asset-intensive products increasing their significance relative to national incomes of countries. Dunning and Narula point out, like in the endogenous growth theory, that FDI activity per se plays no role in development. The most significant contribution of multinational enterprises (MNEs) to the growth of productive capacity is indirect: where inward MNEs activity results in positive externalities, and when domestic firms have the capacity to internalize these externalities usefully, and if the non-firm sector supports domestic capacity building, there will be industrial development [Narula, Dunning, 2010, pp. 263-287].

According to J. Dunning, countries follow a path that consists of five stages, which are briefly described below. At stage 1 a less developed economy neither attracts, nor generates FDI. A country has the majority of its advantages in natural resources and its export sector consists mostly of labour-intensive manufacturing, such as textiles and agricultural and primary goods. Internal institutions and infrastructure are generally simple and underdeveloped.

At stage 2 industrializing developing economies attract FDI through their improved location advantages and perhaps generate minimum domestic direct investment (DDI), leading to a negative net investment position. A country still draws the majority of its advantages from natural resources, but starts to shift toward capital-intensive sectors and slightly more sophisticated and knowledge-intensive goods such as electrical products, clothing, or processed foods. Greater attention is paid to the infrastructure as well as the educational system.

At stage 3 there occurs a shift toward an industrialized economy. Governments modify policies in attempts to make their markets more competitive and open to the rest of the world. Governments also spend more on tertiary education institutions and still on infrastructure. More emphasis is placed on innovations as opposed to investment-driven growth as the country moves toward producing more sophisticated products that require relatively skilled labour. With the improvement of the country's

technological capabilities and the expansion of enterprises to foreign markets, the country attracts significant FDI and generates DDI based also on its innovation activity. However, the net investment position remains negative.

At stage 4, local advantages of companies are more and more dependent on their endogenous assets as they begin to become more competitive with firms from other developed nations. A country should spend heavily on R&D as they seek to develop new products and innovative production methods. The role of government becomes more of one helping companies to cope with market imperfections as opposed to enhancing their markets. The net investment position becomes positive.

The last 5. stage, known in the literature as the knowledge-based economy, is characterized by comparative advantage in technology-intensive products. Additionally, research shows that certain emerging economies have leapfrogged along the development path, omitting the subsequent stages, as in the linear stages theory of economic development advanced by A. Gerschenkron [Ozawa, 1992, pp. 27-54; Narula, Dunning, 2000, pp. 141-167; Dunning, Kim, Lin, 2001, pp. 145-154; Majewska, Grala, 2002, pp. 69-85; Majewska, Grala, 2004, pp. 243-258; Fonseca, 2008, pp. 1-24; Ferencikova, Ferencikova, 2012, pp. 85-111; Stoian, 2013, pp. 615-637].

The main aim of this paper is to indicate on which stage of analyzed economic development path is probably Poland. Therefore, the changes will be presented in main elements of this model, which took place in the Polish economy. Those elements are the trade structure divided by the degree of technological sophistication, direct investment and indicators of economic performance. In order to verify if in the case of Poland have been occurred economic dependences assumed by the representatives of this model also will be carried out correlation and regression analysis.

The period between 1995 and 2012 was under our consideration. The data came mainly from the statistics of the United Nations Conference on Trade and Development (UNCTAD), as the organization gives access to the broad statistic of international trade structure, foreign and domestic direct investment as well as national accounts. Only data on R&D expenditures were taken from the statistics of the United Nations Educational, Scientific and Cultural Organization (UNESCO). All included in correlation and regression analysis variables were transformed into natural logarithms, except for percentages of particular groups of export, because in this case the use of logarithms is redundant. The correlation and regression analysis also was accounted for the time delays.

2. The analyzed economic development path: evidence from Poland

In view of the nature of the development path of a country presented in our paper as a segmentation criterion of trade structure was chosen the degree of technological sophistication. However, due to the marginal share of exports and imports of coin, which reached in almost all years the value 0, this group will be omitted in our analysis. Therefore, using the UNCTAD data in the study taken into account the following groups of products:

1. Exports and imports of primary commodities, precious stones and non-monetary gold (EXPPC, IMPPC).
2. Exports and imports of manufactured goods by degree of manufacturing:
   - Labour-intensive and resource-intensive manufactures (EXPLRM, IMPLRM).
   - Low-skill and technology-intensive manufactures (EXPLSM, IMPLSM).
   - Medium-skill and technology-intensive manufactures (EXPMSM, IMPMSM).
   - High-skill and technology-intensive manufactures (EXPHSM, IMPHSM).

In the literature it is widely assumed that with increasing technological sophistication of economy production, thus its exports, should grow productivity and hence welfare. For this reason one of the main conditions for passing a country on the analyzed path of economic development is to increase the share of industries with higher added value, and thus technological sophistication. Table 1 illustrates the structural changes in terms of technological sophistication in the Polish industry in 1995-2012 using the proxy of import and export structures. In 2012 which moved from third place in 1995. It exhibited an upward trend in 1996-2012 and after dropped by 4.4%. This was the biggest increase in the share of Polish exports – that is 15.5%. Compared with 1995 labour-intensive and resource-intensive exports moved from second to fourth place in terms of percentage of total exports and this was the biggest drop (12,85%) in 1995-2012. After 1999 one can see a downward trade. In 1995 exports of primary commodities, precious stones and non-monetary gold had the biggest share of Polish exports. In 2012 it dropped one position. Low-skill and technology-intensive exports gradually shrank with slight fluctuations. At the beginning of the period the share of high-skill and technology-intensive exports was the smallest and reached third place in 2012, with the increase by 7.34% in 1995-2012.

Poland's import structure was characterized by much lower fluctuation than exports regarding changes in terms of percentage. During the period considered, the share of medium-skill and high-skill technology-intensive imports maintained above 50%, and the share of labour-intensive and resource-intensive imports fell to the highest extent by 5%. This may indicate that there are still relatively large development needs of Polish industry and it takes place the implementation of technological progress by learning from the rest of the world. In the present competitive world technological progress does not depend only on own stock of the knowledge, as results of R&D activities, but also on absorption abilities of foreign knowledge. New theories of economic growth and international trade underline that the available stock of knowledge for the country is greater from produced, so Poland has the chance to accelerate its economic development in spite of too small investments in R&D activities. Consequently, this should lead to positive structural changes in production factor endowments, which indeed is reflected in the above-described changes in Polish export structure [Majewska-Bator, Jantoń-Drozdowska, 2007, pp. 115-127].

TABLE 1.

Changes in trade structures of Poland in %, 1995-2012

Year	Primary commodities, precious stones, non-monetary gold		Labour and resource-intensive		Low-skill and technology-intensive		Medium-skill and technology-intensive		High-skill and technology-intensive	
	EXP	IMP	EXP	IMP	EXP	IMP	EXP	IMP	EXP	IMP
1995	28.74	25.31	27.20	15.95	16.12	7.42	16.80	26.38	11.13	24.94
1996	25.78	24.77	27.73	14.88	15.72	7.37	18.78	28.75	11.99	24.23
1997	27.12	22.34	27.19	14.41	12.40	7.39	19.97	30.94	13.31	24.93
1998	22.77	18.88	26.95	14.83	15.22	8.11	22.44	32.90	12.62	25.28
1999	21.30	18.65	27.56	14.48	14.32	7.91	24.81	32.02	11.99	26.93
2000	19.87	21.97	24.73	13.22	13.56	8.14	29.10	28.80	12.75	27.88
2001	19.22	21.27	24.07	13.73	15.25	9.39	29.05	28.49	12.43	27.13
2002	18.05	19.88	23.39	13.78	15.34	10.68	30.45	29.15	12.78	26.51
2003	17.61	19.35	22.74	13.23	14.69	11.59	32.08	30.52	12.88	25.32
2004	19.28	20.05	19.73	12.17	14.53	12.59	34.16	30.30	12.30	24.89
2005	20.18	22.78	18.25	11.31	13.24	11.64	35.39	28.87	12.93	25.40
2006	20.36	22.60	16.51	10.72	12.73	11.80	36.15	29.45	14.24	25.43
2007	19.04	22.43	16.01	10.38	13.24	12.51	36.72	29.87	14.98	24.80
2008	18.99	23.83	14.83	9.83	13.33	11.81	35.93	29.15	16.91	25.37
2009	19.12	22.53	15.22	10.92	10.89	10.28	35.27	28.02	19.49	28.24
2010	20.86	24.17	14.69	10.24	10.33	10.64	33.70	26.41	20.42	28.54
2011	22.04	26.85	14.57	10.06	11.75	11.06	33.57	26.26	18.07	25.77
2012	23.47	28.16	14.40	9.59	11.33	10.88	32.32	25.22	18.47	26.15

Source: own calculations, based on [*UNCTADstat*, *International Trade in goods and services, Trade Structure by partner, product or service category*, http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx., access data: 16.05.2014].

The changes in the nature of Poland's economic development path also can show merchandise trade specialization index calculated by the UNCTAD secretariat. Thus, table 2 presents the values of merchandise trade specialization index (TSI) which is used to measure the degree of specialization in the production/consumption of goods through trade. It compares the net flow of goods (exports minus imports) to the total flow of goods (exports plus imports). This is also known as normalized trade balance by product. The formula of this index is as follows: $TSI_{ji} = X_{ij} - M_{ij} / X_{ij} + M_{ij}$, where *i* is product or product groups, *j* economy, X_{ij} economy's *j* exports of goods *i*, M_{ij} economy's *j* imports of goods *i*.

The range of values is between -1 and 1, the positive value indicates that an economy has net exports (hence it specializes on the production of that specific product) and negative values means that an economy imports more than it exports (net consumption). This index removes bias of high exports values due to significant re-exports activities, thus it is more suitable to identify real producers than traders [*UNCTADstat*, http://unctadstat.unctad.org/TableViewer/summary.aspx., date of access: 16.05.2014].

TABLE 2.

Merchandise trade specialization indexes for Poland, 1995-2012

Year	Primary commodities, precious stones, non-monetary gold manufactures	Labour and resource-intensive manufactures	Low-skill and technology-intensive manufactures	Medium-skill and technology-intensive manufactures	High-skill and technology-intensive Manufactures
1995	-0.054	0.148	0.264	-0.331	-0.479
1996	-0.186	0.103	0.169	-0.398	-0.508
1997	-0.150	0.070	0.011	-0.435	-0.509
1998	-0.156	0.048	0.064	-0.416	-0.536
1999	-0.192	0.061	0.036	-0.370	-0.582
2000	-0.264	0.093	0.035	-0.212	-0.545
2001	-0.214	0.113	0.075	-0.156	-0.506
2002	-0.195	0.115	0.032	-0.126	-0.473
2003	-0.166	0.150	-0.002	-0.095	-0.429
2004	-0.108	0.151	-0.017	-0.029	-0.415
2005	-0.123	0.174	0.001	0.039	-0.380
2006	-0.107	0.159	-0.017	0.047	-0.332
2007	-0.152	0.145	-0.043	0.032	-0.312
2008	-0.198	0.117	-0.027	0.017	-0.283
2009	-0.115	0.132	-0.004	0.082	-0.215
2010	-0.114	0.139	-0.055	0.081	-0.205
2011	-0.139	0.143	-0.011	0.081	-0.215
2012	-0.108	0.184	0.003	0.106	-0.189

Source: [*UNCTADstat*, *International Trade in goods and services, Trade indicators*: http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx., date of access: 16.05.2014].

The values of merchandise trade specialization indexes show that the large increase in medium-skill and technology-intensive exports led to the emergence of specialization in this type of products in 2005. Additionally, the negative values of trade specialization indexes for high-skill and technology-intensive manufactures gradually decreased compared with 1995. Despite the above described positive changes in the structure of Polish foreign trade, the highest degree of specialization remains in labour-intensive and resource-intensive manufactures. But this does not imply that in comparison to other economies Poland is competitive in this regard, since its cost advantage is gradually decreasing when compared to countries with more resources of cheap labour and less developed. Maintaining by force the cost advantage by companies in Poland and not to make the reallocation of resources towards innovative activity and limit investment in human-capital formation, is therefore a bad strategy. Moreover, from the perspective of a long period it will have a strong regressive impact on national income, which is already observable.

This problem is stressed, for example, by specialists working for the Organisation for Economic Co-operation and Development (OECD) in report titled *OECD Economic Surveys: Poland 2014*. According to this report labour-cost pressures have been moderate, with real wages having risen less than labour productivity by a cumulated 20% since 2002.

Since 2002, wage increases have not matched the pace of labour productivity gains in any year except 2008, thereby improving cost competitiveness. Thus, the labour share of national income has fallen steadily, leading to one of the lowest levels in the OECD. This situation contributes to a further increase of working-poor in Poland, resulting in maintaining income gap between Poland and the rest of the world [OECD, 2014].

In order to see how different groups of trade distinguished by their technological content, impact on the productivity growth of Polish economy, passing Poland closer or away from the next stage of economic development, the analysis with Pearson linear correlation was performed (Table 3.). Therefore, the study covered the following indicators of Poland's economic performance: export *per capita,* which was calculated by divided Poland's export by its total population (EXP*pc*), GDP *per capita* (GDP*pc*), nominal gross national income *per capita* (GNI*pc*), gross domestic expenditure on R&D in purchasing power parity *per capita* (GERD*pc*), and value added *per capita* of total economic activity (TVE*pc*).

TABLE 3.

Correlation coefficients for relationship between groups of Polish exports in % and indicators of Poland's economic performance in USD in current prices *per capita*, 1995-2012

	EXPPC $_{t0}$	**EXPLRM$_{t0}$**	**EXPLSM$_{t0}$**	**EXPMSM $_{t0}$**	**EXPHSM$_{t0}$**
EXP*pc*$_{t0}$	-0.431	-0.993*	-0.688*	0.867*	0.795*
EXP*pc*$_{t+2}$	-0.733*	-0.969*	-0.584*	0.955*	0.688*
	EXPPC $_{t0}$	**EXPLRM$_{t0}$**	**EXPLSM$_{t0}$**	**EXPMSM $_{t0}$**	**EXPHSM$_{t0}$**
GDP*pc*$_{t0}$	-0.378	-0.978*	-0.703*	0.815*	0.837*
GDP*pc*$_{t+2}$	-0.655*	-0.978*	-0.637*	0.925*	0.715*
	EXPPC $_{t0}$	**EXPLRM$_{t0}$**	**EXPLSM$_{t0}$**	**EXPMSM $_{t0}$**	**EXPHSM$_{t0}$**
GNI*pc*$_{t0}$	-0.381	-0.977*	-0.700*	0.815*	0.837*
GNI*pc*$_{t+2}$	-0.654*	-0.977*	-0.641*	0.925*	0.716*
	EXPPC $_{t0}$	**EXPLRM$_{t0}$**	**EXPLSM$_{t0}$**	**EXPMSM $_{t0}$**	**EXPHSM$_{t0}$**
GERD*pc*$_{t0}$	-0.267	-0.807*	-0.807*	0.664*	0.928*
GERD*pc*$_{t+2}$	-0.505	-0.934*	-0.745*	0.781*	0.912*
	EXPPC $_{t0}$	**EXPLRM$_{t0}$**	**EXPLSM$_{t0}$**	**EXPMSM $_{t0}$**	**EXPHSM$_{t0}$**
TVE*pc*$_{t0}$	-0.382	-0.979*	-0.705*	0.817*	0.840*
TVE*pc*$_{t+2}$	-0.658*	-0.978*	-0.636*	0.926*	0.717*

Note: *statistically significant coefficient at the level 0.05.

Source: own calculations, based on [*UNCTADstat*, *International Trade in goods and services, National accounts, Population and labour force*, http://unctadstat.unctad.org/ReportFolders/report Folders.aspx; http://www.uis.unesco.org/ScienceTechnology/Pages/research-and-development-statistics.aspx., date of access: 16.05.2014].

According to the earlier presented assumptions of the considered country's economic development path, also in the case of Poland in the relevant period occurred positive and statistically significant correlation of medium-skill and high skills technology-intensive exports with each indicator of economic performance. In contrast, labour-intensive

and resource-intensive exports had the strongest negative and statistically significant correlation with each indicator of economic performance. There was also a statistically significant and negative relationship between all indicators of economic performance and low-skill and technology-intensive exports. All these relationships maintained statistically significant over time.

Another prerequisite for the achievement by a developing country the next stage of economic development is not so much the scale of inward direct investment but its positive influence on structural changes leading to a reallocation of production factors towards the sectors with higher added value that depends too on stressed above knowledge absorptive ability. In the analyzed model of economic development the authors also assume that the scale of domestic direct investment is positively correlated with an increase in technological progress of a given country and in cumulated experience of enterprises, which expand to foreign markets through exports [Drozdowska-Janton, Majewska, 2013, pp. 281-292].

Consequently, it was decided to perform Pearson's linear correlation to verify these assumptions for Poland (table 4). There was also carried out a linear regression analysis to check if it is a two-way dependence, and in which direction is stronger (Tables 5. and 6.). The country's net outward investment position is usually defined as the difference between outward direct investment stock (STDDI) and inward direct investment stock (STFDI) and therefore we have chosen these variables in our study.

TABLE 4.

Correlation coefficients for relationship between foreign direct investment stocks *pc* ($STFDI_{pc}$) and domestic direct investment stocks *pc* ($STDDI_{pc}$) in USD and groups of Polish exports in %, current prices, 1993-2012

1995-2012	**EXPPC** $_{t0}$	**EXPLRM** $_{t0}$	**EXPLSM** $_{t0}$	**EXPMSM** $_{t0}$	**EXPHSM** $_{t0}$
$STFDI_{pc\ t0}$	-0.612*	-0.964*	-0.739*	0.930*	0.796*
$STDDI_{pc\ t0}$	-0.348	-0.974*	-0.807*	0.785*	0.893*
1995-2012	**EXPPC** $_{t0}$	**EXPLRM** $_{t0}$	**EXPLSM** $_{t0}$	**EXPMSM** $_{t0}$	**EXPHSM** $_{t0}$
$STFDI_{pc\ t+2}$	-0.774*	-0.949*	-0.645*	0.971*	0.695*
$STDDI_{pc\ t+2}$	-0.605*	-0.988*	-0.696*	0.898*	0.773*
1993-2012	**EXPPC** $_{t+2}$	**EXPLRM** $_{t+2}$	**EXPLSM** $_{t+2}$	**EXPMSM** $_{t+2}$	**EXPHSM** $_{t+2}$
$STFDI_{pc\ t0}$	-0.631*	-0.939*	-0.761*	0.920*	0.807*
$STFDI_{pc\ t0}$	-0.354	-0.930*	-0.841*	0.739*	0.942*

Note: *statistically significant coefficient at the level 0.05.

Source: own calculations.

The result of the correlation analysis is a statistically significant relationship of STDDI *pc* and STFDI *pc* with all distinguished export groups except primary commodities, precious stones and non-monetary gold. The correlative relationship between STDDI *pc* and STFDI *pc* and labour-intensive and resource-intensive exports and low-skill and technology-intensive exports is negative. Thus, one can make the assumption, for example, as the volume of outward and inward direct investment grew, the share of these export groups decreased. In the case of medium-skill and high skills technology-intensive

exports the correlative relationship is positive. If the STDDI *pc* and STFDI *pc* increased, so did the shares of these export groups became bigger in the relevant period and vice versa. The strongest correlation occurred for labour-intensive and resource-intensive manufactures.

TABLE 5.

Results of linear regression analysis for relationship between STFDI$_{pc}$ in USD and groups of Polish exports in %, current prices, 1995-2012

Dependent variables	*Regression coefficient*	*Constant*	R^2	*p-value*
	Independent variables			
	EXPPC $_{t0}$			
STFDI$_{pc\ t0}$	-0.212*	11.904*	0.374	0.007
	STFDI$_{pc\ t0}$			
EXPPC $_{t0}$	-1.766*	34.361*		
	EXPLRM $_{t0}$			
STFDI$_{pc\ t0}$	-0.198*	11.511*	0.930	0.000
	STFDI$_{pc\ t0}$			
EXPLRM $_{t0}$	-4.705*	55.609*		
	EXPLSM $_{t0}$			
STFDI$_{pc\ t0}$	-0.467*	13.715*	0.547	0.000
	STFDI$_{pc\ t0}$			
EXPLSM $_{t0}$	-1.171*	22.199*		
	EXPMSM $_{t0}$			
STFDI$_{pc\ t0}$	0.157*	2.708*	0.866	0.000
	STFDI$_{pc\ t0}$			
EXPMSM $_{t0}$	5.521*	-10.948*		
	EXPHSM $_{t0}$			
STFDI$_{pc\ t0}$	0.299*	3.065*	0.634	0.000
	STFDI$_{pc}$			
EXPHSM $_{t0}$	2.118*	-1.210		
	EXPPC $_{t0}$			
STFDI$_{pc\ t+2}$	-0.213*	12.113*	0.600	0.000
	STFDI$_{pc\ t0}$			
EXPPC $_{t+2}$	-1.457*	31.387*	0.398	0.005
	EXPLRM $_{t0}$			
STFDI$_{pc\ t+2}$	-0.169*	11.270*	0.901	0.000
	STFDI$_{pc\ t0}$			
EXPLRM $_{t+2}$	-3.667*	46.203*	0.882	0.000
	EXPLSM $_{t0}$			
STFDI$_{pc\ t+2}$	-0.351*	12.463*	0.416	0.007
	STFDI$_{pc\ t0}$			
EXPLSM $_{t+2}$	-0.964*	20.212*	0.579	0.000
	EXPMSM $_{t0}$			
STFDI$_{pc\ t+2}$	0.130*	3.806*	0.942	0.000
	STFDI$_{pc\ t0}$			
EXPMSM $_{t+2}$	4.369*	-0.363	0.846	0.000
	EXPHSM $_{t0}$			
STFDI$_{pc\ t+2}$	0.232*	4.379*	0.483	0.003
	STFDI$_{pc\ t0}$			
EXPHSM $_{t+2}$	1.717*	2.567	0.651	0.000

*statistically significant coefficient and constant at the level 0.05.

Source: own calculations.

One can also to note that statistically significant relationship between the export groups and stocks per capita of outward and inward direct investment is maintained over time and is two-way directional. The bidirectional relationship between the observed variables has been also confirmed by statistical significant regression coefficients calculated for the models where the independent variable in year t_0, is the cause of the emergence of the phenomenon being explained in year t_{+2}. Regression models of the dependence of the export groups on STFDI *pc* and STDDI *pc* as well as regression models of the dependence of the STFDI *pc* and STDDI *pc* on export groups show, inter alia, that according to the theory the scale of domestic direct investment is related to technological progress taking place in the Polish economy, and that FDI stimulate positive changes in Poland's export structure. Additionally, the impact of FDI on the changes in export structure is stronger than the effect of changes in export structure on FDI. The same situation occurs in the case of outward direct investment.

TABLE 6.

Results of linear regression analysis for relationship between STDDI$_{pc}$ in USD and groups of Polish exports in %, current prices, 1995-2012

Dependent variables	*Regression coefficient*	*Constant*	*R^2*	*p-value*
	Independent variables			
	EXPLRM $_{t0}$			
STDDI$_{pc\ t0}$	-0.311*	11.265*	0.949	0.000
	STDDI$_{pc\ t0}$			
EXPLRM $_{t0}$	-3.055*	35.470*		
	EXPLSM $_{t0}$			
STDDI$_{pc\ t0}$	-0.793*	15.528*	0.651	0.000
	STDDI$_{pc\ t0}$			
EXPLSM $_{t0}$	-0.821*	17.478*		
	EXPMSM $_{t0}$			
STDDI$_{pc\ t0}$	0.206*	-1.357	0.616	0.000
	STDDI$_{pc\ t0}$			
EXPMSM $_{t0}$	2.993*	15.516*		
	EXPHSM $_{t0}$			
STDDI$_{pc\ t0}$	0.522*	-2.758*	0.797	0.000
	STDDI$_{pc}$			
EXPHSM $_{t0}$	1.527*	7.133*		
	EXPPC $_{t0}$			
STDDI$_{pc\ t+2}$	-0.300*	11.372*	0.366	0.013
	EXPLRM $_{t0}$			
STDDI$_{pc\ t+2}$	-0.317*	11.895*	0.976	0.000
	STDDI$_{pc\ t0}$			
EXPLRM $_{t+2}$	-3.011*	33.530*	0.866	0.000
	EXPLSM $_{t0}$			
STDDI$_{pc\ t+2}$	-0.684*	14.473*	0.484	0.003
	STDDI$_{pc\ t0}$			
EXPLSM $_{t+2}$	-0.884*	17.268*	0.707	0.000
	EXPMSM $_{t0}$			
STDDI$_{pc\ t+2}$	0.217*	-1.350	0.807	0.000
	STDDI$_{pc\ t0}$			
EXPMSM $_{t+2}$	2.911*	17.586*	0.546	0.000
	EXPHSM $_{t0}$			
STDDI$_{pc\ t+2}$	0.467*	-1.490	0.598	0.000
	STDDI$_{pc\ t0}$			
EXPHSM $_{t+2}$	1.662*	7.443*	0.886	0.000

*statistically significant coefficient and constant at the level 0.05.

Source: own calculations.

3. Conclusions

The results of previous study carried out for the period of 1991-2002 suggested that Poland was at the beginning of the second - investment-led - stage of development according to the country's development path of M. Porter that corresponds to the second stage of the model proposed by J. Dunning and his collaborators, which was described above [Majewska, Grala, 2004, pp. 243-258]. The findings of research performed by M. Gorynia, J. Nowak and R. Wolniak for the similar period 1990-2003 also indicated that Poland was at the end of stage 2, which it entered in the mid-1990s. They argued that this is mainly due to the pull of the large internal market, the still weak competitiveness of domestic firms in international markets, and government reluctance to adopt more active, firm-specific ownership advantage stimulating policies toward outward FDI [Gorynia, Nowak, Wolniak, 2007, pp. 52-74].

The results of the present study suggest that Poland after further 10 years of economic transformation shifted to the third stage of analyzed country's development path. For this stage of development is characteristic that as a country improves its endogenous comparative advantages to adjust to the needs of foreign market, what is reflected in the changes in its export structure, outward direct investment starts to grow faster like in Poland. Additionally Poland's locational advantages began to base in a broader extent on created assets in more capital- and technology-intensive manufactures. In the case of inward foreign investment is observed a slowdown what is connected with the erosion of Poland's comparative advantages in labour-intensive and materials-intensive industries compared to the countries located at lower stages of development. The results of the study also indicate that Poland has begun to attract FDI into more skill- and technology-intensive manufactures and that FDI is related to the reallocation of labour-intensive processes to more technology-intensive production.

Thus, Poland is slowly passing on the next stage of economic development. However, whether Poland reaches this stage depends mainly on its own efforts to continue various types of structural changes, which is called the endogenous process of specialization. Moreover, the results of our study on the impact of export groups on the economic performance of Poland confirm the conclusions of the OECD report cited above, because the authors of this report believe that in the case of Poland structural reforms are prerequisites for climbing the technological ladder, developing knowledge-based capital and becoming a more innovation-based economy. In their opinion with slow implementation of reforms, there is always a risk that the full potential of the economy will not realised, and in the case of Poland that risk is compounded by the general distrust in key public institutions [OECD, 2014].

We also agree with the views of the United Nations Development Group that the role of the State should not be confined to doing the basic minimum. Thus, the Polish government should ensure an enabling environment for enterprises, provide public goods, such as reliable infrastructure and social services, redistribute gains from inequitable growth and be more proactive in providing incentives to accelerate a process of developing successful and innovative economic activities – in other words promote

technological upgrading, skills formation, innovativeness and job creation [United Nations Development Group, 2013].

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