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Wojciech POLAN[1]

INTRA-INDUSTRY COMPETITIVENESS OF THE EUROPEAN UNION MEMBER STATES BY INDUSTRY IN 2004–2015[2]

The article aims to present the results of research into changes in the international competitive position of the European Union Member States in the period 2004–2015 on the basis of analysing the development of particular types of intra-industry trade (IIT) of manufactured goods.

The investigation was based on the IIT share measurement methodology (Grubel, Lloyd 1975) and calculations of types of intra-industry trade (Greenaway, Hine, Milner 1994, 1995). Multilateral IIT indices were computed at the 6-digit CN code level on the basis of data published by Eurostat.

As part of a larger research project funded by the National Science Centre, this analysis contributes to the assessment of the degree of intra-industry specialisation of the EU Member States and the resulting changes in the international competitive position of the economies covered.

Keywords: intra-industry trade, international competitiveness, EU enlargement.

JEL Classification Codes: F14, F15.

Introductory remarks

The analysis aimed to answer the following research questions:

1) after 11 years from the most extensive enlargement of the European Union, what was the product composition of the intra-industry trade of the EU-15 in manufactured goods?

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[2] The publication is a result of the research grant financed by the National Science Centre, decision no. 2015/17/N/HS4/01529.

2) did the changes in the composition of two-way trade in the EU-10 in 2004–2015 follow patterns similar to those observed in the EU-15 and did they have a positive structural dimension?

On account of the volume of the publication required by the Publishing House, this paper only presents the study results for the SITC sections (5 to 8) which are classified in the nomenclature in question as manufactured goods and in the period covered accounted for nearly 80% of the merchandise trade of the EU-25.

The analysis of intra-industry trade in manufactured goods was supplemented with an examination of the composition of trade broken down into groups of products characterised by varying technology intensity.

The composition of intra-industry trade by industry was analysed at the level main SITC categories[3]:

a) primary commodities:
   - food, drinks and tobacco (sections 0 and 1),
   - raw materials (sections 2 and 4),
   - energy products (section 3),
b) manufactured goods:
   - chemicals (section 5),
   - other manufactured goods (sections 6 and 8),
   - machinery and transport equipment (section 7),
   - other (section 9).

Data were aggregated and allocated to specific analytical groups on the basis of source data from the Eurostat database at a low aggregation level of 6-digit CN codes. The grouping took account of the main methodological assumptions adopted by other researchers for analyses of intra-industry trade (Kawecka-Wyrzykowska et al. 2017, pp. 25–33).

In an examination of particular CN sections at the country level with a low value of trade flows, even a single major transaction may significantly affect the composition of intra-industry trade in products of the group concerned. In such cases, the focus was on comparing trends in the country structure of trade in the EU-10 and the EU-15.

Composition of intra-industry trade by industry

Data presented in Tables 1 and 2 and the trends illustrated in Figure 1 served as the basis for analysing the structure of the intra-industry competitiveness of the EU-10 in comparison with the EU-15 at the level of total trade for each of the seven SITC commodity groups.

[3] For more on the Standard International Trade Classification see http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Standard_international_trade_classification_(SITC) (retrieved on 01/11/2017).

Table 1. Value and structure of merchandise trade by SITC commodity group in the EU-10 and the EU-15 in 2004 and 2015, broken down into total trade and intra-industry trade

	Total trade				Intra-industry trade			
	EU-10	EU-10	EU-15	EU-15	EU-10	EU-10	EU-15	EU-15
	2004	2015	2004	2015	2004	2015	2004	2015
	value of trade flows, EUR billion							
Food, drinks and tobacco (0+1)	23.4	99.3	360.7	709.4	3.1	18.2	79.0	156.8
Raw materials (2+4)	14.4	37.9	138.6	244.7	1.6	5.3	21.9	39.1
Energy products (3)	30.2	82.8	320.6	605.1	2.6	14.1	43.0	100.8
Chemicals (5)	43.2	124.2	687.9	1170.1	6.3	33.0	230.2	397.7
Other manufactured goods (6+8)	151.0	350.2	1314.1	1993.6	37.8	106.0	413.9	635.0
Machinery and transport equipment (7)	178.8	534.0	1824.5	2858.3	53.8	172.3	700.2	993.9
Other (9)	1.8	1.2	11.8	78.3	0.4	0.4	1.8	12.5
Total	**442.9**	**1229.6**	**4658.0**	**7659.5**	**105.7**	**349.3**	**1490.0**	**2335.7**
	structure, share in %							
Food, drinks and tobacco (0+1)	5.3	8.1	7.7	9.3	3.0	5.2	5.3	6.7
Raw materials (2+4)	3.3	3.1	3.0	3.2	1.5	1.5	1.5	1.7
Energy products (3)	6.8	6.7	6.9	7.9	2.5	4.0	2.9	4.3
Chemicals (5)	9.8	10.1	14.8	15.3	6.0	9.4	15.5	17.0
Other manufactured goods (6+8)	34.1	28.5	28.2	26.0	35.8	30.3	27.8	27.2
Machinery and transport equipment (7)	40.4	43.4	39.2	37.3	50.9	49.3	47.0	42.6
Other (9)	0.4	0.1	0.3	1.0	0.3	0.1	0.1	0.5
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Eurostat, EasyComext, http://epp.eurostat.ec.europa.eu/newxtweb [retrieved on 13/03/2017]. Own study.

Table 2. Dynamics of merchandise trade by SITC commodity group in the EU-10 and the EU-15 in 2004 and 2015 (2004=100%)

	Total trade		Intra-industry trade		Inter-industry trade	
	EU-10	EU-15	EU-10	EU-15	EU-10	EU-15
food, drinks and tobacco (0+1)	324	97	480	98	300	96
raw materials (2+4)	163	77	239	78	154	76
energy products (3)	174	89	434	134	149	82
chemicals (5)	187	70	423	73	147	69
other manufactured goods (6+8)	132	52	180	53	116	51
machinery and transport equipment (7)	199	57	220	42	189	66
Other (9)	-32	565	-2	596	-39	560
Total	**178**	**64**	**230**	**57**	**161**	**68**

Source: Eurostat, EasyComext, http://epp.eurostat.ec.europa.eu/newxtweb [retrieved on 13/03/2017]. Own study.

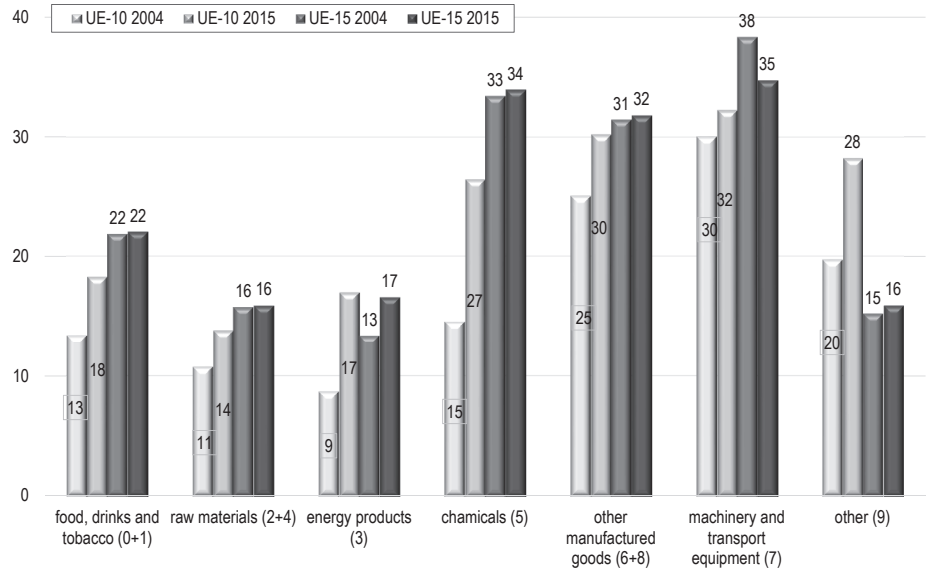

Figure 1. Shares of intra-industry trade in specific types of trade in the SITC commodity groups covered, in the EU-10 and the EU-15 in 2004 and 2015 (IIT indices in %)

Source: Eurostat, EasyComext, http://epp.eurostat.ec.europa.eu/newxtweb [retrieved on 13/03/2017]. Own study.

Detailed trends analysed for each of the seven commodity groups SITC covered are presented in sub-chapters describing specific groups.

Machinery and transport equipment

In the period in question, the SITC commodity group (section 7), i.e. machinery and transport equipment, accounted for the largest part of foreign trade in the EU-15[4]. In 2015, it was as much as 37.3% of the value of the total trade of the EU-15 (cf. Table 1). In 2004, the respective share was 39.2%. The role of the group in total trade slightly declined in the period in question. It is also reflected in the low dynamics of the trade value – a rise from EUR 1.82 trillion to EUR 2.85 trillion meant a considerable increase in value but – in comparison with the other groups – the growth rate was relatively low, at a mere 57% (see Table 2).

As regards the intra-industry trade of the EU-15, in 2004–2015 the SITC commodity group (7) played the greatest role. In 2015, machinery and transport equipment accounted for 42.6% of total two-way trade in the EU-15. In 2004, the respective share

[4] The largest exporting firms in the EU-15 operated in the industry concerned. For Germany, those included: VW, Daimler, BMW, Continental, Siemens, KHS. For France: Renault, Michelin, Saint-Gobain, Transityre. As regards Spain and Italy, those comprised: Ferrovial, Abertis, Nemak, Telefonica. Fiat and Pirelli. For more cf. www.worldstopexports.com

was 47%. The value of trade increased from EUR 700 billion to EUR 993 billion (by 42%). The comparison of the growth rate with those for the other commodity groups shows that in the years covered enterprises from the EU-15 developed IIT more quickly in commodity groups other than machinery and transport equipment (cf. Table 1).

The share of overall intra-industry trade for the group concerned dropped from 38% to 35% of total trade (see Figure 1). The comparison of that proportion with those for the other SITC groups indicates that the EU-15 maintained high competitiveness in the commodity group in question (see Figure 2).

The assessment of the dynamics of the competitive position based on the composition of the EU-15 IIT in the group of machinery and transport equipment is not unambiguously favourable. It is confirmed by the results of the IIT index analysis regarding specific types of two-way trade in 2004–2015 (cf. Figure 2). Importantly, there was a fall in the value of GHM indices of the share of HIIT – for horizontal trade (from 10.9% to 8.2%). In the years in question, the horizontal two-way trade of the EU-15 mostly developed with the new EU Member States (a rise by 129.6%, i.e. by EUR 13.4 billion) and with third countries (respectively: up by 59.1% and EUR 17 billion). For comparison, the corresponding growth rate of mutual trade within the EU-15 was only 3.1% (up by EUR 5 billion). The GHM index for VIITh – high quality vertical trade – increased from 12.6% to 15.2% of intra-industry trade. Firms from the EU-15 mostly engaged in vertical two-way trade in high quality products with partners from the EU-10 (up by 171.6%, i.e. EUR 31 billion). The respective figures for trade with third countries were as follows: the rate of growth at 103.4%, i.e. by EUR 76 billion, whereas for mutual trade within the EU-15: the rate of growth at 21.0%, i.e. by EUR 40.8 billion.

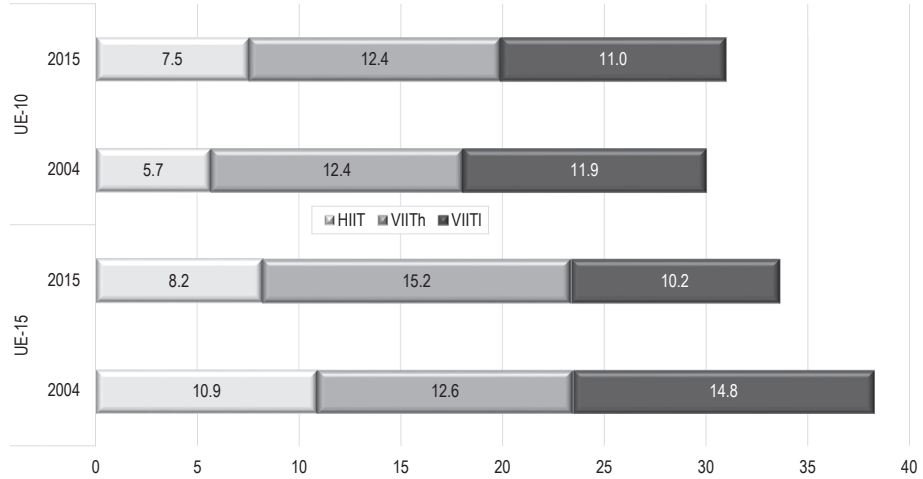

Figure 2. Importance of specific types of intra-industry trade to the EU-10 and the EU-15 in trade in machinery and transport equipment (SITC section 7) in 2004 and 2015 (GHM indices in %)

Source: Eurostat, EasyComext, http://epp.eurostat.ec.europa.eu/newxtweb [retrieved on 13/03/2017]. Own study.

The analysis of development trends for intra-industry trade in the group of machinery and transport equipment (SITC section 7) in the EU-15 allows to demonstrate the main trends in the intra-industry competitiveness of the EU-10 in the group in question against the backdrop of the EU-15.

In 2004–2015, products from the SITC commodity group (7) accounted for the largest part of foreign trade in the EU-10 – as in the EU-15. In 2015, machinery and transport equipment represented as much as 43.4% of the value of total trade in the new EU Member States[5]. In 2004, the respective share was 40.4%. In the period covered, the group concerned gained in importance in the overall trade of the EU-10. It is reflected in the high dynamics of trade – a rise from EUR 178.8 billion to EUR 534.0 billion, i.e. more than threefold growth in the value of imports and exports in the commodity group concerned[6].

In the period under examination, IIT in machinery and transport equipment was characterised by a significant rise in the share of the EU-10: in 2004 it was 7%, whereas in 2015 it was already nearly 15% of two-way trade (cf. Table 1). Not surprisingly, therefore, in 2004–2015 in the intra-industry trade of the new EU Member States the SITC commodity group (7) played an even greater role than in the case of the EU-15. In 2015, machinery and transport equipment accounted for nearly half (49.3%) of the value of the EU-10 two-way trade. In 2004, the respective share was 50.9%. Its trade value jumped from EUR 172.3 billion to EUR 700 billion (by 220%). However, the growth rate of IIT in the SITC commodity group (7) in comparison with other commodity groups was relatively low (only lower in the case of the SITC commodity group including sections 6 and 8 – other manufactured goods). For the new EU Member States, as in the EU-15, in 2004–2015 the largest growth in intra-industry trade took place in commodity groups other than machinery and transport equipment (which mainly resulted from its low levels in those groups in 2004).

The IIT index in the EU-10 trade in the commodity group in question rose from 30% in 2004 to 32% in 2015 (see Figure 1). The comparison with the other SITC groups

[5] As regards Poland's largest exporting enterprises, the so-called Polish Business Ambassadors abroad, the ranking of Wprost (http://rankingi.wprost.pl/200-najwiekszych-firm/ retrieved on 23/02/2018) indicated the following operators from the SITC section concerned (7): Remontowa Holding, Solaris, PKP, PESA, Sanok Rubber, Amica.

[6] In the majority of the countries under analysis, a major role in trade, particularly in exports, was played by transport equipment, dominated by products of the automotive industry. After the mid-1990s, the Central European countries, i.e. the Czech Republic, Poland, Romania, Slovakia, Slovenia and Hungary, became integrated into the global chain of automotive production as destinations for foreign capital in the form of foreign direct investment in the automotive sector, largely in motor vehicle assembly plants. The division of production processes into specific stages, frequently located in a number of countries, created trade flows: between plants producing parts and components and the car assembly plant as well as between the assembly plant and the outlet for the cars produced.

indicates that the EU-10 strengthened their intra-industry competitiveness in the commodity group concerned (cf. Table 3).

Table 3. Value and structure of merchandise trade by SITC commodity group in the EU-10 and the EU-15 in 2004 and 2015, broken down into total trade and intra-industry trade

Partner	Type	intra-industry trade				Dynamics			
		EUR billion				EUR billion		%	
		EU-10	EU-10	EU-15	EU-15	EU-10	EU-15	EU-10	EU-15
		2004	2015	2004	2015	2004–2015		2004–2015	
EU-15	HIIT	8.2	29.4	159.7	164.6	21.1	5.0	256.6	3.1
	VIIThigh	18.7	46.9	193.9	234.7	28.2	40.8	151.1	21.0
	VIITlow	17.7	42.7	159.4	180.4	24.9	21.0	140.7	13.2
	Total	**44.7**	**119.9**	**514.3**	**609.4**	**75.2**	**95.2**	**168.3**	**18.5**
EU-10	HIIT	1.0	8.9	10.3	23.8	7.9	13.4	833.7	129.6
	VIIThigh	1.6	11.4	18.1	49.1	9.8	31.0	596.0	171.6
	VIITlow	1.5	11.0	10.7	37.9	9.6	27.2	654.0	254.4
	Total	**4.1**	**31.4**	**39.2**	**112.5**	**27.4**	**73.3**	**670.8**	**186.8**
Third countries	HIIT	0.9	1.9	28.7	45.7	1.0	17.0	110.2	59.1
	VIIThigh	1.9	7.8	73.4	149.4	5.9	76.0	317.9	103.4
	VIITlow	2.1	5.3	44.0	74.2	3.1	30.3	145.9	68.9
	Total	**5.0**	**21.0**	**146.7**	**271.9**	**16.0**	**125.2**	**319.7**	**85.3**

Source: Eurostat, EasyComext, http://epp.eurostat.ec.europa.eu/newxtweb [retrieved on 13/03/2017]. Own study.

An examination of the dynamics of the competitive position based on analysing the types of IIT in the SITC commodity group (7) allows to positively assess the trends observed for the EU-10 (in contrast to the case of the EU-15). Importantly, in 2004–2015 there was an increase in the GHM indices for horizontal trade (from 5.7% to 7.5% of total intra-industry trade within the SITC commodity group (7)). In the EU-10, intra-industry trade in horizontally differentiated products grew the most rapidly within the single European market – in mutual trade (the rate of growth at 833.7%, i.e. by EUR 7.9 billion) and with the EU-15 (up by 256.6%, i.e. EUR 21.1 billion). The respective indicators in trade with non-EU countries were 110.2% and EUR 1 billion. At the same time, in the EU-10 two-way trade in high quality vertically differentiated products of the SITC commodity group (7) developed the most dynamically in mutual trade (up by 596%, i.e. EUR 9.8 billion) and with third countries (the rate of growth at 317%, i.e. by EUR 5.9 billion). For trade with the EU-15, the growth rate of high quality VIIT was 151.1% and the trade value went up by EUR 28.2 billion.

In 2004–2015, machinery and transport equipment played the greatest role in intra-industry trade in both the EU-15 and the EU-10. In the period covered, the EU-15

maintained high intra-industry competitiveness within the commodity group in question[7]. Over the same period, the EU-10 significantly strengthened their competitive position in the group concerned. Importantly, after the enlargement of the European Union the development directions of the most desirable types of two-way trade observed in the new EU Member States were synchronised with the trends characteristic of the EU-15. It indicates similar compositions of intra-industry trade in both integrating economic areas. It also confirms the trend of strengthening intra-industry competitiveness within the SITC commodity group (7) in the single European market.

Changes in the structure by type of intra-industry trade in machinery and equipment in the EU-10 can be regarded as favourable. The rise in the shares of horizontal and high quality vertical IIT indicates that the majority of the countries covered were no longer mere suppliers of primary commodities, unprocessed products or of low-value goods: they increasingly exported semi-finished products and final goods of high quality and significant technology intensity. Those changes can be attributed to the modernisation of the machinery and equipment industry and with the inflow of foreign direct investment to the sector concerned (Czarny, Śledziewska 2009, pp. 92–116). The scale of such developments varied between the states covered, hence the different effects observed (Kawecka-Wyrzykowska, Ambroziak, Molendowski, Polan, 2017, p. 88).

An example illustrating the phenomenon at the enterprise level can be a major involvement of Germany's largest automotive companies in the building of production branches in the new EU Member States. The list of the largest German exporting enterprises includes four concerns from the automotive industry: the Volkswagen Group (VW), Daimler, the BMW Group and Continental[8]. Three of them considerably increased their business operations in the EU-10. In the ranking of the largest firms from Central and Eastern Europe, VW subsidiaries were ranked as follows: 2nd – Škoda Auto A.S. in the Czech Republic, 5th – Volkswagen Slovakia A.S., 6th – Audi Hungaria Motor KFT, 30th

[7] In a more detailed analysis of the composition of intra-industry trade by type, the section including transport equipment must be treated with particular caution. The section in question comprises goods of varying nature, in terms of production methods and uses of final products. The production of motor vehicles, in particular of passenger cars, was characterised by a high degree of production process fragmentation. On the other hand, processes in the manufacture of railbound vehicles or vessels were distinctly less fragmented. According to theory, the higher the degree of production fragmentation, the greater the possibility of differentiating varieties of goods produced at specific production stages, thus the higher potential for growth in intra-industry trade. The groups of products under examination played different roles in particular countries, which was reflected in the structure of intra-industry trade in type in the SITC commodity group (7). In addition, the structure of intra-industry trade in transport equipment by type was at times distorted for statistical reasons. In certain countries, e.g. in Poland, intra-industry trade included processing activities such as repairs of ships from other countries. A vast majority of such trade was vertical in nature, with the country in which ships were repaired exporting vessels of higher unit values (after repairs) and importing vessels of lower unit values (in need of repair work). For instance, it was observed in trade in ships between Poland and Norway (for more cf. Ambroziak 2013).

[8] Cf. http://www.worldexports.com/germanys-top-exports/ (retrieved on 24/02/2018).

– Volkswagen Poznań Sp. z o.o. and 39th – Volkswagen Group Polska Sp. z o.o. In the same ranking, Mercedes-Benz Manufacturing Hungary KFT was ranked 17th, whereas Continental Automotive Czech Republic S.R.O. and Continental Barum S.R.O. were ranked 51st and 54th respectively[9].

Other manufactured goods

In 2004–2015, the group of other manufactured goods represented the second – behind SITC section 7 – most important commodity group in the foreign trade of both the EU-15 and the EU-10. Over the analysed period from 2004 to 2015, however, in the case of both economic areas there was a decrease in the share of the commodity group in question in total trade – from 28.2% to 26% in the case of the EU-15, from 34.1% to 28.5% for the EU-10 (cf. Table 1). As regards the EU-15, the growth rate of total trade in the SITC commodity group concerned (sections 6 and 8) was the lowest among all the group under analysis – 52%. That was also the case for the EU-10, with the growth rate at 132% (cf. Table 2).

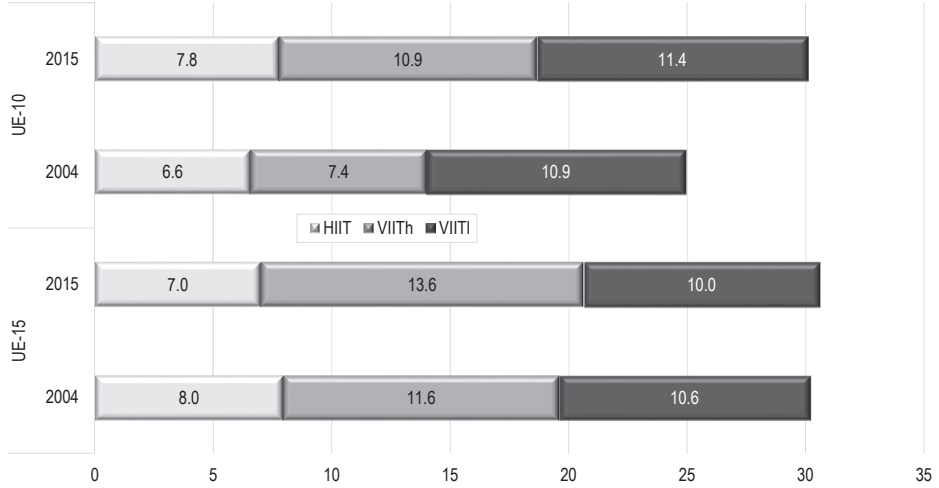

Figure 3. Importance of specific types of intra-industry trade to the EU-10 and the EU-15 in trade in other manufactured goods (SITC sections 6 and 8) in 2004 and 2015 (GHM indices in %)

Source: Eurostat, EasyComext, http://epp.eurostat.ec.europa.eu/newxtweb [retrieved on 13/03/2017]. Own study.

With regard to the EU-15, in 2015 as much as 27.2% of intra-industry trade concerned goods included in the SITC commodity group in question (sections 6 and 8). In 2004, the respective share was 27.8%. It means a rise in turnover from EUR 414 billion to EUR 635 billion (by 52%). Therefore, other manufactured goods constituted

[9] Cf. www.coface.pl/Aktualności-i-media/Rankingi-i-konferencje/TOP-500-CEE (retrieved on 24/02/2018).

a significant commodity group for two-way transactions in the EU-15 (cf. Table 1). The Grubel–Lloyd IIT index for the SITC product group in question (6+8) increased from 31% to 32% (see Figure 1). For the EU-15, the only commodity groups characterised by greater dynamics of involvement in the intra-industry division of labour were chemicals and machinery and transport equipment.

The result of the analysis of intra-industry trade indices concerning specific types of two-way trade in 2004–2015 (cf. Figure 3) indicate no major improvement of the international competitive position of the EU-15 in the SITC commodity group (6+8). The GHM index for horizontal trade, the most desirable indicator from the point of view of this analysis, dropped from 8% in 2004 to 7% in 2015. As in the case of machinery and transport equipment, in the years covered the horizontal two-way trade of the EU-15 in other manufactured goods mostly developed with the new EU Member States (a rise by 129.6%, i.e. EUR 7.9 billion) and with third countries (respectively: up by 68.8%, i.e. EUR 8.5 billion). The growth rate of mutual horizontal trade within the EU-15 was 22% (an increase in value by EUR 18.9 billion) over the same period.

The analysed SITC category (6+8) encompasses other products included in section 6 (manufactured goods classified chiefly by material, e.g. leather and leather manufactures, rubber manufactures, cork and wood manufactures, paper manufactures, textile yarn and fabrics, non-metallic mineral manufactures, iron and steel, non-ferrous metals and manufactures of metals) and section 8 (miscellaneous manufactured articles, mostly: prefabricated buildings, various fixtures and fittings; furniture; travel goods; apparel; footwear; professional, scientific and controlling instruments and apparatus; photographic apparatus, equipment and supplies and optical goods). It is a broad category of products, including manufactures of heavy and light industries[10]. Importantly from the point of view of examining the types of intra-industry trade – particularly of high quality vertical trade – that commodity group also comprises articles of apparel and clothing accessories, furniture, footwear, tyres, characterised by strong brands and vital influence of their marketing on the standardisation of consumer demand patterns not only in the single European market but affecting global demand for such products as well. Intra-Community trade in products included in the category in question was also considerably stimulated by the development in the EU's single market of DIY & Gardening distribution chains (e.g. IKEA, Adeo, Kesko, OBI, Bauhaus, Leroy Merlin, Bricomarche, KIK, Castorama, Praktiker, METRO, REWE). The expansion of such operators, mostly based in the EU-15, in markets of the new EU Member States as well as their key supplier concentration strategies influenced significant intra-Community purchase and sale

[10] In the period covered, the greatest contributors to the expansion of Polish exports in the SITC commodity group in question (6+8) included the following enterprises: Impexmetal, Alumetal, Stalprodukt, FAKRO, ZGK Bolesław, Hutmen, Selena, Nicroment, Alchemia, Nowy Styl, BRW, PressGlass, Grupa Kęty, Forte, Stalmet, CCC. Cf. http://rankingi.wprost.pl/200-najwiekszych-firm/ retrieved on: 23/02/2018.

transactions. Bearing in mind the above, it is hardly surprising that in the period covered the share of IIT in high quality vertically differentiated products rose by 2 pps (from 11.6% to 13.6% of the total two-way trade of the EU-15). In 2004–2015, that type of intra-industry trade in the EU-15 mostly developed in relations with the new EU Member States (the rate of growth at 108.8%, i.e. by EUR 15.1 billion) and with third countries (up by 82.9%, i.e. EUR 32.6 billion). Cf. Table 4.

Table 4. Dynamics of specific types of the intra-industry trade in other manufactured goods (SITC sections 6 and 8) of the EU-10 and of the EU-15 with major groups of partners in 2004 and 2015 (2004=100%)

Partner	Type	intra-industry trade				Dynamics			
		EUR billion				EUR billion		%	
		EU-10	EU-10	EU-15	EU-15	EU-10	EU-15	EU-10	EU-15
		2004	2015	2004	2015	2004–2015		2004–2015	
EU-15	HIIT	7.8	17.2	86.1	105.0	9.5	18.9	121.8	22.0
	VIIThigh	8.3	26.4	117.7	170.3	18.1	52.6	217.5	44.7
	VIITlow	13.5	28.3	90.8	128.1	14.8	37.4	109.6	41.2
	Total	**29.7**	**72.1**	**303.8**	**416.0**	**42.4**	**112.2**	**142.9**	**36.9**
EU-10	HIIT	1.9	8.4	6.1	14.0	6.6	7.9	354.9	129.6
	VIIThigh	2.1	8.7	13.9	29.0	6.5	15.1	305.0	108.8
	VIITlow	2.2	9.0	5.6	21.3	6.9	15.7	314.6	281.9
	Total	**6.2**	**26.2**	**25.7**	**65.0**	**20.0**	**39.3**	**321.8**	**152.6**
Third countries	HIIT	0.3	1.6	12.3	20.8	1.3	8.5	419.1	68.8
	VIIThigh	0.8	3.1	39.4	72.0	2.3	32.6	290.0	82.9
	VIITlow	0.8	2.8	24.9	49.7	2.0	24.8	252.9	99.3
	Total	**1.9**	**7.6**	**84.3**	**154.0**	**5.7**	**69.7**	**295.5**	**82.7**

Source: Eurostat, EasyComext, http://epp.eurostat.ec.europa.eu/newxtweb [retrieved on 13/03/2017]. Own study.

In 2015, other manufactured goods accounted for nearly one-third (30.3%) of the value of the overall intra-industry trade of the EU-10. In 2004, the respective share was 35.8%; the value of IIT jumped from EUR 151 billion to EUR 350.2 billion (by 180%). Therefore, the growth rate of IIT in the new EU Member States in the SITC commodity group (6+8) as compared to other product groups was the lowest in the period covered.

In 2004–2015, the Grubel–Lloyd index of the share of two-way trade in other manufactured goods went up from 25% to 30%. Significant increases in the intra-industry trade of the EU-10 in the commodity group in question were observed for all the types of two-way trade. The proportion of horizontal trade augmented from 6.6% to 7.8% of total IIT. At the same time, the GHM indices of the share of high quality vertical trade rose from 7.4% to 10.9%.

As regards the EU-10, intra-industry trade in horizontally differentiated manufactures included in the SITC commodity group (6+8) showed the most robust growth in relations with third countries (up by 419.1%, i.e. EUR 1.3 billion) and in mutual trade (up by 354.9%, i.e. EUR 6.6 billion). Simultaneously, high quality vertical trade in the EU-10 developed the most dynamically in mutual trade (the rate of growth at 305%, an increase in trade by EUR 6.5 billion) and with third countries (up by 290%, i.e. EUR 2.3 billion).

Chemicals

In 2004–2015, SITC section 5 – organic and inorganic chemicals; dyeing, tanning and colouring materials; medicinal and pharmaceutical products; perfume materials; toilet, polishing and cleaning preparations; fertilisers; plastics and other chemical materials and products – represented the third most important group of products in foreign trade, both in the EU-15 and the EU-10. Over the 11 years under analysis, the share of that group went up both in the total trade and in the intra-industry trade of the EU-25. With regard to the EU-15, a rise in two-way trade in chemicals from EUR 230.2 billion to EUR 391.7 billion indicated an increase in the share of the commodity group in question in overall intra-industry trade by 1.5 pps (from 15.5% to 17%). In the case of the EU-10, the growth was even more distinct – the proportion augmented by 3.4 pps (a rise in trade from EUR 6.3 billion to EUR 33 billion) (cf. Table 1).

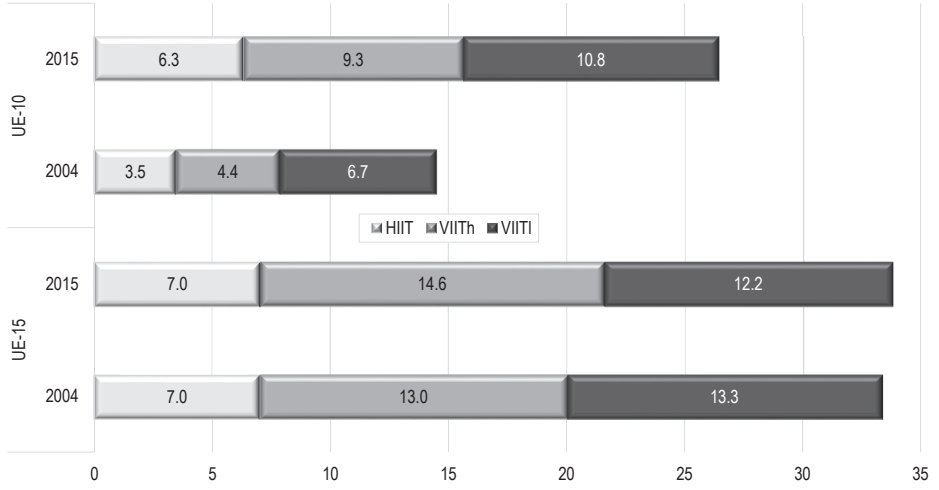

Figure 4. Importance of specific types of intra-industry trade to the EU-10 and the EU-15 in trade in chemicals (SITC section 5) in 2004 and 2015 (GHM indices in %)

Source: Eurostat, EasyComext, http://epp.eurostat.ec.europa.eu/newxtweb [retrieved on 13/03/2017]. Own study.

In the EU-15, the Grubel–Lloyd IIT index for the SITC product group (5) went up from 33% to 34% (cf. Figure 1). It means that in the period covered the involvement of the EU-15 economies in the intra-industry division of labour within the industry concerned was similar to the proportion of two-way trade in machinery and transport equipment.

The period 2004–2015 saw an improvement in the intra-industry competitive position of the EU-15 in trade in chemicals. It is confirmed by the results of the intra-industry trade index analysis regarding specific types of two-way trade within the SITC commodity group (5) (cf. Figure 4). The GHM index for trade in horizontally differentiated products remained at 7%, whereas the value of trade increased from EUR 48.2 billion to EUR 82.3 billion. As in the case of other categories of manufactured goods (SITC section 7, SITC sections 6 and 8), also for chemicals the horizontal two-way trade of the EU-15 grew the most rapidly with the new EU Member States (by 398.7%, i.e. EUR 3.4 billion). The respective growth rate of mutual trade was 73.1% (up by EUR 29.4 billion), whereas trade with third countries went up by 17.2% (i.e. EUR 1.2 billion). At the same time, the share of high quality vertical trade rose by 1.6 pps from GHM=13.0% in 2004 to GHM = 14.6% in 2015. That type of trade in the EU-15 developed mostly with the EU-10 and with third countries (cf. Table 5).

Table 5. Dynamics of specific types of the intra-industry trade in chemicals (SITC section 5) of the EU-10 and of the EU-15 with major groups of partners in 2004 and 2015 (2004 = 100%)

Partner	Type	intra-industry trade				Dynamics			
		EUR billion				EUR billion		%	
		EU-10	EU-10	EU-15	EU-15	EU-10	EU-15	EU-10	EU-15
		2004	2015	2004	2015	2004–2015		2004–2015	
EU-15	HIIT	0.9	5.1	40.2	69.6	4.2	29.4	452.2	73.1
	VIIThigh	1.0	7.6	69.9	121.3	6.6	51.4	636.1	73.5
	VIITlow	2.0	9.5	73.8	100.1	7.5	26.3	378.8	35.6
	Total	**3.9**	**22.2**	**184.4**	**292.2**	**18.2**	**107.8**	**462.2**	**58.5**
EU-10	HIIT	0.5	2.4	0.9	4.3	1.9	3.4	363.8	398.7
	VIIThigh	0.7	3.2	1.5	7.5	2.6	6.1	372.4	416.8
	VIITlow	0.7	3.0	0.8	7.5	2.3	6.8	336.2	883.2
	Total	**1.9**	**8.7**	**3.1**	**19.4**	**6.8**	**16.3**	**356.3**	**526.7**
Third countries	HIIT	0.1	0.4	7.1	8.3	0.3	1.2	489.1	17.2
	VIIThigh	0.2	0.7	15.2	41.5	0.5	26.3	306.5	172.6
	VIITlow	0.2	1.0	20.0	35.3	0.7	15.2	366.1	76.0
	Total	**0.5**	**2.1**	**42.7**	**86.1**	**1.7**	**43.4**	**359.9**	**101.5**

Source: Eurostat, EasyComext, http://epp.eurostat.ec.europa.eu/newxtweb [retrieved on 13/03/2017]. Own study.

In 2015, chemicals accounted for nearly one-tenth (9.4%) of the value of the overall intra-industry trade of the EU-10[11]. In 2004, the respective share was 6%. The value soared from EUR 43.2 billion to EUR 124.2 billion (by 423%). In 2004–2015, the Grubel–Lloyd index of the share of two-way trade in chemicals in the new EU Member States increased from 15% to 27%.

Significant increases in the intra-industry trade of the EU-10 in the group in question were observed for all the types of two-way trade. The proportion of horizontal trade augmented from 3.5% to 6.3% of total IIT in that commodity group. At the same time, the GHM indices of the share of high quality vertical trade rose from 4.4% to 9.3%.

In the EU-10, intra-industry trade in horizontally differentiated chemicals grew the most dynamically in relations with third countries (the rate of growth at 489.1%, i.e. by EUR 0.3 billion) and in trade with the EU-15 (up by 452.2%, i.e. EUR 4.2 billion). At the same time, high quality vertical trade in products of the analysed SITC category (5) in the EU-10 developed the most rapidly in trade with the EU-15 (the rate of growth at 636.1%, an increase in trade by EUR 6.6 billion) and in mutual trade within the EU-10 (up by 372.4%, i.e. EUR 2.6 billion).

Intra-industry trade in manufactured goods broken down into categories based on technology intensity

In 2015, international trade in manufactures included in SITC section 5, sections 6 and 8 and section 7 represented nearly 80% of the total merchandise trade of the EU-25. With the application of the UNCTAD classification, the groups can be broken down into four categories of products by technology intensity[12]. Analysing such a structure of intra-industry trade is of particular importance to assessing changes in the competitiveness of economies. From the point of view of improving competitiveness, it is more desirable to increase horizontal and high quality vertical two-way trade in manufactured goods characterised by high technology intensities than to focus more on low quality vertical trade in resource-based and labour-intensive products.

The analysis of data presented in Figure 5 allows to conclude that in 2004–2015 total trade and IIT in manufactures in the case of both the EU-10 and the EU-15 mostly developed in the categories of medium- and high-technology products ('MidTech' and 'HighTech' indications respectively).

[11] A number of Poland's largest exporting enterprises represented the chemical industry (Boryszew, Grupa Azoty, Ciech, Anwil, Synthos, PCC Exol) and the pharmaceutical sector (TZMO, Grupa Adamed). Cf. http://rankingi.wprost.pl/200-najwiekszych-firm/ retrieved on: 23/02/2018.

[12] See http://unctadstat.unctad.org/EN/Classifications.html

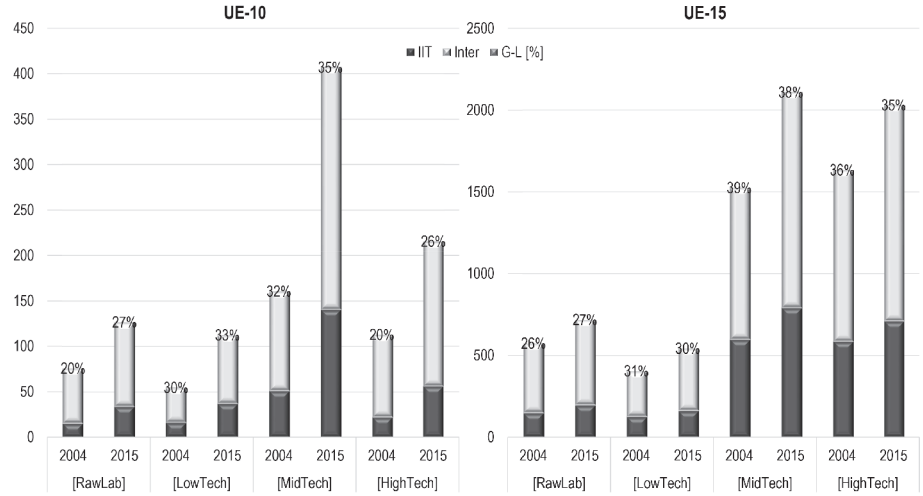

Figure 5. Value of the inter- and intra-industry trade of the EU-10 and of the EU-15 in manufactures broken down by technology intensity [EUR billion] and IIT shares [G-L indices, in %] in 2004 and 2015

Source: Eurostat, EasyComext, http://epp.eurostat.ec.europa.eu/newxtweb [retrieved on 13/03/2017]. Own study.

In the period covered, there was a considerable improvement in the competitiveness of the EU-10 intra-industry trade. The quality of the two-way trade of that group of countries in high-technology products increased with regard to each of the types of trade under examination. As regards the EU-15, the assessment of changes in the structure is not so unequivocally positive (cf. Figure 6).

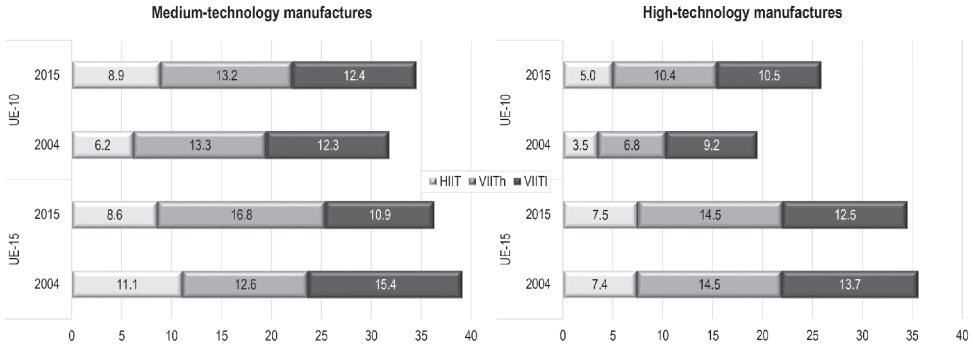

Figure 6. Importance of specific types of intra-industry trade to the EU-10 and the EU-15 in trade in medium- and high-technology manufactures in 2004 and 2015 (GHM indices in %)

Source: Eurostat, EasyComext, http://epp.eurostat.ec.europa.eu/newxtweb [retrieved on 13/03/2017]. Own study.

In the EU-10 and the EU-15, trade in high-technology products grew the most dynamically with the EU-10 and third (non-EU-25) countries (see Table 6). It is a significant similarity of changes in the composition of IIT in the single European market in the most important area of intra-industry competitiveness.

Table 6. Dynamics of specific types of the intra-industry trade in manufactures of the EU-10 and of the EU-15 with major groups of partners in 2004 and 2015

Partner	Type	Medium-technology goods				High-technology goods			
		EUR billion		% (2004=100%)		EUR billion		% (2004=100%)	
		EU-10	EU-15	EU-10	EU-15	EU-10	EU-15	EU-10	EU-15
		2004–2015		2004–2015		2004–2015		2004–2015	
EU-15	HIIT	19.1	-11.4	230.7	-8.3	4.3	20.9	150.9	21.6
	VIIThigh	19.8	39.9	108.3	24.7	10.2	1.7	195.1	1.0
	VIITlow	20.4	-1.9	121.0	-1.3	8.2	20.1	100.4	14.2
	Total	**59.3**	**52.1**	**136.3**	**11.6**	**22.8**	**45.2**	**138.9**	**10.7**
EU-10	HIIT	5.8	12.8	534.3	132.7	2.2	2.7	262.7	71.4
	VIIThigh	7.6	23.0	402.0	121.6	3.3	9.3	235.9	141.0
	VIITlow	7.3	19.5	409.5	194.0	2.8	9.8	208.7	239.3
	Total	**20.7**	**56.9**	**433.8**	**146.8**	**8.4**	**21.9**	**230.0**	**149.7**
Third countries	HIIT	1.2	9.1	230.3	38.8	0.4	8.0	153.0	38.9
	VIIThigh	5.0	59.3	392.6	116.5	1.2	16.7	117.3	21.1
	VIITlow	3.2	15.8	284.7	44.5	1.3	30.1	158.5	60.8
	Total	**9.4**	**84.4**	**319.5**	**76.5**	**3.0**	**56.4**	**136.1**	**37.2**
Total	HIIT	26.2	10.6	264.2	6.2	6.9	31.5	174.9	26.0
	VIIThigh	32.4	161.8	150.9	84.3	14.7	57.4	192.1	24.3
	VIITlow	30.8	-6.2	156.1	-2.6	12.3	30.2	119.2	13.5
	Total	**89.4**	**193.4**	**174.6**	**32.3**	**34.2**	**123.5**	**153.6**	**21.0**

Source: Eurostat, EasyComext, http://epp.eurostat.ec.europa.eu/newxtweb [retrieved on 13/03/2017]. Own study.

As regards the category of medium-technology manufactures, in 2004–2015 the EU-10 improved their intra-industry competitiveness to a greater extent than the EU-15. The shares of all the three types of two-way trade increased in the case of the new EU Member States. For the EU-15, growth in proportion was only recorded in the case of trade in horizontally differentiated products (by a mere 0.1 pp).

Conclusions

A number of important economic benefits arise from intra-industry trade (IIT). This type of trade gives momentum to international economic linkages. Its growth may facilitate the resolution of various socio-economic development issues. There are significant

opportunities to deepen the intra-industry division of labour and to improve its structure in the process. Further opening of economies is of key importance to the new EU Member States (EU-10). Moving to a more advanced stage of production internationalisation, i.e. active participation in international economic integration within the European Union, may and should be conducive to improved economic efficiency and increased social well-being (Misala, Pluciński 2000).

Adjustment processes observed in the CEECs in transition were not undisturbed. One drawback was the relatively low intensity, thus specific structure of IIT. Therefore, it is essential to investigate further development of those processes and to make use of such analysis results in seeking more optimal solutions in the real economy and in the institutional and organisational spheres (Molendowski 2007).

The analysis of the main trends in the foreign trade of the EU-10 after the 2004 EU accession indicates increasing similarities between trade patterns in the new EU Member States and the structure characteristic of the EU-15, the convergence of the EU-10 economies and further adjustments to the single market (Polan 2017a).

However, did the process of greater European integration support positive structural effects on the EU-10 economies? An examination of composite indicators (e.g. the Global Competitive Index) does not suggest that after the most extensive enlargements of the European Union in 2004 and 2007 there was an unambiguous enhancement in the economic competitiveness of the EU Member States (Molendowski 2017). The average GCI value computed for the EU-15 and the EU-10 showed no improvement between 2006 and 2015 – it was 5.1 for the EU-15 and 4.4 for the EU-10. In addition, according to the analysis of the GCI ranking (arithmetic mean), the competitiveness rank dropped from 21st to 23rd for the EU-15 and from 45th to 48th for the EU-10[13].

An additional examination of intra-industry competitiveness seems useful at this point. Intra-industry trade may be treated as a competitiveness measure (Molendowski, Polan 2015). The observation of the composition of the EU-15 intra-industry trade and the comparison of the results with trends observed in the EU-10 may help identify advisable development directions of trade models for the EU-10 to fast-track their well-being growth and to narrow their development gap.

The conducted analysis of the intra-industry trade structure in the EU-10 as compared to the respective trends for the EU-15 allowed to demonstrate a significant structural improvement of the intra-industry trade competitiveness of the EU-10 in the period covered. In a number of cases, there was a significant similarity of changes in the composition of IIT in the single European market in the most important areas of intra-industry competitiveness.

[13] Own calculations based on The Global Competitive Index Historical Dataset 2007–2016, World Economic Forum, http://reports.weforum.org/global-competitiveness-report-2015-2016

Those trends seem to have mainly resulted from fast adjustments of businesses in the EU-10 to the requirements of the EU's single market. The process appeared to be successful. The goal has been achieved but are the results satisfactory? Does the comparison of well-being effects with those observed in the EU-15 give a sense of satisfying economic outcome? According to the study carried out, intra-industry trade in manufactures in the EU-15 has developed dynamically also outside the single market. It may indicate that the EU-10 should expand their trade relations also with those countries in order to faster catch up with the wealth level of the EU-15.

It seems possible in a longer term. The years after EU accession saw significant development in the technological infrastructure of the new EU Member States. Investments in modern technologies in the EU-10 produced results. The CEECs now have modern, large enterprises, ever-more successful in global markets. Due to dynamic accumulation of knowledge and capital, such companies increasingly rely on their own economic strength rather than only being dependent on operators from Western Europe, the EU-15. In the future, by building solid and global brands and pursuing international marketing strategies they will be able to more effectively influence the demand side – purchasing preferences of their customers. It may contribute to more robust growth in trade in vertically differentiated products of high quality and in horizontal intra-industry trade. That, in turn, may be conducive to more intensive convergence in the area of the SEM and increased social well-being in the EU-10.

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IMPACT OF THE ACCOUNTING STANDARDS APPLIED ON THE ASSESSMENT OF THE FINANCIAL SITUATION OF A COMPANY FROM THE MINING SECTOR

The discrepancies between the Polish balance sheet law and the International Financial Reporting Standards (IFRS) with regard to the recognition and presentation of economic events may in some cases have a significant impact on the financial data of the entities applying selected standards. Having regard to the Polish legal system, which imposes the obligation to apply IFRS on listed entities, at the same time excluding this possibility for other entities, it is interesting to attempt to verify the potential comparability of specific companies with a similar profile, operating in the same industry. The aim of the paper is to identify and assess the impact of the accounting standards applied on the key financial ratios and data of an entity operating in the mining industry. The research method used in the paper is financial analysis. The data used for the analyses cover the years 2007–2015.

Keywords: finance, standard, accounting, company, mining.

JEL Classification Codes: L72, M41.

Introduction

Wide spreading IFRS adoption and its progressive evolution contribute to increased interest in the subject of differences between local accounting standards and IFRS and also changes introduced to international standards over time. Comparative analysis of differences between IFRS and Romanian Accounting Standards and its impact on

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financial statement of companies listed on Bucharest Stock Exchange (Georgescu et al. 2015) or comparison of IFRS and Chinese local standards based on review of the enforcement of the IFRS principles in China when they are used by Chinese companies listed on the Mainland Chinese Stock Exchanges (Rossetti S. Verona R., 2017) are examples of papers that emphasis significance of the subject in various countries.

Financial statements constitute a significant source of information about the financial condition of a company, and the data disclosed in such statements are the subject of interest of stakeholders such as investors, lenders, contracting parties, governments and their agencies, as well as the general public. According to the „Conceptual Framework for Financial Reporting" developed by the International Accounting Standards Board, the primary objective of financial statements is to provide information about the financial situation, business results and change in the entity's financial situation, which will be useful for a wide group of users when they make economic decisions (IFRS, 2004). The Conceptual Framework also points out that information may be considered useful if it is comparable, verifiable, timely, and understandable.

A significant role in this context is played by the form of presentation of the financial data, which translates into such qualitative characteristics as comparability and understandability of the information (Kędzior & Grabiński, 2018). It needs to be pointed out that International Accounting Standard No. 1 gives entities substantial freedom when it comes to choosing the layout and contents of the financial statements, only indicating a list of the items that should be disclosed, while the Polish legislator defines the form of the statements precisely, providing a template in an annex to the Accounting Act (Polish Journal of Laws Dz.U. of 2018, item 395, as amended), hereinafter also referred to as the „Act". According to the Polish legal system, which takes into account the provisions of Regulation (EC) No 1606/2002 of the European Parliament and of the Council of 19 July 2002 on the application of international accounting standards (OJ L 243, 11.9.2002), public companies are obligated to apply International Financial Reporting Standards (hereinafter the "IFRS"), while other entities apply Polish accounting principles set forth by the Accounting Act. Bearing in mind the above, users analysing financial statements need to be familiar with the Polish and international balance sheet law in order to be able to interpret the data and to compare the respective entities' financial situation correctly.

Full text of international accounting standards adopted by EU was introduced by Commission Regulation (EC) No 1126/2008 of 3 November 2008 adopting certain international accounting standards in accordance with Regulation (EC) No 1606/2002 of the European Parliament and of the Council (Dz. Urz. UE L of 2008, item 320/1, as amended).

The differences between the IFRS regulations and the Polish Accounting Act in terms of recognition and presentation of certain economic events and operations may lead to significant discrepancies in the structure of companies' financial statements, and consequently influence the assessment of the financial situation as well as the users' decisions made on the basis of such statements. Although literature on the subject so

far has already analysed differences between the standards and their potential impact on financial statements (cf. Wędzki 2009, Adamkiewicz et al. 2014, Grabiński & Kędzior 2007, Adamik-Citak 2011), both the scope of the discrepancies and the specific nature of the companies operating in different industries justify further exploration of the topic. The mining industry is one that displays such specificities. In the Polish hard coal mining sector, there are currently several large business entities, the majority of which, as companies listed on the Warsaw Stock Exchange (JSW SA, Bogdanka S.A.) or entities controlled by public companies, prepare reports according to IFRS. However, there are entities that are still reporting according to the Polish Accounting Act or have recently transitioned its statements to IFRS.This situation may make it difficult to assess and compare the economic resources and claims as well as the business performance of entities with a similar profile of operations. This is why the aim of the paper is to assess the impact of the differences appearing in financial statements prepared in accordance with the Polish accounting principles vs. IFRS on the financial situation of a group from the mining sector[2]. Financial analysis was applied as the research method, using selected ratios on the basis of the financial statements made available by the company, prepared in accordance with IFRS, and statutory financial statements prepared in accordance with the Accounting Act. The analyses spanned the years 2007–2015, with the date of transition to IFRS for the company being 1 January 2007. The company selected for the analysis prepared its statutory financial statements in the period discussed here in accordance with the Accounting Act, and financial statements in accordance with IFRS in relation to the requirements of the financing agreement. It is worth emphasising that both the statutory financial statements and the financial statements in accordance with IFRS were subject to audit by a certified auditor.

The results of the study may be significant both for government agencies acting as regulators and shareholders in the sector, and for other entities from the sector considering transition to IFRS.

Description of the adjustments made by the group as of the date of transition to IFRS

The main adjustments made by the company (group of companies, group) within the framework of data restatement should be considered to comprise:

1. Valuation of tangible fixed assets

   The group, as of the date of transition to IFRS, i.e. 1 January 2007, measured tangible fixed assets acquired before that date using fair value as the assumed acquisi-

[2] The name of the group whose consolidated financial statements were analysed has been anonymised at the request of the company's representatives.

tion cost. The adjustment was applied directly as a result of the exemption indicated in IFRS 1.13b, described more extensively in IFRS 1.16-1.18. Measurement of fixed assets at fair value led to a significant increase in their initial value, at the same time contributing to an increase in the entity's equity. The solution applied had the largest influence not only on the value and structure of assets and liabilities, but also on the financial profit/loss recognised in the consecutive years, affected by higher depreciation. Additionally, the increased value of non current assets may generate additional differences in subsequent reporting periods in the case of an impairment test. It should be pointed out that the criteria of asset impairment set forth in Polish Accounting Standard No. 4 coincide as a matter of principle with those defined in IAS 34 (cf. Adamkiewicz et al., 2014).

2. Presentation of capitalised costs of preparatory works
   The parent company capitalises costs of preparatory works related to coal mining, which do not cause the production or acquisition of property, plant and equipment. Such expenditures are incurred for preparatory works related to mining output obtained in future periods. These expenditures were presented in financial statements made in accordance with the Act in the 2008[3] to 2013 period as prepayments, divided into the short-term and the long term portion. In the restatement process, it was decided that the said assets were similar to property, plant and equipment in terms of their nature. This approach is also applied by companies from the coal mining sector listed on the Warsaw Stock Exchange which prepare their financial statements in accordance with IFRS (LW Bogdanka SA, JSW SA). Recognition of the entire value of capitalised costs of preparatory works in fixed assets influenced the asset structure significantly, increasing the value of non-current assets at the expense of current assets.
3. Presentation of assets held for sale
   Non-current assets held for sale include assets (or groups thereof) in relation to which the economic benefits derived from ownership may be obtained by way of a sale transaction, rather than through continued use. This situation occurs when a fixed asset is available for immediate sale in its current state, taking into account only normal and customarily accepted conditions of sale, and its sale is highly probable (Seredyński et al., 2009).
   According to IFRS 5, the entity must present non-current assets classified as held for sale, and the assets included within a disposal group classified as held for sale, separately on the face of the statement of financial position. A similar approach is applied with regard to liabilities related to the disposal group, which must also be presented separately in liabilities. Offsetting assets and liabilities is not allowed

[3] The data in accordance with the Accounting Act for the year 2007 were restated appropriately for the purposes of this paper.

(IFRS 5.38) In practice, taking into account the liquidity criterion, these assets are presented in current assets (cf. Piotr Prewysz-Kwinto, Grażyna Voss, 2016). Assets held for sale are measured at the lower of carrying amount and fair value less costs to sell (cf. IFRS 5.15). The Polish balance sheet law does not regulate the aspect of assets held for sale, nor, in particular, does it envisage the possibility of excluding assets intended for disposal from non-current assets. Consequently, classifying assets as available for sale entails a change in the asset structure.

4. Net presentation of deferred tax
   For the purposes of preparation of financial statements in accordance with the Polish accounting standards (Accounting Act), the Group presented the deferred income tax asset and provision separately in assets and liabilities in the statement of financial position.
   According to IAS 12.73, in consolidated financial statements, a current tax asset of one entity in a group is offset against a current tax liability of another entity in the group if, and only if, the entities concerned have a legally enforceable right to make or receive a single net payment and the entities intend to make or receive such a net payment or to recover the asset and settle the liability simultaneously (IAS 12.73). It is worth pointing out that the IAS 12.72 provisions quoted above represent an exception from the general rule defined in IAS 1, according to which the entity should not offset assets and liabilities or revenues and expenses, because it detracts from the ability of users both to understand the transactions, other events and conditions that have occurred and to assess the entity's future cash flows (IAS 1.32–1.33). Offsetting assets and liabilities may lead to a significant decrease in the balance sheet total, improving at the same time the capital gearing ratio.
5. Company Social Benefits Fund assets
   In accordance with the Act of 4 March 1994 on the company social benefits fund (Dz. U. of 2018, item 1316), entities which are part of the analysed capital group establish a Company Social Benefits Fund (ZFŚS) and manage it on behalf of their employees. The contributions towards the Company Social Benefits Fund are deposited in separate bank accounts of the respective entities. In the group's consolidated financial statements in accordance with the Accounting Act, the assets financing the Company Social Benefits Fund are recognised as monetary assets, receivables or prepayments (IFRS financial statements, 2007–2009, 2011). Special funds are not regulated by IFRS, which in practice has led to discrepancies in the recognition of assets and liabilities related to the funds. Some companies, including companies from the analysed group, recognise events related to the company social benefits fund only in the financial profit/loss, while assets and liabilities are removed from the statement of financial position. This solution is justified by the fact that the Company Social Benefits Fund assets, being beyond the entity's control, do not meet the definition of assets included in the conceptual framework. Given the absence of regulation

in IFRS, some entities apply the provisions of the Polish balance sheet law in this regard, in accordance with the provisions of Article 2.3 of the Accounting Act, which clearly indicates that the Act and the implementing rules issued on its basis shall be applied in cases not governed by IAS (cf. Seredyński, Krupa, Stawowy, Jałowiecka-Madeja, 2009). The Company Social Benefits Fund assets were not recognised in consolidated financial statements in accordance with IFRS, due to the absence of expected economic benefits which could potentially lead to cash and cash equivalents crediting the Group's account (IFRS financial statements 2007–2009, 2011). The exclusion of Company Social Benefits Fund assets and liabilities in the IFRS financial statements often leads to a decrease in the recognised amount, and consequently worse liquidity ratios compared to the same ratios calculated on the basis of financial statements prepared in accordance with the Accounting Act.

6. Recognising contributions to the Mine Liquidation Fund (FLZG) and presentation of assets and provisions related thereto in the statement of financial position.
   Pursuant to the Act of 4 February 1994 – Geological and Mining Law (Dz. U. of 2011 no. 163, item 981), the group companies established provisions for the liquidation of mines, made contributions to the Mine Liquidation Fund, and transferred funds to separate accounts, but the presentation of the related assets and liabilities and the method of cost recognition differed in the financial statements prepared in accordance with IFRS compared to the recognition in the statements in accordance with the Accounting Act in the following manner:
   a) with regard to assets, the estimated costs of dismantling and removal of an asset according to IAS 16.16c increase the production or acquisition of fixed assets. According to the Accounting Act property, plant and equipment is recognised at the acquisition or production cost which do not include the estimated future costs of dismantling;
   b) with regard to liabilities in the financial statements in accordance with the Accounting Act, the provision for the costs of plant liquidation is presented in long-term provisions, while the balance of the liquidation fund is presented in special fund payables. In the financial statements in accordance with IFRS, it is presented entirely in provisions;
   c) in the income statement in accordance with IFRS, depreciation of the capitalised portion of the liquidation costs is charged to operating expenses, which is a consequences of recognising this category as an element of the initial value of property, plant and equipment item;
   d) the Mine Liquidation Fund cash, constituting restricted cash in the group's financial statements prepared in accordance with IFRS, is presented as other long-term financial assets, reflecting the degree of liquidity of the relevant asset.

   The adjustment applied as above with regard to the recognition and presentation of the Mine Liquidation Fund in the financial statements in accordance with IFRS had

an impact, therefore, on the structure of the balance sheet and of the income statement, as well as on the cash flow statement.

Assessment of the impact of transition to IFRS on the entity's financial data

The main categories of data presented in the financial statements were analysed to assess the influence of the standards applied on the group's financial data. Table 1 presents the differences in the value of assets as of the date of transition to IFRS and as of the subsequent balance sheet dates.

Table 1. Changes in the value of non-current and current assets as a result of transition to IFRS [millions PLN]

	01 Jan 2017	31 Dec 2007	31 Dec 2008	31 Dec 2009	31 Dec 2010	31 Dec 2011	31 Dec 2012	31 Dec 2013	31 Dec 2014	31 Dec 2015
Financial statements in accordance with the Act										
Total assets, including	3,284	3,420	4,106	4,819	4,736	4,710	5,485	5,716	5,158	4,386
Non-current assets	2,375	2,565	3,070	3,662	3,761	3,777	4,167	4,331	4,244	3,690
Current assets	910	855	1,035	1,157	976	932	1,318	1,385	914	696
Financial statements in accordance with IFRS										
Total assets, including	5,204	5,054	5,433	5,847	5,560	5,343	5,954	6,032	5,590	4,505
Non-current assets	4,482	4,402	4,664	5,014	4,883	4,702	5,023	5,113	4,719	3,828
Current assets	722	651	769	834	677	641	931	919	871	677
Difference / change as a result of restatement										
Total assets, including	1,920	1,633	1,328	1,028	823	634	469	316	432	118
Non-current assets	2,107	1,837	1,593	1,352	1,122	925	857	782	475	138
Current assets	-188	-204	-266	-324	-298	-291	-387	-466	-43	-19
Difference / change as a result of restatement (expressed in %)										
Total assets, including	58	48	32	21	17	13	9	6	8	3
Non-current assets	89	72	52	37	30	24	21	18	11	4
Current assets	-21	-24	-26	-28	-31	-31	-29	-34	-5	-3

Source: own compilation based on the company's financial statements.

The comparison points to a clear increase in the value of assets, caused mainly by the measurement of fixed assets as of the date of transition to IFRS. Interestingly, the result of the above analysis differs from the results of the analyses carried out for listed companies in the period of transition to IFRS. The analysis of the consequences of transition to IFRS in 2004 carried out on the basis of 30 groups listed on the Warsaw Stock Exchange demonstrated that restatement of the financial statements in accordance with International Accounting Standards had only an insignificant impact on the financial data.

According to the outcomes of the research, total assets increased by 2% on average as a result of the transition to IFRS. It is worth pointing out, however, that fixed assets were the main drivers of growth, increasing by 5% on average (cf. Grabiński & Kędzior, 2007).

In the analysed case, the reason for the significant change in the value of assets may be provided by the valuation of land and of the right of perpetual usufruct of land, whose value grows over time. The last revaluation of fixed assets in polish balance sheet law was performed as of 1 January 1995 on the basis of the Ordinance of the Minister of Finance of 20 January 1995 on depreciation of property, plant and equipment and amortisation of intangible assets, and on property, plant and equipment valuation (Dz. U. No. 7, item 34, as amended). With regard to underground headings, which constitute a significant element of the mines' assets, the valuation is most likely to have been performed using the replacement method, so the values could grow significantly. With regard to the remaining groups of assets, this may be caused by the overly high depreciation rates applied in the previous periods, leading to an inappropriate decrease in the value of the assets held.

An analysis of the data over time clearly points to the temporary nature of the difference. The higher value of assets in the subsequent periods translates into increased depreciation, leading to a decrease in the financial results in the financial statements prepared in accordance with IFRS compared to the financial statements prepared in accordance with the Accounting Act. The values of the depreciation costs are compared in Table 2.

Table 2. Comparison of depreciation value in financial statements in accordance with the Act and IFRS [millions PLN]

Depreciation value	2007	2008	2009	2010	2011	2012	2013	2014	2015
PAS statements	-254	-280	-369	-422	-460	-470	-425	-917	-834
IFRS statements	-489	-484	-545	-565	-530	-513	-452	-943	-850
Difference	-236	-204	-177	-143	-70	-44	-27	-27	-16

Source: own compilation based on the company's financial statements.

A comparison of assets also points to a significant decrease in current assets, caused mainly by reclassification to fixed assets of the prepayments related to capitalised costs of preparatory works. Another significant adjustment consists in the reclassification of the financial assets of the Mine Liquidation Fund to long-term investments.

The change in the structure of assets as a result of the adjustments leads to a reduction in the group's net working capital defined as current assets less short-term liabilities, and thus has a negative impact on the assessment of the company's financial situation in terms of liquidity. Table 3 presents a comparison of the net working capital values.

Table 3. Differences in the value of net working capital as a result of restatement of data in accordance with IFRS [millions PLN]

	01 Jan 2017	31 Dec 2007	31 Dec 2008	31 Dec 2009	31 Dec 2010	31 Dec 2011	31 Dec 2012	31 Dec 2013	31 Dec 2014	31 Dec 2015
Financial statements in accordance with the Act										
Current assets	910	855	1,035	1,157	976	932	1,318	1,385	914	696
Current liabilities	860	1,020	1,573	2,003	1,843	1,723	1,638	1,795	2,244	1,491
Financial statements in accordance with IFRS										
Current assets	722	651	769	834	677	641	931	919	871	677
Current liabilities	846	949	1,485	1,929	1,781	1,641	1,551	1,694	2,173	1,455
Net working capital = current assets – current liabilities										
PAS statements	49	-164	-538	-845	-868	-791	-320	-410	-1,329	-795
IFRS statements	-124	-297	-715	-1,095	-1,104	-999	-620	-775	-1,302	-778
Difference	-173	-133	-177	-250	-236	-209	-300	-365	28	16

Source: own compilation based on the company's financial statements.

The data presented in Table 3 show the influence of the adjustments on the group's net working capital. With regard to current liabilities, the main difference between the statements concerns the adjustment related to liabilities of the Mine Liquidation Fund, recognised together with a long-term provision.

The significant reduction of the difference in the value of net working capital between the statements from 2014 results from the adjustment to the accounting principles introduced by the group in the financial statements prepared in accordance with the Accounting Act with regard to the presentation of capitalised costs of preparatory works and to the principles of their depreciation. According to the information presented in the notes to the statutory financial statements of the group prepared in accordance with the Accounting Act, the change was caused precisely by the effort to achieve a consistent approach in the whole industry, with an emphasis on the practice applied by companies from the coal sector listed on the Warsaw Stock Exchange (PAS financial statements 2014, 2015). The change in the policy that was made concerned the reclassification of prepayments to fixed assets and the recognition of the current use of the asset as depreciation, which explains the changes in Table 2 presenting a comparison of that cost category.

In the context of the impact of the application of IFRS on the balance sheet structure, it is worth looking at the ratios based on the relations between the individual categories of assets and liabilities. Table 4 presents two basic ratios related to the structure of liabilities:

1. Sustainability of the financing structure ratio, supposed to determine the share of capital employed in the total value of assets. It refers to the golden balance sheet rule, according to which source of financing may not be connected to specific assets

for a time longer than the time over which the same source of financing remains within the company (Gabrusewicz, 2005). According to the rule described above, the optimal value of the ratio should be more or less one.

2. Debt to equity ratio, providing information about the degree of employment of external sources of financing compared to own sources. This ratio measures the company's indebtedness. It is difficult to determine, however, how many times debt capital may exceed equity capital (Gabrusewicz, 2005).

Table 4. Comparison of financing structure sustainability and debt to equity ratios [millions PLN]

	01 Jan 2017	31 Dec 2007	31 Dec 2008	31 Dec 2009	31 Dec 2010	31 Dec 2011	31 Dec 2012	31 Dec 2013	31 Dec 2014	31 Dec 2015
Financial statements in accordance with the Act										
Financing structure sustainability	0.68	0.65	0.57	0.53	0.54	0.59	0.66	0.65	0.53	0.62
Debt to equity ratio	1,62	1,75	2,27	2,64	2,49	2,14	2,97	3,06	8,60	8,44
Financial statements in accordance with IFRS										
Financing structure sustainability	0.80	0.78	0.70	0.62	0.63	0.66	0.71	0.69	0.58	0.65
Debt to equity ratio	0.75	0.82	1.11	1.43	1.44	1.37	1.92	2.08	3.67	5.68
Differences										
Financing structure sustainability	0.12	0.13	0.12	0.10	0.08	0.07	0.05	0.04	0.05	0.02
Debt to equity ratio	-0.87	-0.94	-1.16	-1.21	-1.05	-0.77	-1.05	-0.97	-4.93	-2.75

Source: own compilation based on the company's financial statements.

The financing structure sustainability ratios calculated on the basis of the financial statements in accordance with IFRS are higher than the corresponding ratios calculated on the basis of the financial statements in accordance with the Accounting Act. The situation is reversed in the case of the debt to equity ratio. This means that, in the context discussed here, the financial statements in accordance with IFRS present a more favourable picture of the company compared to financial statements in accordance with the Accounting Act. Valuation of fixed assets had the most significant impact on this situation, and its results were reflected in the respective equity figures. One should note the downward trend in the differences between the ratios, resulting from the gradual reduction in the value of the assets as a result of depreciation.

It is also worth pointing to the negative impact of the increase in the value of fixed assets on the assessment of the company's profitability. The trend is reflected by:

1) the fixed asset turnover ratio, providing information on how effectively fixed assets are used in the company;

2) the return on assets ratio, representing the profit-generating capacity of the company's assets;
3) the return on equity ratio (Jantoń-Drozdowska, Mikołajewicz-Woźniak, 2017).

Table 5 presents the differences between the ratios calculated for financial statements in accordance with the Accounting Act and IFRS.

Table 5. Comparison of profitability ratios

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Financial statements in accordance with the Act									
Fixed asset turnover	1.28	1.25	1.21	1.06	1.12	1.00	0.94	0.78	0.79
Return on assets	0.01	0.00	0.02	0.01	0.04	0.01	0.01	-0.03	-0.02
Return on equity	0.02	0.01	0.07	0.03	0.12	0.02	0.03	-0.17	-0.17
Financial statements in accordance with IFRS									
Fixed asset turnover	0.71	0.78	0.84	0.80	0.88	0.82	0.79	0.68	0.73
Return on assets	-0.03	-0.04	-0.02	-0.02	0.00	-0.01	-0.01	-0.01	-0.07
Return on equity	-0.06	-0.07	-0.05	-0.05	0.01	-0.02	-0.03	-0.03	-0.39
Differences									
Fixed asset turnover	-0.57	-0.47	-0.37	-0.27	-0.24	-0.18	-0.15	-0.10	-0.05
Return on assets	-0.04	-0.04	-0.04	-0.03	-0.03	-0.01	-0.02	0.02	-0.05
Return on equity	-0.08	-0.08	-0.12	-0.08	-0.12	-0.04	-0.06	0.14	-0.21

Source: own compilation based on the company's financial statements.

In line with the expectations, the increase in the value of assets led to a reduction in the asset turnover ratios. The return on assets and return on equity ratios calculated on the basis of the financial statements in accordance with IFRS are negative, which results from the losses in the financial statements following the restatement. The decrease in financial performance is caused mainly by the fact that valuation of fixed assets was taken into account, leading to increased depreciation, increased revaluation write-downs on assets, and higher costs of fixed assets sold and liquidated. It was determined, on the basis of an analysis of the notes to the company's financial statements, that the differences related to asset valuation were among the main aspects generating discrepancies in the company's results, while a detailed analysis of the remaining reasons for the differences in the company's financial results goes beyond the scope of this paper.

The impact of the restatement on the liquidity analysis was assessed using the current ratio and the cash ratio, defining liquidity statically (cf. Table 6).

Table 6. Comparison of liquidity ratios

	As of								
	31 Dec 2007	31 Dec 2008	31 Dec 2009	31 Dec 2010	31 Dec 2011	31 Dec 2012	31 Dec 2013	31 Dec 2014	31 Dec 2015
Financial statements in accordance with IFRS									
current ratio	0.69	0.52	0.43	0.38	0.39	0.60	0.54	0.40	0.47
cash ratio	0.20	0.15	0.09	0.06	0.07	0.10	0.12	0.09	0.15
Financial statements in accordance with the Act									
current ratio	0.84	0.66	0.58	0.53	0.54	0.80	0.77	0.41	0.47
cash ratio	0.25	0.18	0.12	0.08	0.10	0.12	0.13	0.10	0.16
Differences									
current ratio	-0.15	-0.14	-0.15	-0.15	-0.15	-0.20	-0.23	-0.01	0.00
cash ratio	-0.05	-0.04	-0.04	-0.03	-0.02	-0.01	-0.01	-0.01	-0.01

Source: own compilation based on the company's financial statements.

The financial liquidity ratios calculated on the basis of the financial statements in accordance with IFRS are lower, which results mainly from the adjustments related to recognition and presentation of special funds, as well as from the reclassification of prepayments to fixed assets. With regard to the special funds, it may be determined that the adjustments made influenced as a matter of principle both assets and liabilities, so their impact was limited to the difference between the balance of special funds and the value of the assets in those funds.

The change of classification of prepayments related to preparatory works influenced assets only, so its impact on the current ratio is visible, but it has no impact on the cash ratio. It is worth pointing out that the relation of the current ratio has changed since 2014. The change was caused by the modifications made to the accounting policy in the financial statements in accordance with the Accounting Act with regard to the presentation of capitalised costs of preparatory works.

Conclusion

The results of the analyses carried out point to an impact of differences resulting from the restatement of data to IFRS on the key ratios describing the company's situation. It should be pointed out, however, that the main source of the changes in the analysed case was the measurement of property, plant and equipment at fair value applied as of the transition date, in relation to which the identified differences are temporary in their nature, and their impact decreases as amortisation of the assets progresses. The remaining adjustments concern mainly differences in the presentation of assets and liabilities, which only translates into the balance sheet structure. The absence of an accurate definition of the layout of financial statements in IFRS creates favourable con-

ditions for presentation that gives in a better manner a true and fair view of the given entity, which can be observed using the example of classification of prepayments related to preparatory works, with regard to which the entity, bearing in mind the problems with comparability versus listed companies operating in the sector, decided to change their presentation in the statutory financial statements in accordance with the Accounting Act, starting from 2014. The results of the analyses performed may contribute to a better understanding of the discrepancies if specific companies from the sector are compared that prepare financial statements based on different legal frameworks. The awareness of the impact of the standards applied on the financial statements is significant for stakeholders such as capital providers that assess the relevant entity by comparing it to the industry, as well as for government agencies such as the statistical office, which should take into account the differences in the classification and presentation of economic events when compiling data for the industry.

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SOURCES OF KNOWLEDGE AND NETWORKING AS CONDITIONS FOR DEVELOPMENT OF INNOVATIVE UNDERTAKINGS IN POLAND

Start-up enterprises play a vital role in the knowledge economy, commonly acting as links between invention and innovation. Their development depends on an efficient start-up ecosystem including institutional environment. It comprises such classic institutions as business incubators, accelerators, technology parks, centres of technology transfer as well as increasingly popular forms of support like: mentoring, industry meetings, competitions, and hackathons. This paper is intended to analyse and evaluate non-financial support, mainly knowledge and business contacts (networking), in development of start-up enterprises in Poland.

Keywords: business environment institutions, innovation, start-up.

JEL Classification Codes: M13.

Introduction

The knowledge economy (KE) provides conditions for growing creativity, innovativeness, and competitiveness of organisations operating in an uncertain and changing market environment. Knowledge and information become the basic resources that determine success of an organisation as part of the new economy. '*Traditional competitive*

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advantages are of reduced significance. It is therefore urgent to develop new advantages based on knowledge, intellectual and social capitals, and effects of digitalisation' (Strategia Rozwoju Kraju 2020). As a result of these shifts, start-ups become more important as driving forces of the economy. Innovative and unique undertakings that develop out of the traditional conventions of enterprise growth are a prevailing majority of start-ups. Their characteristics include (Kaliszczak, Sieradzka, 2018): innovation, operation in conditions of extreme uncertainty, ability to learn, potential for dynamic, above-average growth based on technological advantage or market niche, initial phases of growth, and search for a profitable, reproducible, and scalable business model.

It is the aim of this paper to analyse and evaluate non-financial support, mainly knowledge and business contacts (networking), in development of start-up enterprises. To this end, the following research hypotheses are posited:

- **H1**: Non-financial sources of support for start-up enterprises are important conditions of their development.
- **H2**: Mentoring, industry meetings, and participation in start-up competitions and events are major sources of knowledge and networking.
- **H3**: Need for qualified staff, business contacts, and specialist knowledge constitutes (beside capital requirements) the key factor conditioning development of start-ups at the current stage.

For the purposes of realising this aim and demonstrating the hypotheses, data and information in publications by Polish institutions and organisations are analysed, including: *Polskie startupy. Raport. 2015, 2016, 2017, 2018/ Polish Startups. Report. 2015, 2016, 2017, 2018* (Start-up Poland Foundation), *Diagnoza ekosystemu startupów w Polsce/ A Diagnosis of the Start-up Ecosystem in Poland* (Deloitte), and specialist literature is reviewed.

Knowledge economy

The knowledge economy (KE) is based on creation, distribution and transfer of knowledge and information. Knowledge is a strategic success factor that drives development of both the entire ecosystem and of particular organisations. '*The KE is an economy where knowledge is treated as a factor determining production structure and economic progress at an advanced level of socio-economic development*' (Skrzypek, 2008). Fundamental characteristics of the KE encompass:

- Rising importance of intangible resources,
- Replacement of the classic factors of production (labour, capital, land) with the knowledge resource,
- Greater importance of the service sector,
- Change of enterprise management methods (management of intangible resources),
- Changes of staff employment.

These shifts lead to emergence of a new type of society, '*knowledge society*' (Drucker, 1999), and of '*intellectual entrepreneurship*' (Kwiatkowski, 2000). The current transformations of the socio-economic realities and the rise of the knowledge economy require enterprises to turn into organisations based on knowledge. Authors keep pointing to the enterprise as the entity that should create added value based on knowledge resources (Drucker, 1995; Porter, 2006, Obłój 2000, Piech, Skrzypek, 2007). Knowledge is treated as a resource to be managed in order to take full advantage of its inherent potential. This requires enterprises to adopt a new approach to management. These changes concern inter alia numbers of staff with adequate qualifications and skills, ways of motivating, and visions of enterprise development.

To achieve and preserve its competitive advantage in the knowledge economy, an enterprise is required not only to choose its staff and business partners appropriately and to have state-of-the-art IT communications technologies, but above all to continue learning and prevent knowledge from escaping from the organisation. P.F. Drucker (1995) claims the enterprise has two types of key resources – knowledge (resources of creative staff) and money (Drucker, 1995), while K. Obłój (2000) points out only intangible resources are unique in that their value rises with rational management. Thus, intangible resources exhibit the greatest potential and knowledge is the key to success in knowledge enterprises.

The ongoing process of the shift to the knowledge economy causes a fundamental change in determinants of economic development, which include human capital (highly qualified staff), liaisons between science and business (universities, scientific centres, and business environment institutions), information and communication technologies, and, very importantly, actions of public authorities to provide conditions for building and development of the new economy.

Business environment institutions in the knowledge economy

A knowledge economy is founded on conditions conducive to establishment and development of enterprises that base their competitive advantages on knowledge. Entities providing such conditions include: the state, local and regional authorities, business environment institutions, enterprises, intellectual and academic environments. International institutions and organisations like the OECD, UN, World Bank are some more parties fostering development of the KE. Transnational corporations also need to be mentioned as they incur huge financial expenses on research and development and become key beneficiaries of knowledge used as the source of competitive advantage. National states boost development of the knowledge economy by means of their pro-innovation, educational, research, and regional policies.

The World Bank Institute has defined conditions to be met by a country that is part of the knowledge economy (Skrzypek, 2011):

- Economic and institutional conditions should allow for a free movement of knowledge and expansion of investments rich in information and communication technology,
- Society should build or have knowledge creating and using skills,
- A country should have a dynamic information structure to effectively propagate and process data,
- A network of research centres, universities, advisor teams, private entrepreneurs, and social groups capable of using, assimilating and creating new knowledge is important.

Business environment institutions (BEI) play a special role in development of innovative undertakings in an economy. These include centres of innovation and entrepreneurship and non-banking financial institutions (Bąkowski, Marzewska, 2014). Centres of entrepreneurship are engaged in promotion and incubation of entrepreneurship oriented towards creation of businesses and jobs, supply of support services to small firms and support of local development. These functions are fulfilled, among others, by business incubators and training and advice centres. Innovation centres realise goals similar to those of the previous grouping, though targeted at development of innovative businesses, e.g. start-ups. They include:

- Technology parks,
- Technology incubators,
- Technology transfer centres,
- Academic business incubators,
- Centres of innovation.

Non-banking financial institutions, which offer financial support from EU and domestic sources, are the third group. They encompass loan, guarantee, and capital funds. However, as the authors of the most recent report on centres of innovation and entrepreneurship note, '*divisions between activity types vanish, for instance, incubated businesses are dispersed among firms already in operation, areas of activities overlap, namely, commercialisation and technology transfer services are no longer the preserve of Technology Transfer Centres. The latter become involved in areas formerly regarded as the domain of academic incubators, meanwhile*' (Bąkowski, Marzewska, 2018).

Systemic support for enterprise and innovation processes acquires increasing importance. Liaisons and cooperation between people, enterprises, support organisations and institutions designed to aid with creation and development of innovative undertakings make up the so-called ecosystem. Its components are: financing, legal regulations, human capital, social capital, and institutional environment. Financing is essential at every stage of undertaking development, though it should be remembered requirement for this type of support varies as projects develop. The institutional environment comprises institutions and organisations acting for development of the entire start-up ecosystem.

Human capital decides emergence of innovative concepts and their quality and development potential. Social capital is in turn 'the binder' of interpersonal contacts based on observance of norms and engagement in community life.

An analysis by Deloitte produces results concerning evaluation of development and maturity of the start-up ecosystem in Poland. Its 4-point scale (1-the highest score, 4-the lowest score) indicates areas of the minimum and maximum standard of development (Diagnoza ekosystemu…, 2016). The Polish start-up ecosystem is awarded the highest marks for its legal regulations (2.55) and institutional environment (2.5) and the poorest for its social capital (1.5) and financing (1.68). Human capital is moderately developed (scoring 2.27). Low savings in the economy, a limited number of venture capital funds and business angels, as well as lack of incentives to invest in start-ups are reasons for the low evaluation of financing. Social capital is the weakest link in the Polish start-up ecosystem. This is demonstrated with a low trust, inability to cooperate, aversion to risk, and negative attitude to failure. Openness to sharing of knowledge and involvement in public life are absent. Human capital is necessary at all stages of start-up development, in particular, its initial phases. As this is human capital that decides emergence of innovative concepts and development potential, it can be described as a strategic resource for development of start-up undertakings. Research results also suggest 'human capital, commonly measured as the number of years in education and percentage of labour with university qualifications, has positive impact on both standard of innovation and involvement in establishment of start-ups' (Potencjał innowacyjny gospodarki…., 2016). Potential of human capital in Poland is not utilised in full, due to a low applicability of university education and low work productivity. The institutional environment has been assessed as moderately but unevenly developed.

Central entities, local and regional administration, and scientific entities should engage in coordinated long-term actions. Collaboration of science and business is insufficient as its rules are not clear or transparent and incentives to arrange for them are not in place.

Sources of knowledge and networking in development of start-up enterprises

A functional ecosystem that fosters emergence and development of start-ups provides a platform for collaboration between a range of entities and institutions including business environment institutions, research organisations, and public administration. Availability of services at the time of incubation, development and market expansion, of networking and office space rental services are tests of the ecosystem effectiveness as far as the business environment institutions are concerned. Numbers of start-ups at the various stages of development help to evaluate an ecosystem's efficiency in this respect.

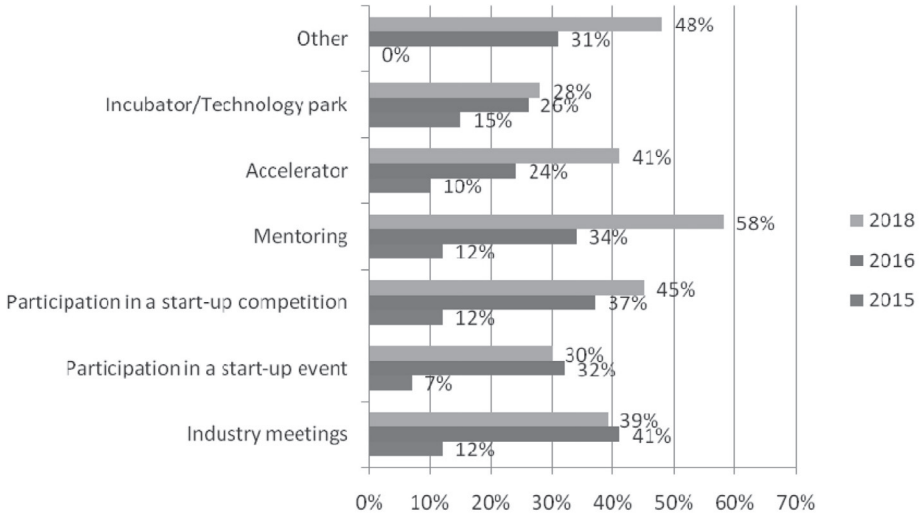
Table 1. Numbers of start-ups at different stages of development

Stage	Stage description	Number of start-ups			
		2015	2016	2017	2018
1. Problem Solution Fit	Formulation of business model assumptions and team creation	no data	no data	14%	18%
2. Solution Product Fit	Intensive product work, firm registration, prototyping, first income and/or users	no data	no data	41%	42%
3. Product -Market Fit	Stable sales and user base, a functioning business model	no data	no data	29%	24%
4. Scaling/Expansion	Rapidly growing numbers of customers and/ or users and income	no data	no data	16%	14%

Source: The authors' own compilation based on (Skala, Kruczkowska, Olczak, 2015), (Skala, Kruczkowska, 2016), (Beauchamp, Kowalczyk, Skala, 2017), (Beauchamp, Krzysztofiak-Szopa, Skala, 2018).

A majority of start-ups (about 60%) are at early stages of their development, i.e. when business model assumptions are formulated and work is under way on products and starting of activities. Most firms (40%) are at the second stage of product finishing and launch. The low share of start-ups at the first stage of forming business assumptions and personnel team is especially noteworthy. This suggests problems with ideas and creative and competent people capable of finding and launching new solutions. Establishment of business accelerators and incubators, education in entrepreneurship and digital competences or arrangement of industry meetings should stimulate development of the ecosystem in economic practice.

As far as non-financial sources of support used by Polish start-ups in 2015–2018 are concerned, dynamic fluctuations in significance of the individual forms can be observed (Fig. 1). Numbers of entities resorting to all the non-financial sources of support clearly tend to grow in the period analysed. Individual mentoring, industry meetings, and start-up events are named as major sources of knowledge and networking. More than a half of the enterprises studied (58%) indicated mentoring as the key source of knowledge in 2018. Its weight is due to insufficient economic and legal knowledge gained at university. Mentoring provides direct access to practical knowledge and new networks of business contacts.



* Although statistics are not available for 2017, high importance of mentoring, industry meetings, and start-up events and competitions is indicated. Business incubators or technology parks, academic incubators, education at universities and transfer centres, and international accelerators are assessed as less significant.

Figure 1. Sources of knowledge and networking in Polish start-ups

Source: The authors' own compilation based on (Skala, Kruczkowska, Olczak, 2015), (Skala, Kruczkowska, 2016), (Beauchamp, Kowalczyk, Skala, 2017), (Beauchamp, Krzysztofiak-Szopa, Skala, 2018).

Taking part in industry meetings, start-up competitions and events is of major importance to development of start-ups – ca. 40% describe them as significant sources of knowledge and networking. Small-scale industry meetings like Aula Polska, OpenReaktor, Hive, Startup Stage, or Startup Poland Camp offer opportunities for making new contacts. Participation in days-long start-up events translates into development of start-ups. Such events include:

- Hackathons – events addressed to programmers, IT engineers, and software developers for purposes of solving specific design issues,
- Startup Weekends – three-day-long events for creative and enterprising people who work in teams to prepare foundations for start-ups, prototype services, tools or customer support. The objective is to bring together specialists from a range of fields like graphics, programming or marketing,
- (National and international) start-up competitions – a development opportunity drawing attention of domestic/ foreign investors and/or funds to a particular business. In effect, prestige and recognition expand and business contacts are developed, financial and other prizes may be won. Examples include Startup Spotlight, Barclays FinTech Accelerator, and BDL Acceleratestartup Competition.

Business accelerators and incubators and technology parks are a little less important in development of innovative undertakings. The accelerators and incubators are institutions tasked with (material and practical) support for development of projects at their initial stages. The former are oriented towards enterprises at further stages of development (clear business ideas) that look for practical knowledge, (local and international) business contacts, knowledge of customers and financing opportunities, and cooperation with large enterprises. Numbers of entities taking advantage of acceleration programmes have grown distinctly since 2015 (10% in 2015 and 42% three years later). This is a result of the growing range of acceleration programmes financed by the Polish Agency for Enterprise Development PARP as part of the Scale Up instrument, on the one hand, and the rising demand for such services as start-ups develop, on the other hand. Numbers of firms employing services of (domestic and international) business incubators and technology parks have also grown substantially, from 15% in 2015 to 28% in 2018. Academic incubators, institutions associated with universities and supporting young entrepreneurs at preliminary stages of their businesses, were distinguished in this grouping (for the first time in 2017). In 2018, 8% start-ups pointed to academic business incubators as sources of their knowledge and business contacts. 48% enterprises indicated other sources of non-financial support for their economic undertakings, 17pp more than in 2016. Most (36%) in this group took advantage of other training and took part in education offered by universities or centres of technology transfer (12%).

Table 2. Resource requirements at the current stage of start-up development (multiple choice)

Resources	2015	2016	2017	2018
Financial	61%	63%	65%	61%
Human (staff)	49%	44%	43%	49%
Network (business contacts)	50%	42%	41%	41%
Specialist knowledge (mentors, training, etc.)	23%	14%	14%	15%
We have all the resources we need	6%	6%	No data	4%

Source: The authors' own compilation based on (Skala, Kruczkowska, Olczak, 2015), (Skala, Kruczkowska, 2016), (Beauchamp, Kowalczyk, Skala, 2017), (Beauchamp, Krzysztofiak-Szopa, Skala, 2018).

The undoubtedly innovative undertakings like start-ups signal a range of needs that determine their survival and development in the market. These are primarily capital and personnel requirements and a distinct need to expand their business contacts. While treating knowledge as a resource, barely 15% start-ups confirmed collaboration with science. '*As part of acceleration programme evaluations, however, knowledge and business experience shared are valued very highly*' (Beauchamp, Krzysztofiak-Szopa, Skala, 2018). Thus, entrepreneurs realise getting to know their customers and markets should be a priority and development should result from this awareness.

Conclusion

The processes of globalisation, propagation and development of information and communication technologies lead to internationalisation of business operations and hyper-competition on the international scale, which enforces the ability to quickly adapt to the constantly changing environment. Enterprises like start-ups frequently offer intangible products in a virtual environment in the global market. They play an important role in the knowledge economy, often by acting as links between invention and innovation. It should be remembered such entities stand limited chances of independent development in market conditions as, for instance, their business ideas may be taken over (bought out) by large enterprises or corporations. Hence a clear need to support these young and innovative firms.

The environment, or ecosystem, plays an extraordinarily important role in development of start-ups. It consists of five sub-systems including the institutional environment that determines incubation and implementation of innovative business ideas. Its components are: business environment institutions, research organisations, and public administration authorities. The development standard of the Polish start-up ecosystem is ranked below average and of the institutional environment as quite high.

Our analysis of the significance of knowledge and networking sources in development of start-ups in Poland in 2015-2018 leads to the following conclusions:

1. Mentoring, industry meetings and participation in start-up competitions and events are indicated as the essential sources of knowledge and networking in the entire period studied,
2. More than a half of the enterprises examined (58% in 2018) point to the special importance of mentoring in acquiring practical knowledge of marketing, management, sales techniques, and legal regulations,
3. Taking part in industry meetings, start-up competitions and events is very important for development of start-ups (39%, 45% and 35% of the businesses, respectively),
4. Numbers of businesses using accelerator services have risen considerably (by 32pp since 2015), chiefly owing to more acceleration programmes financed by the PARP,
5. Academic incubators, education offered by universities or centres of technology transfer, and all non-financial foreign sources, possibly due to insufficient information and availability of the latter, are the least significant sources of knowledge and networking.
6. In spite of the undoubted prevalence of capital requirements, as start-ups progress to successive stages of their development, the need for qualified staff, business contacts, and specialist knowledge becomes more pressing.

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UNIFICATION OF ECONOMIC PROMOTION IN MAŁOPOLSKA REGION AS AN EXAMPLE OF INSTITUTIONAL COOPETITION

In recent years, regions have been increasingly promoted at the international level. It is reflected in actions taken by individual voivodships (Polish provinces), intensifying measures for attracting investment and promoting exports of local enterprises, combined with the use of additional funds, including EU appropriations, or with the formalisation of cooperation between various institutions and businesses. The aim of the article is to verify whether the voivodeship promotion model adopted in Małopolska, based on coopetition, fulfills the intended role and whether it can be a model for other regions. The article presents the most important results of the analysis, which may be the starting point for the development of the first in Poland model of coopetition in the field of economic promotion of the region and verification of its effectiveness.

Keywords: coopetition, economic promotion, regional promotion.

JEL Classification Codes: H79, R58.

Introduction

Coopetition is an example of process and organisational innovation. The term is derived from the words 'cooperation' and 'competition'. It means cooperation between competing enterprises or institutions which, instead of seeking ways of gaining advantage over competitors in the market, decide to focus their efforts on obtaining shared benefits by maintaining mutual cooperative relationships. Such benefits include opportu-

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nities to learn from the partner, access to complementary resources, widening the range of products or services offered, cutting operating costs, access to new technology and production methods, upgrading skills. In competitive cooperation, it is essential to build a good relationship between the competitors engaged in such a coopetitive arrangement. The cognitive dimension connected with communication is of importance as well. The better the communication, the more fruitful the cooperation. Other major determinants include a good relationship between partners – trust, sharing certain standards and values, mutual commitment, cultural similarity and the ability to resolve conflict (http://www.uwm.edu.pl/egazeta/koopetycja-wspolczesna-forma-wspolpracy). Considering the above, it is possible for regional institutions, not infrequently competing with one another, to enter into cooperation? If so, what would such an area of cooperation be?

On the basis of publications and available source materials, the hypothesis was put forward that it was possible for regional institutions to establish coopetition regarding the unification of economic promotion. For the purpose of confirming the assumptions, the examination of documents combined with direct interviews with selected persons engaged in economic promotion in Małopolska (the region of Little Poland) was adopted as the most suitable research method. The analysis covered national and local legislation. Documents related to implemented projects were examined as well. The investigation included promotional publications and websites.

Coopetition in the context of a region and its promotion

Coopetition is observed in a number of sectors, e.g. the high technology, automotive or telecommunications industries. Sony and Samsung can serve as an example. The former supplies new technological and qualitative solutions for manufacturing LCD panels which, from the point of view of the latter, constitute complementary resources to be used quickly through cooperation. As a result, it is translated into gaining competitive advantage over other companies (such as LG) in the flat-screen television market. Coopetition is also seen in the telecommunications industry. Cooperation between Netia and Orange consists in the provision of wholesale services and telecommunications infrastructure. At the same time, both companies compete with each other in retailing satellite telephony and Internet access. In the business world, there are many firms cooperating in the manufacture of common products. Excellent examples are those of automotive concerns such as BMW and Daimler Chrysler, supplying engines to their cars, or GM and Renault, jointly producing light vehicles.

Understood as a special form of integration, coopetition refers to unique resources in the form of capabilities and skills where an enterprise uses its unique resources in competing with other enterprises (Grabowska 2011). Cooperation with competitors (coopetition) is a special importance when firms face a common challenge, such as

environmental issues, and can use their common knowledge base to solve these challenges. (Steinmo, Jakobsen 2013). An important precondition of benefiting from coopetition is that the cooperative activities should be distanced from the customer (Bengtsson & Kock, 2000). Research shows that more than 50% of cooperative relationships (strategic alliances) occur between firms within the same industry or between competitors (Gnyawali & Park, 2009). Most of these alliances are vertical relationships between buyers and sellers and between competitors with indirect links through relationships with the same buyer. Less attention has been paid to horizontal relationships between direct competitors (Bengtsson &Kock, 2000). w (Steinmo, Jakbsen 2013) Identically, coopetition involves cooperation between competing local government and public institutions, as exemplified by the common goal of the unification of economic promotion of the region concerned. In the globalised economy of the 21st century, economic phenomena have a spatial dimension and influence the development of particular areas in the world, in particular of countries and their regions. It intensifies competition between the latter, characterised by attracting foreign and domestic investors as well as by strengthening local producers. Expected effects include job creation and growth in capital resources, increased living standards of the population, scientific and technological development.

Voivodships (Polish provinces) differ in factor endowment, availability of human and natural resources and vary in historical background and economic conditions. The above elements combined account for uneven development of areas in economic terms. Concentration processes in economic activity, buoyant growth of selected urban centres and migration all contribute to the non-symmetrical level and dynamics of regional development. Attracting investment, a vital component of regional economic growth, influences the perception of specific areas as friendly locations for setting up businesses and pursuing economic activities, indirectly or directly affecting the level of costs and potential income (Nazarczuk 2013).

In connection with Poland's membership of the European Union, the terms 'voivodship' and 'region' were assumed to be tantamount. Since Poland joined the European Union in 2004, there has been increasing competition and rivalry between voivodships, forcing them to adopt measures for creating and enhancing economic competitive advantages. In simplified terms, it can be assumed that regional competitiveness means the ability to compete, and hence the region's operations and sustenance in a competitive environment. This skill can be considered both in the process sense (the process of striving to increase competitiveness over time) and in the attribute sense (set of features describing a given object in comparison to other objects) (Łaźniewska, Gorynia 2012). It is recognized that competition between regions is about striving to provide the right technological, social and infrastructural conditions for the development of entrepreneurship. It is on a regional scale that many factors are shaped that may affect the functioning of companies, such as social capital, business environment institutions, and public services (Grodzka 2017). Regions have been ever-more serious about promoting their

economic qualities which must be clearly and, first of all, effectively communicated to undertakings, financial institutions, domestic and foreign investors or to ministries and government agencies responsible for the economic promotion of Poland. The main tool for differentiating a region is to build its economic brand, based on a set of ideas, values, characteristics, culture, words, images, etc. designed to call up certain expected and specific associations for the recipient. A correct identification of values and characteristics of a region contributes to effective economic branding of the region, shaping its image along with all other actions, whether intentional or unintentional (Florek 2006). A strong brand not only arouses interest, attracts tourists or investors but it also contributes to increasing the competitiveness of local enterprises (Zdon-Korzeniowska 2012).

Territorial marketing aims to influence opinions, attitudes and behaviour patterns of external and internal groups of recipients by designing a suitable set of means and instruments for stimulating exchange relationships. The key objectives of territorial marketing comprise developing and strengthening services provided by public institutions, shaping a positive regional image, increasing the attractiveness and improving the positions of competing regions. The most essential external operating goal in territorial marketing is the orientation of all measures and actions towards an external recipient. It encompasses learning their motivations and preferences in assessing the attractiveness of a region at the time of choosing a particular destination and expressing satisfaction with regional conditions (Szromnik 2008).

The external territorial marketing of a region may be oriented towards persons, domestic or foreign institutions. The key is to learn the motives behind migration decisions made by enterprises and groups of undertakings, business owners and managers, followed by creating a professional offer targeted at them and based on the attractiveness of values of the region concerned and persuasive rationale leading to success. For external territorial marketing to be effective, relationships often take the form of affiliate marketing. They may lead to building mutual trust with simultaneous stimulation and creation of social support for public authorities' actions. Effective affiliation shapes loyalty, important to each of the parties (Szromnik 2008).

Coopetition in Małopolska

The Małopolskie voivodship was created in 1999. The development of a single economic brand of the Małopolskie voivodship allowed to build a coherent image as perceived by its residents, undertakings or investors but also prepared the region in institutional and organisational terms to the expected inclusion of Poland in the European Union structures. Another impulse was joining the Schengen area by the Republic of Poland on 21 December 2007.

The delegation by the central government to regional authorities of various powers and rights with regard to the bottom-up creation of regional development contributed to the need for defining a uniform concept of external regional marketing (Florek 2006). After 1999, Polish regional (voivodship) governments carried out promotional activities through departments of the Marshal Offices, voivodship institutions or subsidiaries. Poland's first initiative breaking the previous patterns was a contractual partnership named the Business in Małopolska Centre (*Centrum Business in Małopolska* – CeBiM), created under the 'Agreement on the functioning of the Business in Małopolska Centre 'CeBiM' and cooperation in the economic promotion of the Małopolskie Voivodship between the Małopolskie Voivodship, Małopolska Agencja Rozwoju Regionalnego S.A. and Krakowski Park Technologiczny Sp. z o.o.' (*Porozumienie w sprawie funkcjonowania Centrum Business in Małopolska „CeBiM" i współpracy w zakresie promocji gospodarczej Województwa Małopolskiego pomiędzy Województwem Małopolskim, Małopolską Agencją Rozwoju Regionalnego S.A. oraz Krakowskim Parkiem Technologicznym Sp. z o.o.*) of 3 December 2009. In a single place, it combined various institutions, e.g. investor services, exporter support, participation in trade fairs, etc., which strengthened the coordination and unification of institutional activities for the development of the Małopolskie voivodship. Cooperation was formalised and, first and foremost, intended to be a long-term relationship. It was a model example of the coopetition of institutions and businesses which had competed before and, thanks to the common goal of the unification of economic promotion of the voivodship, entered into cooperation. Affiliation relationships between various regional entities with their external partners could be initiated, maintained and strengthened not only by the parties involved but also by associations, chambers of commerce and industry, authorities, non-governmental organisations, universities, etc.

The most important objective of the project Business in Małopolska Centre was to streamline and standardise the process of investor and exporter service in the Małopolskie voivodship, which resulted from attractiveness analyses of the voivodship. The establishment of CeBiM was then a unique solution on a national scale. The new philosophy of cooperation was a response to problems identified during the investment and export attractiveness analysis of the region. The most serious issue was the lack of coordination between activities of major regional institutions pursuing economic development of the voivodship in the context of its investment and export attractiveness. During inter-institutional meetings, there were suggestions of lacking coordination of promotional measures, resulting in obstacles to information flow and overlapping work of individual institutions. Other confirmed problems included the lack of a leader shaping a coherent promotional and investment policy for Małopolska and weakening dynamics of attracting foreign investment. The absence of a single office combining various activities of a number of institutions, i.e. a one-stop shop, and the lack of a common portal serving as a central and comprehensive source of business information addition-

ally hindered the economic development of the voivodship. CeBiM was supposed to be a response to the identified problems as well as a single and dedicated place for building the regional economic brand of Małopolska, allowing a potential investor to obtain assistance in investing in the voivodship and an exporter to be exhaustively informed of expansion opportunities in foreign outlets (Resolution no. 1261/09 of the Management Board of the Małopolskie voivodship of 10 November 2009 – *Uchwała nr 1261/09 Zarządu Województwa Małopolskiego z dnia 10 listopada 2009 r.*).

The Business in Małopolska Centre was founded by institutions whose activities were systemically oriented towards the economic development of the region. Each of them had their specific characteristics, a profiled purpose and legal framework. One of the founding institutions of CeBiM was the Małopolskie Voivodship (*Województwo Małopolskie* – WM), whose responsibilities included defining the development strategy for the region, its economic and business development, establishing and arranging cooperation with regional authorities in other countries, tourism and cultural promotion of the region. The regional government of the voivodship executed its tasks through the Marshal Office of the Małopolskie Voivodship (*Urząd Marszałkowski Województwa Małopolskiego*), with specialised and dedicated structural units in charge of promotion and economic development, e.g. the Team of the Business in Małopolska Centre (*Zespół Centrum Business in Małopolska*), the Team for Economic Cooperation (*Zespół ds. Współpracy Gospodarczej*) (Regulation no. 39/2016 of the Marshal of the Małopolskie Voivodship – *Zarządzenie nr 39/2016 Marszałka Województwa Małopolskiego z dnia 28 kwietnia 2016 r.*).

Another founder of CeBiM was Małopolska Agencja Rozwoju Regionalnego S.A. (MARR), a leading regional institution for regional development and, at the same time, a major partner for central government institutions and the voivodship government in shaping the policy for innovation-oriented development of Małopolska. The structure of the company had a separate Investor Service Department (*Departament Obsługi Inwestora*), dedicated to activities of the Business in Małopolska Centre (List of Departments at MARR S.A. and their responsibilities 2018).

The third founding institution was Krakowski Park Technologiczny sp. z o.o. (KPT) owned by the State Treasury, from 1997 in charge of managing the special economic zone in Cracow and, as a business environment institution, aimed to carry out activities related to speeding up regional development, e.g. by attracting investment, export expansion and job creation (About Krakowski Park Technologiczny 2018 – *O Krakowskim Parku Technologicznym 2018*). In 2012, CeBiM was joined by Małopolskie Parki Przemysłowe S.A. (MPP), established in 2005 by the Małopolskie Voivodship and Krakowski Park Technologiczny sp. o.o. for the purpose of providing initiative, support and promotion of Małopolska (Resolution no. 1009/12 of the Management Board of the Małopolskie Voivodship – *Uchwała Nr 1009/12 Zarządu Województwa Małopolskiego z dnia 14 sierpnia 2012 r.*).

Delivery on the objectives of CeBiM

The project to have inspired the creation of the Business in Małopolska Centre was 'Invest in Małopolska', implemented by MARR, WM and KPT from September 2008 to October 2010. It was targeted at foreign managers and investment market institutions as they had indicated difficulties related to a large number of institutions and obscure procedures. Chronologically, it was the first close cooperation of institutions aimed to build and promote a coherent image of Małopolska. Observations concerning issues raised by investors, plenty of meetings and information sharing contributed to understanding the importance of the problem and the need to set up a centre coordinating activities and measures for regional economic branding. The implementation of 'Invest in Małopolska' was the origin of establishing permanent institutional cooperation (Completed projects 2017 – *Projekty zrealizowane 2017*).

The institutions contributing to the Business in Małopolska Centre, acting in symbiosis, build an image of the region as an attractive location for business, investment, with a strong focus on exports, aiming to create a solid and recognised regional economic brand. Cooperation, frequent meetings, interconnected events but also one common office space for all the institutions ensure efficient organisation of work and activities. Employees seconded by their respective units to CeBiM shape the recognition of the image of Małopolska by participating in foreign trade fairs, conferences and by providing services to investors or exporters. They also carry out study visits, promote the region in social media, receive official state delegations and cooperate with central government agencies and ministries. All the above-mentioned activities combine to convey a precise and coherent message, regardless of the specific institution, place, time or event.

The experience gathered resulted in the project 'International Promotion of the Export Supply of Małopolska' (*Promocja Małopolskiej Oferty Eksportowej na arenie międzynarodowej*), implemented by MARR and WM in 2009–2010. It was intended to supplement the activities offered by CeBiM through support for Małopolska's exporters as well as for undertakings considering entering foreign outlets. The project implementation comprised the creation of a database of reliable business partners, updated on a regular basis, whereas economic operators from Małopolska could present themselves free of charge in the catalogue of the Export Supply of Małopolska (*Małopolska Oferta Eksportowa*), made available to potential business partners at the CeBiM website. At the same time, the CeBiM partners developed a comprehensive investor service system based on information sharing and joint promotional activities. In addition, exporters could participate in economic missions and business meetings, they were also assisted in establishing relationships with foreign customers and Polish diplomatic missions (*Projekty zrealizowane 2017*).

CeBiM implemented a number of EU-funded projects which allowed to build the regional economic brand of Małopolska. Implemented by MARR and WM from June

2010 to March 2011, the project 'Business in Małopolska' offered, *inter alia*, the preparation of specialist studies of the regional economy, assistance in contacts with the local administration and higher education establishments, information on state aid available to investors, investment zones and areas, EU funds and grants. A coherent project implemented by MARR, KPT and WM from January 2011 to December 2012 was 'Business in Małopolska – Investing in the Future' (*Business in Małopolska – Inwestycja w Przyszłość*). Based on previous experience, it indicated the directions and places of the economic branding of Małopolska in foreign markets. Measures were precisely targeted at investment decision-makers in major economic sectors (*Projekty zrealizowane 2017*). During the implementation of the projects, there was increased interest from foreign investors, in particular in IT, shared services and development centres. In the above-mentioned industries, Cracow has become an unquestionable leader in Europe and a major investment destination in the world (Awards and honourable mentions of the City of Cracow 2018 – *Nagrody i wyróżnienia Miasta Kraków 2018*).

'Business in Małopolska – Grow with us' continued to promote the economic brand of the region but the primary focus was on the promotion of Małopolska in specific industries of biotechnology, shared services, IT and modern technology. The project was implemented from June 2012 to May 2014. Participation in international trade fairs and conferences was intended to maintain the upward trend of investment by global corporations and to build the image of Małopolska as a high-technology and innovation region. It also presented the voivodship's products and services offered by other industries, e.g. manufacturing, tourism, education and healthcare, with media campaigns carried out on television, in the Internet and in-flight magazines. The outcome was an increased number of foreign investors in Małopolska and strengthened association of Małopolska with modern investment and outsourcing (*Projekty zrealizowane 2017*).

In the project 'Business in Małopolska – Partnership Network', implemented by MARR and Województwo Małopolskie in cooperation with partners from Latvia, Russia (the Kaliningrad Oblast) and Ukraine from December 2012 to December 2015, the focus was on supporting and encouraging businesses in Małopolska to engage in export operations. It was the first CeBiM project to involve a Latvian partner and non-EU partners. As an innovation on a national scale, permanent representations of Małopolska were established in Riga, Lviv and Kaliningrad in order to help match business partners, exchange information on potential importers and exporters as well as on investment opportunities. Economic operators in Małopolska showed significant interest in inbound missions from the partner countries within the project. The outlook changed dramatically upon the outbreak of armed conflict between Ukraine and Russia, in particular as a consequence of Russia's imposing an embargo on products from the European Union (*Projekty zrealizowane 2017*).

One of the supporting activities of CeBiM was a network of Investor and Exporter Service Centres (*Centrum Obsługi Inwestorów i Eksporterów* – COIE), operated by the

Marshal Office of the Małopolskie Voivodship and prepared as a system solution by the Ministry of Economy in order to improve the position of Polish businesses in international markets. Launched in July 2010, it is scheduled to function until 2020. The goal was to facilitate access for undertakings and associations of undertakings to comprehensive, high quality and gratuitous information services necessary to plan, organise and carry out exports and foreign investment. In addition, it was intended to stimulate foreign investment in Poland by increasing the accessibility for potential foreign investors of information on conditions of taking up business activities and on support instruments for entrepreneurship development. COIE provided customised information prepared by CeBiM, a unique solution in Poland. Due to the inclusion of employees of the Marshal Office assigned to the execution of COIE tasks in the structure of the Centre, such studies comprehensively presented opportunities offered by the voivodship (Investor and Exporter Service Centre 2018 – *Centrum Obsługi Inwestorów i Eksporterów 2018*).

The activities of CeBiM were promoted through its website, www.businessinmalopolska.pl. It included articles and information prepared for investors and businesses in Małopolska with regard to the services supplied, support opportunities as well as the initiative of the Business in Małopolska Centre itself. The focus was on economic, business and policy aspects. CeBiM was engaged in the voivodship part of the national competition 'First-class Land' (*Grunt na medal*), aimed at selecting the most attractive investment sites in every region. It was organised until 2016 on a two-year basis by the Polish Information and Foreign Investment Agency (*Polska Agencja Informacji i Inwestycji Zagranicznych* – PAIiIZ) in cooperation with the Marshals of the respective voivodships and Investor Service Centres. Information on attractive investment sites was obtained by employees of the institutions forming CeBiM. They sought land, prepared descriptions of parcels, coordinated meetings with the organisers and land owners (An investment site in Bochnia awarded the 'First-class Land' prize 2016 – *Bocheński teren inwestycyjny otrzymał nagrodę Grunt na medal 2016*).

The Business in Małopolska Centre provided information on the Małopolska Business Award (*Małopolska Nagroda Gospodarcza*). Introduced in 2009, it promotes the best economic operators from the Małopolskie voivodship, investment-oriented attitudes and increasing competitiveness between undertakings. During the award presentation ceremony, the successful businesses and entrepreneurs are presented by the Marshal of the Voivodship with statuettes of the Innovation Tree, the symbol of CeBiM (Małopolska Business Award 2017 – *Małopolska Nagroda Gospodarcza 2017*). The Centre actively pursues foreign awards, prizes and titles conducive to the building of a positive image of Małopolska. In contrast to other voivodships where activities are frequently non-coordinated and carried out by various entities, CeBiM is the only unit in Małopolska to prepare materials for and replies to the institution developing an international ranking of regional attractiveness, fDi Strategy. As a result, Małopolska was ranked fourth for fDi Strategy in the European Cities and Regions of the Future 2016/2017 ranking

(Małopolska ranks fourth in FDi ranking 2016 – *Czwarte miejsce Małopolski w rankingu FDi 2016*).

Summary

The article presents a model of the economic promotion of a region as exemplified by the Małopolskie Voivodship. The measures implemented led the way in Poland and allow an assessment and conclusions which should be useful for other regions. The Business in Małopolska Centre can serve as an example of coopetition, in the form of effective cooperation of a number of institutions intended to foster the economic development of the voivodship. Coordinated activities and consistent initiatives facilitate effective economic branding of Małopolska. Cooperation and relations with economic operators, including foreign investors, allow on-going monitoring of business trends and needs. Since 2016, the partners in the Centre have been engaged in the implementation of further projects aimed at national and international economic promotion of the Małopolskie Voivodship.

The „Power up your Business in Małopolska" project is an example of the possibility of undertaking wide-ranging cooperation of institutions for which the common goal is the economic promotion of the region. The partner of the project is Kraków Nowa Huta Przyszłości, a non-CeBiM business partner. Promoting activities of the voivodship are planned in locations such as Kazakhstan, Iran, Dubai and Vietnam. Experience gained in investor and exporter service offers a chance of establishing an entirely new institution to promote the region in Poland and in the world and successful performance confirms the validity of the decisions to set up the Centre, taken years back. The adopted model may serve as a good practice example for other voivodships. As experiences of other countries suggest, the next level of coopetition between regional entities is permanent institutionalisation of cooperation. It may result in the creation of a new institution with legal personality, delegated powers in relevant matters and regular funding. Such a newly established entity could provide commercial services, thus gaining financial independence. The creation of such institutions will allow to reinforce activities connected with regional promotion.

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THE FINANCIAL SITUATION OF THE HOUSEHOLDS IN POLAND AFTER IMPLEMENTATION OF THE PROGRAMME „FAMILY 500+"

The aim of the present paper is an analysis of the impact of the government economic instrument, the „Family 500+" programme on spending decisions of Polish people. For this purpose, financial conditions of families living in two Polish cities: Radom and Chełm were being observed (in the light of the own diagnosis). As a part of a survey, people were asked questions regarding the amount of monthly family income, savings and credits, types of goods and services purchased owing to the „500+" programme for the benefit of children and young people under 18. The paper ends with conclusions resulting from the conducted research.

Keywords: family policy, „500+" programme, financial decisions.

JEL Classification Codes: H53.

Introduction

The role of the state in creating Polish family policy is to shape conducive conditions to implement basic family tasks. Social interest in the family results from the fact that it is the potential for the future labour resources, which is a necessary factor for the economic development of the state. The role of family results from its social roles, while in the processes of economic development it has quantitative and qualitative dimensions.

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This is why it is so important to define precisely the directions in which it should be implemented, in order to be effective and efficient, and the outlays from the state budget incurred for its implementation spent in a rational way (Durasiewicz 2014, p. 102).

Family policy as a response to the needs of the modern family

The family is a group of people separated within the household on the basis of biological criteria, and the inclusion of a particular individual into the family is the result of joint living and adding the income (Giza-Poleszczuk, 2005, p. 50). The primary purpose of family life is to enable people to realize themselves best by creating conducive conditions and providing adequate means. Thus, the level and quality of the tasks fulfilled by a family determines the style and form of life of its members. That is why the care function, including activities in the field of emotional sphere and material security, play such an important role in the family structure.

The proper fulfilment of the upbringing role by the family contributes to shaping own values in young people (through showing the right behaviour patterns), learning how to achieve life goals (thanks to the ability to experience the world) and being in relationships with other inhibitants. Thus, children are, to a large extent, a mirror image of their parents.

In most cases a family as a community is able to deal with its duties. However, the problems of the everyday life, i. e.: unemployment, difficult working conditions and low pay, resignation from domestic life for the sake of professional duties can bring real difficulties impossible to tackle without support. So the well-being of the family is guarded by the state, which is able to minimize these difficulties through its permissions and tools. (Durasiewicz, 2009, p. 58).

The state as a subject of family policy has a fundamental impact on all of the instruments that can be activated in order to create proper conditions for the family; for its creation, development, functioning and fulfilment of all socially important roles (Golinowska, 2007, p. 8). One of such instruments is the „Family 500+" programme as it is fundamental for improvement of the financial situation of a Polish family. Additional monthly income allows families easier access to goods and services.

According to the Act, this state benefit is designed to cover partially the expenses related to raising a child, including taking care of and satisfying the life needs. The benefit is payable to the mother, father, child's actual guardian or child's legal guardian until the child reaches the age of 18. The amount of this aid equals to PLN 500,00 per month for a child in a family, along with taking into account the conditions for its granting. For families applying for „500+" for the first child, the family income is taken into account. Calculated per person, the amount cannot exceed PLN 800,00. If a child with disability is the family member, the „500+" is available to the first child for the family with the income not exceeding PLN 1,200.00 per person.

According to Polish Ministry of Family, Labour and Social Policy data, by the end of December 2017, the support of the governmental programme „500+" covered almost 3.82 million children up to 18 years, which is nationwide 55% of all children up to 18 years. They received over PLN 19 billion. In rural areas this percentage reached 63%, in urban communes 48%, and in urban – rural communes 58%. Single kids of well-situated families were not included.

Accordingly, 2.56 million families received the support from the government's programme „500+", including around 360,000 large families, over 388,000 single parents and 128,800 families with a disabled child. Most of the beneficiary of the money from „500+" were children in Mazovia (over 552,5 thousand), Silesia (over 382,700) and in Greater Poland (over 378,600).

Family policy in the light of own research

The main measures of households wealth are their income, accumulated capital and loans. High level of earnings and investments along with low indebtedness condition meeting the current needs of the family and its ability to accumulate funds, and thus proper functioning in the environment. That is why the ability to manage one's own financial resources is such an important factor in the life of every person.

The purpose of the present analysis is to examine family competences in the field of managing the home budget and the ability to spend funds from the „500+" programme by Polish families. The questionnaire contained 19 multiple choice questions. The study was attended by 52 inhibitants from two cities of Chełm and Radom who received the government economic instrument, the „500+" programme, from 1 April 2016 to 30 September 2017.

The respondents were divided into two groups: the beneficiaries of the „500+" programme and the people whose income allowed independent home maintenance.

The analysis was made according to:

1) age and education of beneficiaries,
2) financial situation of families,
3) level of life of children and young people under 18,
4) „the feelings" of the respondents in terms of their material possessions.

According to the study conducted in 2016, the dominant number of inhabitants of Chełm and Radom were people independently maintaining their households. Professionally active people accounted for 58% of respondents in Chełm and 66% in Radom. Beneficiaries of social welfare accounted for 42% of respondents in Chełm and 34% in Radom.

Table 1. Division into respondents receiving social welfare benefits and respondents independently maintaining their households [%]

Specification	Chełm	Radom
People receiving social welfare benefits	42	34
People independently maintaining their households	58	66

Source: own study based on the conducted surveys.

Most of the respondents who were professionally active had higher education, i.e. 47% of respondents in Chełm and Radom. A large share of respondents were people with secondary qualifications, i.e. 33% in Chełm and 29% in Radom. In Chełm, professionally active respondents were people aged 40–45 (47% of respondents). In Radom, respondents not receiving state benefits were mostly people aged 30–35 (35% of respondents). The professional activity of respondents resulted from their ability to move around the labour market and their ease of using knowledge acquired during their studies and in professional practice.

The analysis shows that work in the lives of these people played an important role. It gave the chance for a better life and was a stimulus for action in further personal development.

If it comes to beneficiaries of social welfare, they were young people aged 30–35 (35% in Chełm and 22% in Radom) and aged 36–45 (29% in Radom and 45% in Chełm), mainly with secondary education (73% in Chełm and 33% in Radom) or professional (18% in Chełm and 22% in Radom). This group of respondents consisted of people having difficulties adapting to the requirements of the local labour market and showed lack of willingness to engage in effective job search. As a result, despite the physical and psychological abilities giving them the opportunity to earn money, they consciously decided to stay in the group of unemployed people, thus charging the state budget with the costs of their subsistence.

Table 2. Age of professionally active people and social welfare beneficiaries [%]

Age	Chełm working respondents	Radom working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
20–25	0	6	11	0
26–29	7	12	22	9
30–35	13	35	22	63
36–39	33	17	11	9
40–45	47	12	34	19
46–50	0	12	0	0
over 50	0	6	0	0
Total	**100**	**100**	**100**	**100**

Source: own study based on the conducted surveys.

Table 3. Education of professionally active people and social welfare beneficiaries [%]

Education	Chełm working respondents	Radom working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
Primary	0	6	0	0
Vocational	20	18	22	18
Secondary	33	29	67	73
Higher	47	47	11	9
Total	**100**	**100**	**100**	**100**

Source: own study based on the conducted surveys.

The financial conditions of families in Chełm and Radom in 2016 were influenced by six factors: type of work performed, income preceding time of the survey, number of people in the family, liabilities, accumulated savings and way of managing the financial budget of a household.

According to the conducted survey, professionally active respondents were families in which two adults were formally working (18% in Radom and 20% in Chełm), or one person (41% in Radom and 67% in Chełm) and the family undertook other activities to ensure maintenance funds.

The group of social welfare beneficiaries mainly consisted of families where one person worked professionally (67% in Radom and 63% in Chełm), while the other performed odd jobs (11% in Radom and 27% in Chełm). As a result, the lack of permanent employment, and thus the documented income, provided the opportunity to benefit from social welfare benefits.

Table 4. Forms of earning by professionally active people and social welfare beneficiaries [%]

Specification	Radom working respondents	Chełm working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
2 people working	18	20	22	9
1 person working	41	67	67	63
Odd jobs	23	0	11	27
Suport from relatives	6	6	0	18
Full time job	0	0	11	9
Otherer activities	20	20	0	9

Source: own study based on the conducted surveys.

Financial condition of the respondents

The main measure of the level of household wealth is the income. The level of earnings determines the satisfaction of the current needs of the family and gives the opportunity to accumulate surpluses. The family income includes: income taxed on general terms, income from business activity and untaxed income. The family's financial situa-

tion is affected not only by the income earned but also by the number of people in the household. Only the income of the whole family divided by the number of its members gives real disposable income per unit.

Table 5. Net income of professionally active families surveyed and social welfare beneficiaries in the month preceding the survey [%]

Specification	Radom working respondents	Chełm working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
Below 1,000 PLN	30	14	33	18
1,001–1,500 PLN	23	6	33	37
1,501–2,000 PLN	12	13	12	9
2,001–2,500 PLN	29	20	0	9
2,501–3,000 PLN	6	14	22	18
Over 3,000 PLN	0	33	0	9

Source: own study based on the conducted surveys.

Table 6. Number of people in the surveyed families, including professionally active and social welfare beneficiaries [%]

Specification	Radom working respondents	Chełm working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
2	6	13	11	9
3	18	27	0	18
4	53	33	67	37
5	23	20	11	18
6	0	0	11	18
7	0	6	0	0

Source: own study based on the conducted surveys.

Table 7. Income management in professionally active families and social welfare beneficiaries a month preceding the survey [%]

Specification	Radom working respondents	Chełm working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
We have enough money and we are able to save	6	20	22	18
We have enough money but we are not able to save	12	20	11	18
We live sparingly and thanks to that we have enough For everything	64	40	34	37
We live sparingly to put aside for more important shopping	6	6	0	9
We have money only for the cheapest food, clothes and fees	12	14	11	18
We have money only for the cheapest food, clothes and fees But we do not have enough money to pay bills	0	0	22	0

Source: own study based on the conducted surveys.

According to the above data, it appears that financially independent families had income higher than PLN 2,000 per month – in total, 67% of respondents in Chełm and 35% in Radom. These families predominantly created the 2 + 1 model (27% in Chełm and 18% in Radom), that is, two adults and one child or 2 + 2 (33% in Chełm and 53% in Radom) two adults and two children.

Due to the amount of income exceeding the criterion entitling to receive support from the social welfare, i.e. 514 PLN net per person, these families were to maintain financially themselves and the children independently. These families had enough money to satisfy all their needs and they could save some money each month (6% in Radom and 20% in Chełm). Although some respondents declared putting aside some funds in the form of deposits, 64% of families in Radom and 40% in Chełm, they led economical lives and thanks to that their budgets enabled them to meet their needs. On the other hand, as many as 12% of the respondents in Radom and 14% in Chełm indicated that they only had enough money for the cheapest food, clothes and fees. Hence the conclusion that the independently maintaining families had a stable job situation but in most cases their material status allowed only for current purchases of goods and services.

Social welfare beneficiaries were families with low material status, whose income threshold was PLN 2,000 (in total, in Radom 78%, in Chełm 64%). Despite low earnings, one household was inhabited by 4 to 7 people (89% in Radom and 73% in Chełm), and what is important, despite the fact that they needed material support, 18% of respondents in Radom and 22% in Chełm declared that the money was enough for all their needs and they still saved. From this fact we can draw the conclusion that the money from social welfare was their additional income, which could have been put aside until later, and not be the support in difficult financial situations.

What is also worth underlining is the fact that the beneficiaries of social welfare were families whose income exceeded PLN 2,000 (22% of respondents in Radom and 36% in Chełm). Such situations were the results of two factors: firstly, in a numerically large family, the income criterion was automatically higher, and secondly one member of a family was a disabled person receiving benefits from social assistance because of their illness and not for financial reasons.

In functioning of households, debt is a natural stage in the development resulting from incurring liabilities, including loans and credits. Liabilities are nothing surprising in a household and unavoidable at some stage in life. This is a form of obtaining funds especially on the early life stages of the household, in which the needs for financial resources is the greatest.

According to the survey conducted in 2016, 67% of beneficiaries of social welfare in Radom and 73% in Chełm did not have any forms of obligations. The remaining 33% and 27% of the respondents borrowed money for the renovation of apartments (22% of those surveyed in Radom and 0% in Chełm) and repayment of current liabilities (11% of respondents in Radom, 33% in Chełm).

The lack of indebtedness in this group of families can be analyzed first as a advantageous phenomenon, because the lack of financial obligations did not cause additional burdens but also as a disadvantageous fact, because it created lack of investment opportunities in inhibitants capital (education, treatment) and fixed assets (flat, house).

The lending situation of families maintaining the households without financial support from the state budget was different. Active people were aware of their financial needs: the current and the long-term needs. In 2016, loans had been taken out by 33% respondents in Chełm and 41% respondents in Radom. According to the analysis of 11% of families in Radom and 40% in Chełm, loans were used to repay current liabilities and to purchase household appliances and electronics gadgets (20% in Chełm and 60% in Radom), and thanks to obtaining a mortgage they bought a flat or house that became an investment for the future.

Table 8. Credit situation and their types among economically active people and social welfare beneficiaries [%]

Specification	Radom working respondents	Chełm working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
With loans	41	33	33	27
Without loans	59	67	67	73
Paying up current liabilities	11	40	11	33
Others, e.g. renovation, Buying a house	22 0	0 60	22 0	0 0
Purchase of appliances/electronics	0	20	0	0

Source: own study based on the conducted surveys.

Savings are the most important budget category in home finances because their primary role is to provide a sense of security and inner peace. Having financial comfort, the family does not have to worry about current expenses or job losses. It is much easier to live in such conditions and focus on other valuable areas of life.

On the basis of the study conducted in terms of collecting savings by professionally active people, it can be concluded that they were aware of their financial situation. As many as 55% respondents in Radom and 46% in Chełm of families had financial background, including a margin for current expenses and fees, and for securing children's future.

In case of beneficiaries of social welfare in Radom, the approach to savings was short-term, as 33% of the respondents had some reserve funds only to settle their current liabilities. In Chełm, on the other hand, 27% of beneficiaries of social welfare declared to have savings, and the reserve funds not only to spend on current fees and expenses, but also on holidays, securing the future of the children and buying or renovating houses. As a result, these people had a higher income than they declared in the social welfare, often as a result of occasional work.

Table 9. Collecting savings by professionally active people and social welfare beneficiaries [%]

Specification	Radom working respondents	Chełm working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
Yes	53	46	33	27
No	47	54	67	73
Total	100	100	100	100

Source: own study based on the conducted surveys.

Table 10. Types of savings accumulated by professionally active people and social welfare clients [%]

Specification	Radom working respondents	Chełm working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
Reserve funds for current expenses	17	20	0	33
Current payments	17	13	100	33
Securing future of children	29	20	0	66
Renovation	0	20	0	33
House purchase	6	0	0	100
Others, e.g. holidays	0	0	0	100

Source: own study based on the conducted surveys.

Spending funds under the 500+ Programme

In 2014, the social exclusion of children aged 0–17, measured by the AROPE[2] ratio, placed Poland in 15th place among EU countries. A significant reduction of poverty or social exclusion in Poland was observed until the turn of 2008/2009. Similar trends were observed in Great Britain, Ireland and the Netherlands. Despite the decrease of the risk of relative poverty along with taking into account the social transfers in income and in-depth financial deprivation of children in Poland, the rates of these parameters were higher compared to the average in the EU. Despite the fact that Poland experienced favourable social changes in relation to improvement of the living conditions of the youngest population, over the last ten years the threat of poverty or social exclusion of children in Poland was higher than in the EU average (Genowska, Goworko-Składanek,, Szafraniec 2017, p. 16).

Hence, dealing with poverty and improving the living conditions of children and youth under 18 is one of the main goals of Polish family policy. The “500+” pogramme has been designed to serve this purpose.

To assess the effectiveness of the above mentioned programme, there was made the analysis of types of goods and services purchased by professionally active families and social welfare beneficiaries solely to satisfy the needs.

[2] The AROPE ratio determines the proportion of the population that experiences at least one of three existential problems in a given calendar year: the risk of relative poverty, increased material deprivation and very low work intensity in households.

Analyzing the types of items purchased for the youngest age group of children, it can be deduced that children with professionally active parents in Chełm and Radom had less access to all necessary goods than children of beneficiaries of social assistance. Only 42% of parents in Chełm and 55% of parents in Radom declared the purchase of necessary cleaning supplies. 18% of children in Chełm and 22% of children in Radom benefited from paid health care and rehabilitation, and only 14% of children in Chełm participated in nursery classes.

In the case of social welfare beneficiaries, 50% in Radom and 100% in Chełm bought hygienic accessories and food products necessary for the everyday functioning of children. Whereas goods such as paid treatment (only 8% of parents in Radom and 27% in Chełm) and the possibility of attending a nursery (only 16% in Chełm) were treated as unnecessary luxury goods.

Table 11. Goods and services purchased for children aged 0 to 3 years by professionally active families and social welfare beneficiaries a month preceding the survey [%]

Specification	Radom working respondents	Chełm working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
Diapers	55	42	50	100
Modified milk	33	28	50	50
Paid vaccinations	44	14	0	16
Toys	44	42	75	83
Ready-made meals	11	14	25	33
Medications/treatment	22	28	25	33
Accessories	55	42	25	83
Clothes/shoes	100	42	75	100
Tuition fees for nursery	0	14	0	16
Rehabilitation	0	14	0	33
Renovation	55	14	0	50

Source: own study based on the conducted surveys.

Table 12. Goods and services purchased for children aged 0 to 3 years by professionally active families and social welfare beneficiaries a month preceding the survey [%]

Specification	Radom working respondents	Chełm working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
Tuition fees for kindergarten	80	100	62	85
Tickets for cultural events	40	50	50	28
Clothes/shoes	80	50	37	28
Toys	80	66	25	71
Sport equipment	20	33	25	57
General development classes	0	16	62	42
Medications/treatment	40	33	12	43
Improving housing conditions	40	33	0	43

Source: own study based on the conducted surveys.

The above data shows that parents used the funds under the „500+" programme in 2016 mostly for the purchase of clothes, footwear and toys (40% in Radom and 58% in Chełm) and fees for kindergarten and additional activities (85% in Radom and 58% in Chełm).

Beneficiaries of social welfare in Chełm paid mostly pre-school fees, i.e. 85%, purchased toys and sport equipment, i.e. 64%, and the least children attended paid cultural events, i.e. 28%. In Radom, on the other hand, parents paid for general development classes and tuition fees for kindergarten, i.e. 62%, and purchased medicines and improved housing conditions, i.e. 40% of the respondents.

Interpreting the above analysis, it can be concluded that both groups: independently managing households and benefiting from social assistance ensured personal development to their children within the limits of their capabilities. As a consequence, the families implemented the main priority of the program – „investment in children's development".

Table 13. Goods and services purchased for children aged 8 to 14 by professionally active families and social welfare beneficiaries a month preceding the survey [%]

Specification	Radom working respondents	Chełm working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
Clothes/shoes	58	100	87	100
School supplies	100	100	87	85
Books/learning aids	58	33	50	85
Computer hardware	16	0	37	57
School dinners	16	33	25	43
School trips	58	33	37	85
Medications/treatment	42	0	37	57
Tickets for cultural events	66	0	25	43
Trips/camps	9	0	25	43
Public transport tickets	16	0	0	14
Sport equipment	42	0	25	43
Improving housing conditions	33	0	0	43
Extra classes	33	33	37	28
Trainings/individual lessons	25	0	25	28
Rehabilitation	0	0	0	28

Source: own study based on the conducted surveys.

Analyzing the type of items purchased for children aged 8 to 14, professionally active parents in Chełm firstly bought clothes and shoes, i.e. 100%, school supplies and teaching aids, i.e. 66% and paid for school trips or other organized excursions and additional classes, i.e. 33%. In Radom, on the other hand, 58% of parents bought clothes and shoes, 79% of parents bought school supplies and books, 33% of parents paid for trips and 29% of parents paid for extra general development classes.

Beneficiaries of social assistance spent the funds mainly on purchase of clothes and footwear (100% in Chełm and 87% in Radom), school supplies, learning aids and computer hardware (58% in Radom and 90% in Chełm), on organized trips and sport equipment developing physical culture (29% of parents in Radom and 85% in Chełm).

The above analysis shows that the financial situation of children aged 8 to 14 from both groups of families was prosperous. Parents in both cities, thanks to additional funds, had the opportunity to provide children not only basic goods and services, but also could provide entertainment and support personal development.

Table 14. Goods and services purchased for children aged 15 to 18 by professionally active families and social welfare beneficiaries a month preceding the survey [%]

Specification	Radom working respondents	Chełm working respondents	Radom social welfare beneficiaries	Chełm social welfare beneficiaries
Clothes/shoes	60	100	100	100
School supplies	80	100	50	100
Books/learning aids	80	100	100	100
Computer hardware	20	0	100	50
School trips	60	0	0	50
Medications/treatment	20	0	0	50
Trips/camps	40	0	0	50
Tickets for cultural events	40	0	0	0
Public transport tickets	60	0	0	0
Improving housing conditions	20	0	0	0
Extra classes	20	0	0	0

Source: own study based on the conducted surveys.

Analyzing the type of shopping done for the young people aged 15 to 18, professionally active parents in Chełm purchased only clothes and footwear and school supplies and teaching aids, i.e.100%. In case of Radom residents, parents purchased all kinds of goods and services, including clothes and shoes i.e. 60%, school aids, computer equipment and public transport tickets, i.e. 60%. They also allowed children to take part in excursions and other events, i.e. 50%, provided access to extra activities, i.e. 20%, private treatment, i.e. 20% and improved the housing conditions of children, i.e. 20% of the respondents.

Beneficiaries of social assistance in Chełm purchased in particular clothes and footwear, i.e. 100%, teaching aids and computer equipment, i.e. 83%, school trips and holiday trips, i.e. 50% and private treatment, i.e. 50%. Radom residents, on the other hand, bought clothes, footwear and computer equipment in 100%, and learning aids in 75%.

The above analysis shows that financial situation of the young people aged 15 to 18 was the best in the professionally active families in Radom and beneficiaries of social assistance in Chełm. Thus, it can be concluded, that the inhabitants of Radom had

a stable financial situation, and the funds from the „500+" programme were additional income. The inhabitants of Chełm, although declared a difficult financial situation, they were able to provide children with a high standard of living. So it can be stated that their actual financial situation was not too difficult or these families were not able to manage the household budget properly by consuming it instantly.

Summary

Parents who were professionally active undertook well-thought-out and rational decisions concerning household budget, including funds from the „500+" programme. They also skilfully managed financial surpluses obtained from making accurate purchases of goods and services and thanks to loans taken out sensibly, e.g. on reasonable terms.

Beneficiaries of social assistance, however, made purchases impulsively without a deeper thought, they often bought expensive and unnecessary goods and services. These families were also characterized by a lack of efficiency in the functioning of the financial market because in most cases they declared the lack of loans and deposits.

Thus, the following conclusion can be drawn: only the appropriate education, the ability to manage finances and professional stability gives family financial security.

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REMARKS ON QE EFFICIENCY IN THE CONTEXT OF NAIRU SHIFTS AND IS-LM APPROACH

The purpose of the paper is to prove the thesis that the capacities of unconventional monetary policy implemented by the central banks of economically developed countries and aiming at overcoming deflationary and stagnancy processes are becoming exhausted and it will not be in the position to bring about desired effects in the long run in accommodation of economic recovery and, in particular, sustainable improvement in labour market conditions. In consequence, economic authorities of developed countries will be compelled to look for new, more effective methods of supporting recovery.

Keywords: Inflation, unemployment, low inflation trap.

JEL Classification Codes: E12, E58, E62, J64.

Introductory remarks

One of the most disturbing phenomena which the economies of economically developed countries have had to face for the last dozen years or so, are the deflationary-stagnation tendencies which, on the one hand, result in growing unemployment and considerable deterioration of living standards in some countries and, on the other, have a negative effect on the levels of trust in business relationships leading to a limited scope of international cooperation. The first great economy which has been affected by

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the contemporary deflationary-stagnation processes[3] is Japanese economy. It started there more than a quarter of a century ago following a collapse in the real estate market which later developed into a banking crisis and eventually spread across other crucial areas of the financial and production sector. Consequently, in the 1990s and 2000s in Japan the economic growth rate indicated low values, much lower than the average for the OECD countries which resulted, among others, in a lower share of the country in global GDP and the loss of the second, after the USA, place in the rankings of the world's economic superpowers (The Word Bank 2016). The deflationary- stagnation processes in Japan developed despite hard efforts of subsequent governments to reverse them. One of the government's undertakings, already in the 1990s, was, among others, implementing the forward guidance practice and quantitave easing, which later became a „standard" for many major central banks including the Federal Reserve System (FRS) and European Central Bank (ECB).

Although Japan is considered to be a classical example of an economy which cannot cope with stagnant economic growth in the situation of a strong deflationary pressure, yet very similar tendencies are observed also in the eurozone and, to some extent, also in American economy. The ECB's strict observation of its mandate which is maintaining the price growth index close to 2%, actually regardless of the economic situation, caused that the eurozone countries economies are by no means immune to external shocks, which was revealed, among others, by a dramatic worsening of the economic situation in southern Europe following the 2007+ crisis and the crisis which is sustained there in the debt market. On the other hand, the United States managed to overcome the stagnation process after the financial crisis owing to the use of the so called unconventional methods of monetary policy (quantitative easing and forward guidance) on an unprecedented scale, yet effectiveness of these activities is gradually dying out and their time-deferred effects for economic growth and employment are dificult to estimate. The doubts emerging in connection with the American economy prospects after the positive (transitory) effects of the anti-crisis actions have died out may also question effectiveness (especially in the area of reducing high unemployment) of the unconventional methods implemented by the European Central Bank since 2015.

The purpose of this paper is to prove the thesis that the potential of the policy implemented by central banks of the major economically developed countries which aims at overcoming the deflationary-stagnation processes developing there, is gradually becoming exhausted and in a long-term perspective it will not be able to bring about the desired changes in the economic situation and, in particular, sustainable improvement in the labour market. Consequently, these countries will be compelled to seek new, more effective tools for supporting economic revival.

[3] The word „contemporary" is used to differentiate between current deflationary-stagnation tendencies in economies of the developed countries and the tendencies observed there in the inter-war period and earlier

The inflation targeting policy and the nature of price expectations of economic entities

One of the more important changes which has occurred in the way the economic policy in developed countries has been articulated in the last quarter of the century is ultimate departure from formulating the objectives of the said policy in the *policy mix* terms, i.e. seeking a compromise between pursuing price stability and ensuring economic growth which would allow keeping unemployment around the "natural" level by means of both monetary and fiscal policy tools. It has been replaced with the policy which treats fighting inflation as a priority, since inflation is regarded as the greatest threat for long-term economic growth and hence employment.

These changes complied with the new consensus logic (Goodfriend, King 1998: 2-3; Woodford 2009: 267-269; Arestis 2009: 2-3), between the Neo-Keynesian and neo-monetarist trends, which gradually developed in the 1980s and 1990s, based, among others on a conviction that in the future the inflationary pressure will remain the main problem of developed market economies and appropriate systemic safeguards (e.g. making central banks independent from the government policy) must be developed to solve this problem effectively. A postulate of non-inflationary growth and superiority of monetary policy as a tool implementing it resulted from the experiences of developed capitalist countries gained in a very specific economic situation of the 1970s when a rapid rise of oil prices in those countries caused a supply shock, which resulted in an unprecedented inflation acceleration. The inflationary impulse was halted only after a radical change in the economic policy where the leading role was assigned to monetary policy based on the money supply control recommended by monetarists. The success of monetary policy in the field of price stabilization was spectacular enough to obscure the fact that the countries which had adopted that policy at the beginning of the 1980s (the United States, Great Britain) in those days faced the strongest economic recession since World War 2 which was also accompanied by a substantial rise in unemployment rate (Bednarczyk 1984: 1314-1320).

In the 1990s in many countries prioritizing inflation was reflected in the implementation of the inflation targeting doctrine together with its specific infrastructure (public announcement of the inflation target and monitoring its progress, publishing reports on inflation, meticulous discussion of the rulings made by the central bank decision-making bodies, etc.). Even in the USA where the central bank is obliged to observe the so called „Dual Mandate" the *implicite* inflation target was a key measure of the monetary policy character.

Another indicator of this character was the level of the non-accelerating inflation rate of unemployment (NAIRU) estimated for each country. There were many attempts to answer the question at what unemployment rate inflation tends neither to fall nor to rise reflecting ideal equilibrium in the labour market. To this end long-term time sequences

of demand for labour and labour supply, real wages, productivity, employment structure, the power of trade unions, rates of unemployment benefits etc. were studied. The basis of the NAIRU concept was a view that the labour market is the main source of inflation, hence it is necessary to affect this market in such a way as to prevent it from generating inflationary impulses. The main issue was not to permit a situation when the real unemployment rate would be permanently lower than the NAIRU value estimated for a given country, as otherwise it might threaten with initiating an uncontrolled inflation process.

A particular role in formulating and justifying economic policy based on strict inflation control had the Taylor rule (Taylor 2010). It was used to define a specific level of the basic short-term interest rate of the central bank depending on the divergences of actual inflation from the target inflation and actual GDP from potential GDP. Although compliance of the central bank with the Taylor rule was to ensure long-term stable economic growth, yet in the case of upward divergences of inflation from the inflationary target it implied an increase in interest rates which caused more than a proportional fall of real GDP growth and corresponding to it unemployment rate growth (Taylor 2010: 105-106). Officially no central bank admitted to following the Taylor rule as the basis of its monetary policy; nonetheless it was used by analysts, economic journalists and experts assessing the quality of the said policy. These circles, having a secondary effect (as the so-called market expectations) on the opinions of decision-makers caused that this policy was virtually compliant with the principles of anti-inflationary orthodoxy.

This almost commonly implemented in the developed countries policy of making a fight with inflation a priority resulted in continuous extinguishing of inflationary expectations in these countries in the 1990s and 2000s and consequently real inflation. The important factors which strengthened these tendencies were: the way in which developed countries reacted to global crises of the first decade of the 21st century (permanent price rise control) and a sustainable entry of Chinese economy into the world economy which, on the one hand, caused a "transfer" of a considerable number of jobs from America and Europe to China (this reduced a pressure on a wage increase in developed countries) and, on the other, a massive inflow of cheap Chinese products to these markets which drove much more expensive American and European products away from the markets, in this way contributing to much lower general price levels.

Treating unemployment as an „output" manifesting itself by a quick and decisive reaction of central banks to even minor divergences of real inflation from the set (usually ambitious) target (the phenomenon of inflationary hysteresis) (Bednarczyk 2013), and lack of appropriate reaction to even a considerable increase in the unemployment rate, including also that assuming a chronic character (vide the eurozone), caused a change in the attitudes of market participants towards the way of considering the price rise in costs calculations, receivables, profits and the scope of their market activities.

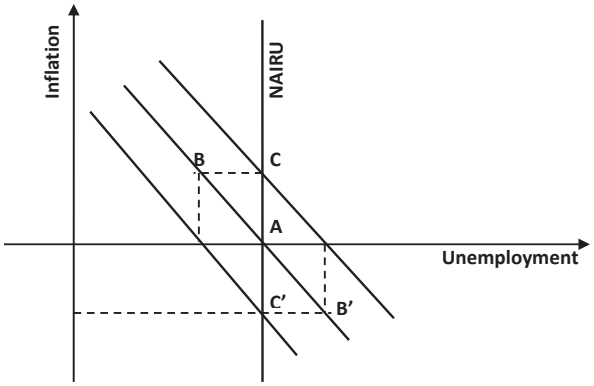

Figure 1. A shift of the short-run Phillips curve in the situation of inflationary and deflationary expectations

Source: (Bednarczyk, 2018).

The nature of changes which occurred in the market in the last twenty-five years can be presented with the use of the expectations-augmented Phillips curve. In Figure 1 points A, B and C represent "classical" changes in the microeconomic equilibrium states in response to a demand impulse caused by expansionary monetary policy (increased money supply). Equilibrium in point B is of temporary character only; the lower than natural unemployment is soon paid for by fuelling inflationary expectations and a shift of the short-run Phillips curve upwards to the right. Each next move of the authorities aiming at lowering the unemployment rate below the natural level will lead to increased instability of inflationary expectations and increasingly higher inflation. Over time the line defining the NAIRU level may lean to the right[4], which means permanently higher inflation and unemployment.

The example of Japanese economy (but also those of American and European economies) shows that at least since the 2000s, the „classical" mechanism of fuelling inflationary expectations and inflation exclusively by means of a monetary impulse has not worked so effectively and unambiguously as monetarists and their followers used to believe (Friedman 1973; Kydland,Prescott 1977: 473-492). This is proved by the data regarding inflation in the situation of the quantitative easing programmes implemented in economically developed countries. There are strong indications that this mechanism has been replaced with a new way of formulating price expectations by economic entities in the situation when they became aware that the authorities will not allow any price increase. Changes in the states of macroeconomic equilibrium corresponding to a new

[4] It is connected with a weaker informative function of prices and deterioration of market mechanism effectiveness

character of expectations are outlined in Figure 1 by a movement from point A to point B' and then C'. Sticking by the authorities to the pursuit of the inflation target may confirm enterprises in a belief that the authorities, while seeking the pro-supply growth factors and aiming at reducing pressure on a wage increase, will tolerate unemployment higher than natural. Their intentions are determined by a hard anti-inflation line expressed by maintaining relatively high real interest rates which effectively block faster increase in nominal income. The effects of a "low inflation trap" (Bednarczyk 2010: 15-26) occur, i.e. an increase in the expected long-term interest rates due to anchoring deflationary expectations. Higher unemployment which is a result of pessimistic expectations as regards economic growth prospects entails a further drop in demand and, at a given supply function – a decrease in price levels (a shift of equilibrium to point B'). This equilibrium (very unfavourable for economy) may not be so permanent because a drop in price levels leads to an increase in the real amount of money which, in turn, alleviates a restrictive impact that the long-term real interest rate mechanism has on economy. Economy may head towards equilibrium in point C', to which the unemployment rate at the NAIRU level corresponds, but also a tendency to a drop in price levels. Like in the case of growing inflationary processes, also in the case of deflationary tendencies there is a risk of a difficult to control deflationary-stagnation process development (vide Japan) (Bednarczyk 2015: 89-102), which may result in a permanently decreased economic growth rate and higher unemployment rate. This rate may diverge higher and higher from the rate which so far has been perceived as natural (NAIRU), which causes a decisive limiting of the function of the latter as a benchmark of the monetary policy practised.

The impact of deflationary expectations on changes in long-run macroeconomic equilibrium is presented in Figure 2. Let us assume that the initial state of analysis is point A, which corresponds to the positive inflation rate and unemployment rate at the NAIRU level. The authorities decide that the inflation rate so far has been too high and must be reduced and kept at a low level (e.g. 2%) irrespective of the conditions in which economy functions (including external shocks). The main tool that the authorities use is increasing interest rates. Initially economic equilibrium shifts to point B (with no effects for economic growth and employment), but, at the same time onto the Phillips curve which is in a lower position and which corresponds to a gradual reduction of inflationary expectations. A fall in inflation means an increase in real interest rates; this leads to limiting the scale of business activities and increased unemployment (equilibrium in point C). The authorities do not react to growing unemployment by quantitative easing as they are afraid of fuelling inflationary expectations and exceeding the set inflation target (such behaviour is in compliance with the Taylor rule logic). Improvement in the labour market results mainly from stopping the wage increase (equilibrium in point D). Point D, however, lies on the lower located Phillips curve (in connection with further reduction of inflationary expectations) and at the same time on the "broken part" of

NAIRU (which corresponds to a permanent deterioration of the state of equilibrium in the labour market). If the authorities continue the hard line aiming at keeping inflation around the ambitious inflationary target, economic equilibrium may shift to point E and then F, following the track of inflationary expectations reshaping permanently into deflationary expectations.

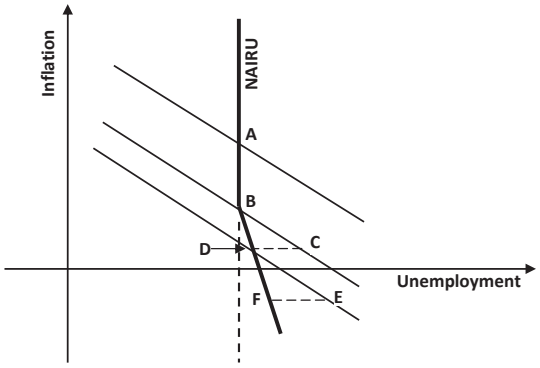

Figure 2. Reaction of the long-run Phillips curve to deflationary expectations

Source: (Bednarczyk, 2018).

The presented analysis of macroeconomic equilibrium changes, based on the observations of experiences of the economically developed countries proves that policy of a strict focus on inflation control, in the long run, actually does not allow economy to maintain satisfactory unemployment indicators close to the NAIRU value. A direct effect of implementing the hard anti-inflation line is gradual reduction of price rise expectations and possible occurrence of deflationary expectations which have a negative influence on the economic growth prospects and lead to a permanent deterioration of the situation in the labour market.

Attempts to overcome the deflationary-stagnation processes

In this situation a question arises: how to overcome the deflation-stagnation processes which develop virtually in all large developed economies as an aftermath of the 2007+ financial crisis. Implementation of the so-called unconventional tools of monetary policy and, in particular quantitave easing, has become a fairly common practice used by the authorities to stimulate economic recovery. Its effect on the economic situation can be followed with the use of dependencies of the IS-LM model, at the same time taking into account changes in equilibrium in the market of goods (Fig. 3). Let us assume that the initial state of equilibrium is characterized by point A which corresponds to a low inflation rate (1-2 per cent) and weak economic activity. To stimulate recovery

the authorities decide to significantly increase the money supply. The intention of the authorities is to reach equilibrium in point B (increasing production levels from P1 to P2). However, a considerable part of the increased monetary supply will eventually be spent on the purchase of securities and not goods or services (vide US and Japanese economies), or will "leak out" abroad as a result of a curent account deficit and deficit of portfolio and direct investment. Increased demand for securities will cause the increase in their prices and their lower profitability. At given low inflation this will lead to lower real interest rates. As a result economic equilibrium will be formed in point C, which will correspond to only small production growth and the increased inflation index. Despite spectacular actions undertaken by the authorities (because activation of a monetary impulse on a large scale must be regarded as such), economy will remain stuck in stagnation. Continuation of this strategy by the authorities will gradually meet with more and more resistance from the market participants due to its increasingly lower effectiveness and due to difficult to predict effects for economy of the excessive monetary supply growth in the long-run. The latter aspect is relatively important because economic entities, being afraid of the necessity of rapid tightening of monetary policy in the future, may start limiting their production plans now or, for example, transfer their production abroad.

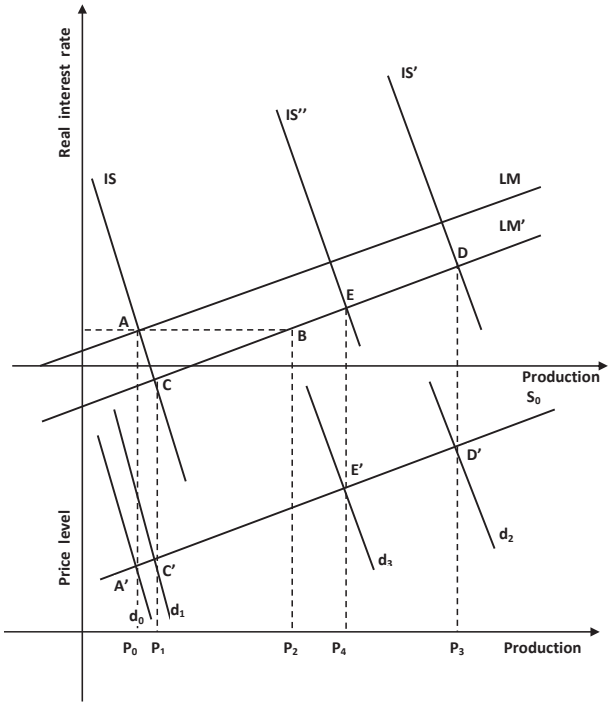

Figure 3. Overcoming the deflationary-stagnation process with the use of the monetary and fiscal policy methods

Source: (Bednarczyk, 2018).

A way out of the situation when the excess of liquid financial resources in the market, low or even negative long-term interest rates and high unemployment cannot contribute to stimulating economy is an attempt to achieve recovery by the method of shifting the IS curve to the IS' position and economic equilibrium from point C to point D. The state can make such an attempt by undertaking, e.g. large-scale infrastructural investment. Such proposals are put forward more and more often in opinions of well-known economists and in economic journalists[5]. Reaching for growth stimulating demand-related factors would probably cause, apart from the growth of the real production volume and employment, a tendency to price rise and, in the long-run, also a tendency to long-term interest rate growth (as a result of increased supply of public securities and a drop in their prices). Economic equilibrium would ultimately be achieved in point E, to which a higher than at the initial moment (C) production level (P4), prices and employment would correspond. Long-term unemployment would gradually start to return to the natural state (NAIRU).

While considering the strategy of overcoming the deflationary-stagnation process by stimulation of demand, one should bear in mind the fact that its implementation, e.g. in the EU countries might turn out impossible due to the formal regime of a 3% ceiling for budget deficit. Paradoxically, implementation of such a strategy would be out of reach for the countries which need it most, where unemployment is at its highest and which experience the greatest economic problems, as they also have the most acute problems with budget deficit. In this situation a dilemma whether to continue pumping “fiat money” into economy in the form of subsequent tranches of quantitative easing which does not bring about expected effects, or to allow a transitional increase in budget deficit which may improve the economic situation and the situation in the labour market, will probably remain unresolved in the European Union.

Conclusions

Unconventional methods of monetary policy, especially quantitative easing used in economically developed countries are not capable of stimulating economic growth and contributing to the reduction of unemployment. Their potential is so limited that in the United States the option of the so-called secular stagnation is seriously discussed. Such an option could result also in a permanent increase in unemployment rate, which is high anyway, especially in the Eurozone countries which were hit most by the 2007+ crisis. Since in the last twenty-five years monetary policy, a “flagship” tool to form economic

[5] An example here is L. Summers from Harvard University, candidate for the Chairman of the Federal Reserve in the 2013 elections, a propagator of the secular stagnation hypothesis who believes that the main problem of the economically developed countries is chronic deficit of demand in the situation of a rising savings rate in aging societies. Cf. P. Coy (2016). Compare also: M. Schuman (2016) and ECB (2016).

equilibrium in developed countries, has lost its ability to revive economy (among others, due to the fact that the nominal interest rates reached the zero lower bound (ZLB)), there is an urgent need to return to the idea of the *policy mix*, thus taking advantage also of fiscal policy as a tool tantamount to monetary policy in balancing economy. However, a condition to implement the new strategy of supporting economic revival in the European Union is making the budget deficit policy more flexible and adjusting it to new realities, considerably diverging from the reality of the 1980s when the principles of this policy were formulated.

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