



Maja Szymura-Tyc

Department of International Management
Faculty of Management
University of Economics in Katowice, Poland
maja.tyc@ue.katowice.pl

**Innovativeness and internationalisation
of the Polish economy – the transition
process perspective**

Abstract

The process of transition of the CEE economies resulted in an increase in their innovativeness and internationalisation. The Polish economy as a transition one has been subject to these processes to a large extent. Due to the fact that innovativeness and internationalisation are perceived as related phenomena, a study of their changes and relationships between them in the transition process may bring interesting cognitive outcomes. The aim of the paper is to describe the changes in the level of innovativeness and internationalisation of the Polish economy when compared with other European economies from the transition process perspective.

Keywords: innovativeness, internationalisation, transition process, Poland.

JEL Classification: F230, O5, P2.

Introduction

The process of transition from the planned and autarkic economies to a market and open ones, which took place in countries of Central and Eastern Europe (CEE) during the last quarter of a century, strongly influenced the level of innovativeness and internationalisation of the CEE economies and firms rooted there. The systemic change resulted in an increase of innovativeness and a higher level of inward and outward internationalisation observed in the countries' statistics both on a macro and micro level. The statistic data show that most of the transition economies started from a very low level of innovativeness and internationalisa-

tion, which was the result of their planned and closed economies dominating until the early 1990s. The systemic transition process started in the 1990s has established the market regulation requiring enhanced innovativeness and opened their economies for international exchange and capital flows from beyond the CMEA¹. These have brought a slow yet continuous rise of innovativeness with a rapid and spectacular increase in the internationalisation of the CEE economies and firms. Since the innovativeness and internationalisation are perceived as related phenomena jointly leading to an improved international competitiveness of both the whole economies and individual firms, there is space for the study of their level changing over time as well as possible relationships between them. Hence, the objective of the study presented in the paper is to show changes in the level of innovativeness and internationalisation of the Polish economy during the transition process related to other economies from the CEE region and Western Europe. The study is based on secondary data sources, namely the Polish and European statistics, and other sources concerning the transition process.

1. Innovativeness and internationalisation of transition economies – prerequisites and development

The innovativeness of business entities, and as a consequence, of entire economies is strongly related to the form of regulation of economic processes prevailing in them. Joseph Schumpeter defined innovation as a process of creative destruction where the constant search to create something new simultaneously destroys the old rules and establishes new ones. He perceived innovativeness as a process driven by a search for competitive advantage leading to an increased profit for a firm [Schumpeter 1950]. Similarly, Peter Drucker claimed that the innovation was the essence of business and defined it as a change in value and satisfying customer needs resulting from changes in the use or configuration of firm's resources [Drucker 1986]. This way of understanding of the innovation and innovativeness of firms links them strongly to the market regulation and private ownership of enterprises. Only in such conditions, the enterprises are oriented on the attainment of profits by way of satisfying customers' needs and/or cost reduction enabling them to achieve a competitive advantage over competitors. Similarly, the degree of the internationalisation of economies and activities of enterprises requires their opening to an international exchange,

¹ CMEA (Council for Mutual Economic Assistance) – an economic organisation under the leadership of the Soviet Union that comprised the CEE countries along with a number of socialist states elsewhere in the world to facilitate and coordinate their economic development.

convertibility of currencies and freedom of the flow of capital, which is related to an open market economy. The innovativeness of economies and enterprises can influence both their inward and outward internationalisation, promoting an increase in their competitiveness in the macro- and microeconomic scale.

1.1. Transition process in Poland and other CEE countries

Implementation of the market regulation that replaced the central planning and privatisation of the state-owned enterprises (SOEs) is at the core of the 25 years' long transition process started in Poland at the end of 1989 with the announcement of the Balcerowicz Plan. The general systemic change introduced in the early 1990s created preconditions for the development of innovativeness of the Polish firms and economy. First, the deregulation and liberalisation of economic activities allowed for the implementation of the market regulation. In most industries of the economy, prices became free from the administrative regulation. Freedom to undertake economic activity was set up, which resulted in the establishment of a multitude of new private-owned firms. Secondly, the privatisation of the state, cooperative or communal firms was initiated, taking various forms (commercialisation, direct privatisation, liquidation due to economic reasons) and bringing positive results reflected by the dominance of private-owned firms in the ownership structure of the Polish economy. As an outcome of the systemic transformation, the desired legal prerequisites for innovative and competitive behaviour of firms have been created.

The privatisation process was established in Poland in 1990. In 1990-2010, 7,534 state-owned enterprises were in the process of the ownership transformation, which accounted for 86.2% of the total number of SOEs in Poland [Mały Rocznik Statystyczny 2011, p. 486]. At the beginning of the process, the share of the private sector in the gross domestic product amounted to 30.9% only and, within the 20 years of transformation, it more than doubled reaching 68.1% in 2010. The most rapid change in the ownership structure occurred in 1990-1995, slowing down after 2000 (Table 1).

Table 1. Private sector in Poland in 1990-2010

Years	Private sector's share in gross domestic product (in %)	Growth index (1990 = 100%)
1990	30.9	100.0
1995	52.8	170.9
2000	63.2	204.5
2005	66.6	215.5
2010	68.1	220.3

Source: Mały Rocznik Statystyczny [1994, p. 317; 2002, p. 446]; Rocznik Statystyczny [2011, p. 676].

It is worth mentioning that the share of private-owned firms in the Polish economy and the dynamics of the privatisation process have differed essentially depending on the type of industry. The share of private firms in production sold in retail, wholesale and construction was already high at the beginning of the transition process and reached almost 100% in 2010. The private sector's share in the industry, transportation and storage was below 50% in 1995, and increased by 30% only during the 1995-2010 period still leaving some entities in the course of privatisation (Table 2).

Table 2. Private sector's share in selected industries in 1990-2010

Industry	Private sector's share in production sold by industry (in %)			
	1995	2000	2005	2010
Industry	46.9	71.3	82.0	84.9
Construction	87.6	95.9	96.6	98.8
Transportation and storage	49.9	60.0	73.5	79.7
Retail	92.4	95.1	98.6	99.2
Wholesale	89.4	94.6	96.6	98.3

Source: Mały Rocznik Statystyczny [2001, pp. 197, 321, 338, 343; 2006, pp. 200, 332, 349, 354; 2011, pp. 207, 349, 366, 372].

Despite the achievements in the transition of the Polish economy, the privatisation process is still considered unfinished. The impediments causing the delay are of the political, social and economic nature. In many cases, particular interests of industry groups unwilling to yield to the competitive pressures on the domestic or international markets have hindered the privatisation process. They usually apply to large groups of workers concentrated in the "old-economy" (like mining and quarrying) and infrastructural industries (transportation, electricity) exerting influence on government representatives to prevent the privatisation process. Additionally, market conditions, specifically the world economic crisis, have put some prospective privatisation projects on hold. However, Poland is one of the liberalisation and privatisation leaders in the CEE region next to Hungary, Slovakia and Estonia, especially as far as the small-scale privatisation, price liberalisation as well as trade and foreign exchange system are concerned. Poland is only behind the leaders regarding the large-scale privatisation and the situation has not improved for the last three years. The followers from the CEE region are Latvia and Lithuania, with Bulgaria and Romania right behind them [Transition Report 2012, p. 12]. It also is worth mentioning that the Czech Republic is the only CEE country that has concluded the transition process and is not listed as a transition country anymore (the Czech Republic has already achieved 4+ in all categories, representing the standards of an industrial

market economy). More detailed data about the progress of the transition process in selected CEE countries are presented in Table 3.

Table 3. Country Transition Indicator scores for selected CEE Transition Countries in 2010-2012

Country	Enterprises			Markets and trade		
	Large-scale privatisation	Small-scale privatisation	Governance and enterprise restructuring	Price liberalisation	Trade and foreign exchange system	Competition policy
2010						
Hungary	4	4+	4-	4+	4+	3+
Slovakia	4	4+	4-	4+	4+	3+
Poland	4-	4+	4-	4+	4+	3+
Bulgaria	4	4	3-	4+	4+	3
Romania	4-	4-	3-	4+	4+	3
2011						
Hungary	4	4+	4-	4+	4+	4-
Slovakia	4	4+	4-	4+	4+	4-
Poland	4-	4+	4-	4+	4+	4-
Bulgaria	4	4	3-	4+	4+	3
Romania	4-	4-	3-	4+	4+	3+
2012						
Hungary	4	4+	4-	4+	4+	4-
Slovakia	4	4+	4-	4+	4+	4-
Poland	4-	4+	4-	4+	4+	4-
Bulgaria	4	4	3-	4+	4+	3
Romania	4-	4-	3-	4+	4+	3+

Note: The transition indicators range from 1 to 4+, with 1 representing little or no change from a rigid centrally planned economy and 4+ representing the standards of an industrialised market economy. For a detailed breakdown of each of the areas of reform, see the Methodological Notes on page 160 of the Transition Report 2012 EBRD.

Source: Transition Report [2010, p. 4; 2011, p. 13; 2012, p. 12].

The liberalisation and privatisation of the Polish economy that has taken place in the last 25 years resulted in an essential increase in the number of firms, changing the market structures of most industries as far as the type of ownership and the size of firms are concerned. These features of the market structure may have an influence on both the innovativeness and internationalisation of Polish firms as they require not only the private ownership but also capital concentration. As it can be seen in the Table 4, the number of firms in Poland more than tripled in the 1990-2010 period. In 2010, their number increased to 3,910 thousand with 246 state-owned firms constituting only 0.01% of all economic entities registered in Poland. It can also be observed that there was an essential increase in the number of natural persons conducting economic activity in that period, with the growth index close to 260% and a diminishing share in the total number of enterprises (Table 4).

Table 4. Number of enterprises and employment in public and private sectors in Poland in 1990-2010

Years	Total number of enterprises		State owned enterprises		Natural persons conducting economic activity			Persons employed in	
	Number (in thousands)	Growth index (1990 = 100%)	Number	Share (in %)	Number (in thousands)	Growth index (1990 = 100%)	Share (in %)	Public sector (in %)	Private sector (in %)
1990	1 205	100.0	8 453	0.70	1 135	100.0	94.1	51.1	47.9
1995	2 111	175.2	4 357	0.20	n.a.	–	–	28.6	61.4
2000	3 185	264.3	2 268	0.07	2 501	220.4	78.5	27.5	72.5
2005	3 616	300.1	1 029	0.03	2 776	244.5	76.7	28.3	71.7
2010	3 910	324.5	246	0.01	2 943	259.2	75.3	25.3	74.7

Source: Mały Rocznik Statystyczny [1994, p. 312; 1996, p. 323; 2001, p. 131; 2003, p. 143; 2011, p. 496]; Rocznik Statystyczny [2011, p. 222].

Though the data concerning the increase of the number of enterprises are impressive they may be not considered as the best indicator of the changes in the ownership structure of the Polish economy. As the size of firms differs by number of employees the data should be supplemented by the share of persons employed in the public and private sectors. The analyses shows that though the number of state owned firms decreased essentially from 0.7% to 0.01%, the share of employees in the public sector has remained comparatively high at the level 25.3%, starting from 51.1% in 1990 (Table 4).

As a result of all above mentioned changes, the business structure in Poland described in terms of the size of enterprises by number of employees became similar to the one of the EU-27 as presented in the Table 5. The share of the number of all SMEs, medium-sized firms and large firms in the total number of enterprises is exactly the same in Poland as in the EU-27 constituting, respectively, 99.8%, 1.1% and 0.2% of the total number of enterprises. A unique feature of Poland is its larger share of micro enterprises and a smaller share of small firms than in EU-27. This structural feature of the Polish economy may be reflected, in part, in the fact that the share of SMEs in the value added used to be lower than in EU-27, and almost equal to the share of the value added generated by large firms, many of them state-owned enterprises.

Table 5. Business structure in Poland and EU-27 by enterprise size in 2010-2012

Years	Countries	Share of the Total Number of Enterprises					Share of SMEs in Value Added
		Micro	Small	Medium-sized	SMEs	Large	
2010	Poland	96.1	2.7	1.0	99.8	0.2	54.0
	EU-27	92.1	6.6	1.1	99.8	0.2	58.4
2011	Poland	95.6	3.0	1.1	99.8	0.2	51.5
	EU-27	92.2	6.5	1.1	99.8	0.2	58.1
2012	Poland	95.2	3.5	1.1	99.8	0.2	50.5
	EU-27	92.1	6.6	1.1	99.8	0.2	57.6

Source: SBA Fact Sheet [2010/2011, p. 1; 2012, p. 1; 2013, p. 2].

1.2. Innovativeness in the process of transition

As mentioned above, the advancements in the transition and the business structure may have some impact on the innovativeness of firms and entire economies of the CEE region. The measurement of the innovativeness of transition economies on a comparable basis began in 2004 with the introduction of the European Innovation Scoreboard (replaced by the Innovation Union Scoreboard in 2012) covering the new members of EU, in particular, the transition economies from the CEE region. The first findings were based on the 2004-2006 data. As it can be observed in Table 6, the value of the innovation index is increasing slowly yet constantly, starting from 0.429 for EU-27 and 0.264 for Poland in 2004 and achieving 0.544 for EU-27 and 0.270 for Poland in 2012. The values of the composite index are used to rank and classify countries depending on their innovation performance. Most of the CEE countries as well as Spain, Portugal, Greece and Italy belong to the group of modest or moderate innovators, representing a lower level of the innovation index over time than the EU-27 average. Table 6 presents the Summary Innovation Index (SII) attained by selected European countries in 2004-2012 and its growth in that period.

Table 6. Summary Innovation Index (SII) for selected EU-27 countries in 2004-2012

Country	2004*	2005*	2006*	2007*	2008*	2009**	2010**	2011**	2012**	Growth index 2004 = = 100%
EU-27	0.429	0.431	0.447	0.466	0.475	0.516	0.532	0.531	0.544	126.8
Spain	0.329	0.344	0.352	0.359	0.366	0.394	0.390	0.393	0.407	123.7
Portugal	0.290	0.317	0.337	0.340	0.364	0.400	0.427	0.425	0.406	140.0
Czech Republic	0.344	0.346	0.368	0.392	0.404	0.371	0.408	0.413	0.402	116.9
Hungary	0.266	0.273	0.287	0.305	0.316	0.301	0.329	0.225	0.323	121.4
Slovakia	0.257	0.273	0.298	0.299	0.314	0.295	0.281	0.291	0.337	131.1
Poland	0.264	0.272	0.282	0.293	0.305	0.278	0.273	0.283	0.270	102.3
Bulgaria	0.172	0.174	0.178	0.206	0.221	0.198	0.231	0.234	0.188	109.3
Romania	0.209	0.205	0.223	0.249	0.277	0.250	0.233	0.252	0.221	105.7

Note: The Summary Innovation Index (SII) measuring the innovation performance of the European countries is composed of a large set of indicators (25 in 2003-2007; 29 in 2008-2009; 24 in 2010-2011), grouped in three types of indicators: Enablers, Firm Activities and Outputs. The calculated index is then normalised to take on the value between 0 and 1, with 1 representing the highest possible innovation performance.

Note: As of 2008, the innovation index has been reflecting the performance in the preceding two-year period due to a lag in data availability, e.g. the Innovation Union Scoreboard 2013 reflects the performance in 2010/2011.

Source: *European Innovation Scoreboard [2008, p. 58]; **Innovation Union Scoreboard [2013, p. 74].

Analysis of the innovativeness of the European Union economies shows a substantially lower innovativeness of the CEE transition economies in compari-

son with the majority of EU-15 economies. A comparative study of the growth index of the studied economies over the last 9 years shows a rather low level for the whole EU-27, with the growth of Portugal and Slovakia slightly faster and Poland showing the slowest growth. As a result, the 2004 innovation index for Poland constituted 62% of the EU-27 average while it reached only 50% of the SII EU-27 in 2012.

To understand the innovation processes in the CEE economies, we need to study factors comprising the innovation performance index (SII). When studying the data presented in the Table 7, we can conclude that the analysed CEE transition countries are the weakest ones when it comes to Research Systems, Linkages and Entrepreneurship and Innovators. They have a relatively good position as far as Human Resources are concerned and are not so bad (at least some of them) in Economic Effects.

Table 7. Innovation performance in selected EU-27 countries per innovation dimension in 2012

Country	HR	RS	FS	FI	LE	IA	IN	EE
EU-27	0.557	0.478	0.585	0.406	0.532	0.555	0.571	0.603
Spain	0.433	0.493	0.436	0.223	0.297	0.399	0.318	0.507
Portugal	0.404	0.435	0.414	0.279	0.416	0.312	0.728	0.378
Czech Republic	0.537	0.227	0.343	0.409	0.429	0.275	0.518	0.486
Hungary	0.452	0.169	0.271	0.244	0.217	0.240	0.131	0.590
Slovakia	0.746	0.116	0.302	0.210	0.301	0.155	0.289	0.470
Poland	0.550	0.094	0.383	0.319	0.094	0.271	0.078	0.324
Bulgaria	0.429	0.094	0.085	0.111	0.088	0.231	0.064	0.245
Romania	0.421	0.087	0.218	0.137	0.083	0.101	0.124	0.433

Legend: HR – Human Resource; RS – Research Systems; FS- Finance and Support; FI – Firm Investments; LE – Linkages and Entrepreneurship; IA – Intellectual Assets, IN – Innovators; EE – Economic Effects.

Source: Innovation Union Scoreboard [2013, p. 75].

When Poland is taken into account, the data in Table 7 show that it is poorest in the Innovators area and very poor in Research Systems, and Linkages and Entrepreneurship. The first indicator (IN) consists of the SMEs with the product or process innovation and SMEs with the marketing or organisational innovation as a percentage of all SMEs and the high-growth innovative firms. The second indicator (RS) includes the international scientific co-publications per one million of inhabitants, scientific publications among the top 10% most cited publications worldwide as a % of all scientific publications in a country and Non-EU doctorate students as a % of all doctorate students. The latter indicator (LE) is composed of SMEs innovation in-house, and innovative SMEs collaborating with others as a percentage of all SMEs and the public-private co-publication per one million inhabitants [Innovation Union Scoreboard 2013, pp. 9 and 75].

Summing up, the conducted analysis of the progress in the transition of selected CEE economies and their innovativeness supports the assumption that the advancement in transition is related to the innovativeness of an economy. The countries lagging in transition process report a lower level of the innovation performance, while the transition leader – the Czech Republic occupies the position that is close to Spain and Portugal. As Poland is concerned, the data describing the transition process and business structure of the Polish economy may be helpful in the understanding of the low level of its innovation performance. The still unfinished process of transition – i.e. a great share of the state ownership in the industry, transportation and storage sectors (being the natural field for innovation), delayed large-scale privatisation, and a relatively high share of micro enterprises with a smaller share of small firms may constitute the reasons for the Polish economy's inability to bridge the innovativeness gap in the course of the last 10 years.

1.3. Internationalisation in the process of transition

The opening of the Polish economy for the international exchange and the abandonment of the state monopoly in foreign trade was an essential component of the transition process started in Poland in 1990. Convertibility of the currency was assured, the market has opened for imports, and foreign capital investments were invited on a much larger scale than it was in the past decades. The departure from the closed economy, dominated by international trade relations within CMEA (Council for Mutual Economic Assistance) coincided with the intensified processes of globalisation and the European integration. As a result, during the 25 years of the transition process in the Polish economy, there was an essential increase in its inward and outward internationalisation reflected by the changes in the imports, exports and foreign direct investment, both inward and outward.

As presented in Tables 8 and 9, an impressive growth of the inward and outward internationalisation was observed in the transition period. The growth indices for the inward internationalisation (imports and inward FDI) have been much higher than the outward internationalisation indices (exports and outward FDI). The imports growth index for 2012 reached 2 062.1% of the 1990 figure and 177 193.6% for inward FDI. The outward internationalisation growth for exports in 2012 equalled only a half of the imports growth index, reaching 1 141.9% and, for outward FDI, it constituted merely 38 777.9%, i.e. 21.9% of the inward FDI growth. In 1990-2010, the share of the Polish imports in the world imports increased from 0.23% to 1.14%, which means a fivefold rise, while the share of exports in the world exports has risen from 0.39% to 1.02%, i.e. a less than threefold increase.

Table 8. Inward internationalisation of the Polish economy in 1990-2010

Years	Imports			Inward FDI		
	Imports (in USD million)	Growth index (1990 = 100%)	Share in world imports (in %)	FDI per year (in USD million)	FDI cumulated (in USD million)	Growth index FDI cumulated (1990 = 100%)
1990	8 413	100.0	0.23	88	2 081 782	100.0
1995	29 050	345.3	0.55	3 659	3 381 329	7 195.4
2000	48 940	581.7	0.73	9 445	7 442 548	31 400.9
2005	101 598	1 207.6	0.94	10 293	11 524 898	83 373.4
2010	173 481	2 062.1	1.14	9 681	19 140 603	177 193.6

Source: Adapted from Gorynia [2012, p. 416-417, 421]. Calculations based on UNCTAD, <http://unctadstat.unctad.org>

Table 9. Outward internationalisation of the Polish economy in 1990-2010

Years	Exports			Outward FDI		
	Export (in USD million)	Growth index (1990 = 100%)	Share in world export (in %)	FDI per year (in USD million)	FDI cumulated (in USD million)	Growth index FDI cumulated (1990 = 100%)
1990	13 627	100.0	0.39	5	95	100.0
1995	22 895	168.0	0.44	42	539	567.4
2000	31 651	232.3	0.49	16	1 018	1 071.6
2005	89 401	656.1	0.85	3 399	6 277	66 097.4
2010	155 602	1 141.9	1.02	4 701	36 839	38 777.9

Source: Adapted from Gorynia [2012, p. 408-409, 414]. Calculations based on UNCTAD, <http://unctadstat.unctad.org>

The inward and outward internationalisation has been developing with different speed in different periods of the transition process. As far as the inward internationalisation is concerned, the imports were developing steadily as of 1990 while the cumulated inward FDI flow speeded up as of 2000 (Table 8). The outward internationalisation was lagging behind the inward one and speeded up after 2005 when Poland joined the EU. Exports were developing at the fastest rate as of 2000 while the outward FDI started to increase significantly as of 2005 (Table 9).

Despite the fast development of inward and outward internationalisation of the Polish economy during the transition process, the level of its internationalisation is still very low when compared to other European economies [Gorynia 2012]. Table 10 presents the GDP, imports and exports data for selected European countries. The leading transition CEE countries and Spain along with Portugal were chosen for the purpose of the comparative analysis as the EU-15 countries that joined the European Union relatively late and represent comparable levels of innovativeness measured in terms of the innovation index (see previous analyses). The countries selected for the study also differ as far as the size of their economies (measured in terms of the GDP and its share in the global GDP) and populations (measured by total population) is concerned. The assumption behind this choice is that the two dimensions may have an impact on the share of their

imports and exports in the global imports and exports as well as in their GDP. In general, if we take the above-mentioned factors into account Spain and Poland are relatively large countries as the number of population is concerned, which may have an influence on the size of their domestic markets. Romania, Portugal, Czech Republic and Hungary are medium countries while Slovakia and Bulgaria are small. As far as the size of economy measured in terms of the GDP and its share in the global GDP is concerned, Spain is the largest country, Poland is right behind it with its share in the global GDP three times lower and, behind them, there is Portugal, Czech Republic, Romania and Hungary as medium-sized economies with the shares ranging between 0.3% and 0.2%. Slovakia and Bulgaria are the smallest ones with the 0.1% share in the global GDP. The per capita GDP reflecting the level of economic development puts Spain on top, with Portugal, Czech Republic and Slovakia on subsequent positions followed by Hungary and Slovakia, with Romania and Bulgaria closing the ranking (Table 10).

Table 10. Gross Domestic Product (GDP) and population in selected EU countries in 2010-2012

Country	GDP (in USD million)	Population (in million)	GDP per capita (in USD million)	GDP share in world GDP (in %)
2010				
Spain	1 389 166	46.2	30 149	2.2
Portugal	228 688	10.6	21 422	0.4
Czech Republic	198 947	10.6	18 960	0.3
Hungary	127 967	10.0	12 818	0.2
Slovakia	87 072	5.4	15 941	0.1
Poland	469 799	38.2	12 274	0.7
Bulgaria	47 727	7.4	6 368	0.1
Romania	164 436	21.9	7 653	0.3
2011				
Spain	1 478 206	46.5	31 820	2.1
Portugal	237 586	10.6	22 226	0.3
Czech Republic	217 076	10.6	20 607	0.3
Hungary	138 713	10.0	13 919	0.2
Slovakia	96 000	5.4	17 545	0.1
Poland	514 115	38.2	13 424	0.7
Bulgaria	53 514	7.4	7 187	0.1
Romania	189 776	21.8	8 853	0.3
2012				
Spain	1 350 907	46.8	28 883	1.9
Portugal	212 265	10.6	19 839	0.3
Czech Republic	195 971	10.7	18 548	0.3
Hungary	126 785	10.0	12 743	0.2
Slovakia	91 729	5.4	16 738	0.1
Poland	487 528	38.2	12 724	0.7
Bulgaria	50 943	7.3	6 886	0.1
Romania	175 985	21.8	8 228	0.2

Source: UNCTAD, <http://unctadstat.unctad.org>.

The comparative analysis of the data concerning the selected EU-27 countries in terms of the GDP, exports and imports share in the global imports and exports shows that larger economies, when measured in terms of the GDP and population (Spain, Poland), have larger shares in the global GDP as well as in the global exports and imports, exceeding 1.0% in the case of imports and exports (Table 11). At the same time, their share of exports in the GDP is relatively lower than that of other, more economically developed countries, and is lowest for Spain, attaining only 21.8% in 2012. Medium-sized and small CEE economies with a higher level of economic development (measured in terms of the per capita GDP) whose shares in the global imports and exports range from 0.4% to 0.9% report a very high share of exports in the GDP, which accounted for 80%-89% in Slovakia, Hungary and the Czech Republic in 2012. Portugal as a medium-sized economy does not fit into the general pattern with its lower share of imports and exports in the global trade and a much lower share of exports in its GDP (27.5% in 2012) comparable only with Spain. Bulgaria and Romania as the small and medium-sized economies with the lowest per capita GDP in the group of analysed countries have a share in the global exports and imports comparable to their shares in the GDP and moderate shares of exports in the GDP (52.4% for Bulgaria and 32.9% for Romania in 2012).

Table 11. Imports and exports of selected EU countries in 2010-2012

Country	Imports			Exports			
	in USD million	per capita in USD million	share in global in %	in USD million	per capita in USD million	share in global in %	share in GDP in %
1	2	3	4	5	6	7	8
2010							
Spain	327 016	7 081	2.1	254 418	5 509	1,7	18.3
Portugal	77 749	7 342	0.5	49 406	4 665	0,3	21.6
Czech Republic	126 652	12 001	0.8	132 982	12 600	0,9	66.8
Hungary	88 178	8 805	0.6	95 483	9 534	0,6	74.6
Slovakia	65 026	11 968	0.4	64 664	11 901	0,4	74.3
Poland	178 049	4 661	1.2	159 724	4 181	1,0	34.0
Bulgaria	25 513	3 453	0.2	20 630	2 792	0,1	43.2
Romania	62 109	2 841	0.4	49 579	2 268	0,3	30.2
2011							
Spain	376 606	8 097	2.0	306 551	6 590	1,7	20.7
Portugal	82 466	7 782	0.4	59 675	5 631	0,3	25.1
Czech Republic	152 125	14 336	0.8	162 939	15 356	0,9	75.1
Hungary	102 440	10 248	0.6	112 312	11 235	0,6	81.0
Slovakia	79 842	14 676	0.4	79 830	14 674	0,4	83.2
Poland	210 597	5 512	1.1	188 696	4 939	1,0	36.7
Bulgaria	32 582	4 443	0.2	28 208	3 847	0,2	52.7
Romania	76 475	3 507	0.4	63 012	2 889	0,3	33.2
2012							
Spain	334 790	7 161	1.8	293 938	6 287	1,6	21.8
Portugal	72 216	6 810	0.4	58 328	5 501	0,3	27.5

Table 11 cont.

1	2	3	4	5	6	7	8
Czech Republic	140 736	13 202	0.8	156 569	14 687	0.9	79.9
Hungary	95 316	9 554	0.5	103 927	10 417	0.6	82.0
Slovakia	78 206	14 361	0.4	81 497	14 965	0.4	88.8
Poland	196 021	5 130	1.1	183 420	4 800	1.0	37.6
Bulgaria	32 742	4 499	0.2	26 715	3 671	0.1	52.4
Romania	70 183	3 226	0.4	57 824	2 658	0.3	32.9

Source: UNCTAD, <http://unctadstat.unctad.org>.

If we study the changes in the imports and exports of the selected CEE transition economies in the last three years, we can observe that their shares in the global imports stay stable: from 0.2% for Bulgaria to 1.2%-1.1% for Poland. The same applies to the share of exports, which ranges from 0.1% for Bulgaria to 1.0% for Poland. The result is not so bad taking into account the increasing shares of the big emerging economies in the world trade like those of China, India, Brazil and other.

The macroeconomic data analyses presented above do not bring a clear answer to the question whether the innovativeness of the CEE transition countries is related to their internationalisation. Such an answer may be found in the exploratory research conducted by Filippetti, Frenz and Ietto-Gillies [2009]. The study is a report for the European Commission to investigate the links between the innovation performance of 32 European countries using the EIS 2008 Summary Innovation Index (SII), and various indicators of internationalisation. Certain composite internationalisation indices were developed for the research with one of them, i.e. the Summary Globalization Index (SIG/A) being calculated on a general level. The SIG/A included FDI, trade and the mobility of employees and students for the period 1999-2007. The Summary Globalization Index (SIG/A) and the Summary Innovation Index (SII) 2008 are presented in Table 12.

Table 12. Summary Globalization Index (SIG/A) for selected European countries

Country	Summary Globalization Index (SIG/A)								SII	
	Inward FDI	Outward FDI	Imports	Exports	Foreign students	Foreign employees	Value	Rank	Value	Rank
Spain	0.26	0.50	0.09	0.08	0.12	0.35	0.23	23	0.366	19
Portugal	0.23	0.31	0.20	0.11	0.13	0.11	0.18	27	0.364	20
Czech Rep.	0.53	0.04	0.69	0.69	0.22	0.04	0.37	12	0.404	17
Hungary	0.37	0.14	0.71	0.68	0.16	0.02	0.35	16	0.316	24
Slovakia	0.63	0.02	0.89	0.81	0.04	0.00	0.40	10	0.314	25
Poland	0.25	0.05	0.18	0.18	0.00	0.00	0.12	29	0.305	26
Bulgaria	0.92	0.01	0.71	0.53	.	0.01	0.43	9	0.221	31
Romania	0.38	0.00	0.29	0.19	.	0.00	0.18	27	0.277	29

Source: A. Filippetti, M. Frenz and G. Ietto-Gillies [2009, p. 19]; European Innovation Scoreboard [2008, p. 58].

The data in the table show that the highest globalisation indices in the period of study were attained by Bulgaria, Slovakia and Czech Republic, i.e. the rather small CEE countries. The lowest values of the globalisation index were reported in Poland, Portugal and Romania, and Spain. In few cases (Romania, Poland and Spain), the ranks in SIG/A and SII are relatively close to each other; in all other cases, they differ essentially.

However, further studies of the relationship between the innovativeness of European economies measured in terms of the SII and their internationalisation measured in terms of SIG confirmed the assumption that innovation and internationalisation are related at the macroeconomic level. Findings of the correlation analysis are presented in Table 13.

Table 13. Correlations between internationalisation indicators composing the SGI/A for 1999-2007 and SII 2008

Innovation and internationalisation indices and indicators	All European countries 32	Small European countries 27	Large European countries 7
Innovation index 2008	SII pooled	SII pooled	SII pooled
SGI/A index	0.35***	0.30***	0.67***
Inward FDI flows	-0.10	-0.07**	-0.23
Outward FDI flows	0.64***	0.60***	0.93***
Imports	-0.13	-0.08**	-0.52***
Exports	0.11	0.17*	-0.32*
Foreign students	0.72***	0.68***	0.92***
Foreign employees	0.49***	0.24***	0.93***

Legend: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Note: Large European economies selected for the study: France, Germany, Italy, Poland, Spain, Turkey and the UK.

Source: A. Filippetti, M. Frenz and G. Ietto-Gillies [2009, p. 29].

Concluding, there is a significant and positive correlation between the innovativeness and internationalisation of European economies as measured in terms of the composite indices developed for their study at a macroeconomic level. However, the correlation coefficient for all the 32 European countries is low at the level of 0.35, reaching only a higher value for the 7 larger European economies, Poland among them. As far as the indicators composing the SGI/A are concerned, the strongest correlations may be observed between SII and Outward FDI as well as regarding the mobility of foreign students and employees. The analysis of the inward FDI as well as imports and exports did not provide a very clear picture of their relation to the innovativeness of an economy.

The above macroeconomic analyses supported the general assumption adopted for this study that the level of innovativeness and internationalisation of the CEE economies has improved during the transition process and, what is

more, their innovativeness is related to some extent to their internationalisation. However, for smaller CEE countries (like Bulgaria, Slovakia and Hungary) the higher internationalisation index is not reflected by higher innovativeness of their economies. The exception is only the Czech Republic, the CEE country most advanced in the transition process, where the internationalisation and innovativeness ranks correspond with each other.

Conclusions

Considerations and analyses conducted on macroeconomic level, regarding the prerequisites and development of innovativeness and internationalisation of the CEE economies during the transition process, make it possible to draw a few conclusions related to that region of Europe and to Poland in particular.

Firstly, the transition process taking place since the 1990s promoted an increase in the innovativeness of economies in the region. Analysed economies improved their results in the area of innovativeness measured with the use of the SII innovativeness index in the period under study. Those economies in which the transition process was most advanced according to the Transition Report rankings reported the greatest progress in innovativeness.

Secondly, the systemic transformation related to the opening of these economies to the international exchange and international capital flows entailed an increase in the degree of their internationalisation, reflected in the high dynamics of the inward and outward internationalisation taking place by way of the imports, exports and foreign direct investments – both incoming and outgoing ones.

Thirdly, it is possible to assume that the innovativeness of the CEE economies was and still is related to their internationalisation to large extent. However, it is very difficult to demonstrate the causality of these phenomena due to the multitude of factors that have to be taken into account in the research and to the specificity of individual countries whose links to the domestic and international markets are varied. Despite the complexity of such studies, further analyses, based both on secondary and primary data, are strongly recommended.

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