

## The improvement in the international competitiveness of the Polish food sector and its support with public funds during Poland's membership in the EU

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### Abstract

Poland's accession to the European Union (EU) meant not only active inclusion into the EU structures, but also the strengthening of internal forces, so that it could cope with the global competition and protect itself against its negative effects. In order to be a full partner, especially for the EU Member States, and to be able to develop, Poland – as the national economy – obviously, must be competitive in the international market. Due to this approach to the issues of competition and competitiveness, the major objective of the studies carried out at the Institute of Agricultural and Food Economics – National Research Institute (IAFE-NRI) was to assess the international competitive position of the Polish food sector and to verify a thesis that the competitiveness of this sector during Poland's membership in the EU has improved.

**Key words:** international competitiveness, food sector, public support, agri-food products

### Introduction

In the present study the competitiveness of Polish food producers is defined as the ability to establish domestic food producers in foreign markets – both in the EU and in third country markets – and the ability to develop exports. Implementing the above-mentioned general objective of research and assuming the accepted definition, an analysis of the competitive potential, competitive strategies, instruments of competition and the competitive position of Polish food producers on the Single European Market and world markets was carried out. The highlighted elements of "competitiveness" have strong links of a cause-and-effect relationship. Generally, it can be concluded that the competitive potential held by a company determines the application of a specific competitive strategy, which provides a basis for selection of specific instruments of competition and these in turn help to achieve a certain competitive position. It is also important to maintain an adequate quality of cooperation with the external environment (Szczepaniak, 2014; a).

## **Objective and methodological assumptions**

The aim of this study is to verify the thesis that the competitiveness of Polish food sector in the period of Polish membership in the EU has improved, and one of the factors that contributed to this improvement was the support for this sector from public funds.

To implement this goal several issues were presented. First of all, recognising the international dimension of the concept of competitiveness as one of the main manifestations of development of the competitive position of Polish food producers, it discusses the results of foreign trade in agri-food products. Secondly, it presents the assessment of the Polish competitive position in trade in agri-food products in the world market, which uses two quantitative indices, i.e. trade coverage index (TC) and B. Balassa index of revealed comparative advantage (RCA). The next part of the paper is devoted to the analysis of the competition strategies used by the Polish food industry enterprises in the world market, in which we used the K. Aiginger method. The next part of the paper assesses the use of public funds, made available under the Common Agricultural Policy (CAP), by the Polish food industry and their impact on the international competitiveness of the sector. Conclusions complete the paper.

The presented analysis of the Polish foreign trade in agri-food covers the period of 2003-2014. This analysis used data from the database of the Analytical Centre of Customs Administration (CAAC) and the Ministry of Finance (MF). Rating of the competitive position and analysis of the competitive strategies of Polish foreign trade in agri-food products covers the years between 2003 and 2013, and it was carried out on the basis of data from WITS-Comtrade database. The analysis of public support for Polish food industry typically covers the years between 2003 and 2013. The data used therein come from the Agency for Restructuring and Modernisation of Agriculture (ARMA) and the Agricultural Market Agency (AMA).

## **Development of Polish foreign trade in agri-food products**

The analysis of foreign trade in agri-food products is a classic analysis of changes in the value and balance of foreign trade in agri-food products. Changes in both exports and imports (rate of change) allow drawing conclusions on development of the agri-food sector in Poland. The trade balance reflects whether a sector is a net exporter or net importer. The positive balance of trade means that there is a comparative advantage in the export of a given branch, while the deficit – that there is no such advantage.

Ten years of Poland's membership in the EU have been characterised by a regular growth in and improved results of foreign trade in agri-food products. In 2014, the value of Polish trade in agri-food products amounted to EUR 37.0 billion, in which the export reached the record-breaking level of EUR 21.9 billion and the import – EUR 15.1 billion (Table 1). When compared to the previous year, this means an increase in trade by 6.6%, including in the export by 7.1% and in the import by 5.7%. Since the moment of Poland's accession to the EU, the positive trade balance of agri-food products has also increased regularly and, in 2014, it reached the unprecedented value of EUR 6.7 billion. When compared to the previous

year, it was higher by 10.2%. The changes in the flows of Polish foreign trade in agri-food products, recorded in 2003-2014, means that the export increased by nearly 5,5 times, the import – by more than 4 times and the trade balance of these products – by nearly 15 times. Despite the fact that the global economic situation is still difficult, the growth of trade in food is still progressing in Poland.

The export of agri-food products in 2004-2014 increased, on average, by 16.7%, and the import by 14.1% a year. The higher growth rate of the export rather than of the import resulted in the improved positive trade balance, which in that period increased, on average, by 27.8% a year (Table 1). From a comparison of the average growth rate of Polish agri-food trade flows in the subsequent years, it results that this rate, in the first period after accession, was clearly higher than in the next period.

*Table 1. Results of Polish foreign trade in agri-food products*

Trade flow	Direction of trade	Value in EUR million				Growth rate					
		2003	2008	2013	2014	2014			Average annual growth rate* in %		
						2003 = 100	2008 = 100	2013 = 100	2004-2014	2004-2008	2009-2014
Export	Total	4,010.4	11,421.6	20,427.2	21,876.5	545.5	191.5	107.1	16.7	23.3	11.4
	including to the EU	2,616.7	9,218.1	15,929.4	17,409.2	665.3	188.9	109.3	18.8	28.6	11.2
Import	Total	3,556.9	10,088.7	14,312.5	15,134.4	425.5	150.0	105.7	14.1	23.2	7.0
	including from the EU	2,175.9	7,023.0	9,936.8	10,494.1	482.3	149.4	105.6	15.4	26.4	6.9
Balance	Total	453.5	1,332.9	6,114.7	6,742.1	1,486.7	505.8	110.3	27.8	24.1	31.0
	including intra – EU trade	440.8	2,195.1	5,992.6	6,915.1	1,568.8	315.0	115.4	28.4	37.9	21.1

\* The annual average growth rate of foreign trade in agri-food products was estimated by using the concept of compound interest (Luderer B., Nollau V., Veters K., 2009).

*Source: study based on the data from the Analytical Centre of Customs Administration (CAAC) and the Ministry of Finance (MF).*

Poland mainly trades in agri-food products with the EU Member States. In 2014, the share of the EU countries in the export of Polish agri-food products amounted to 79.6% and in the import – 69.3%. The positive balance of trade with the EU countries reached the value of nearly EUR 6.9 billion. This significant share of the EU countries in the geographical structure of the export and the high value of the balance of trade with these countries evidence not only the full integration of Poland with the EU, but also the competitiveness of the Polish food sector in the SEM.

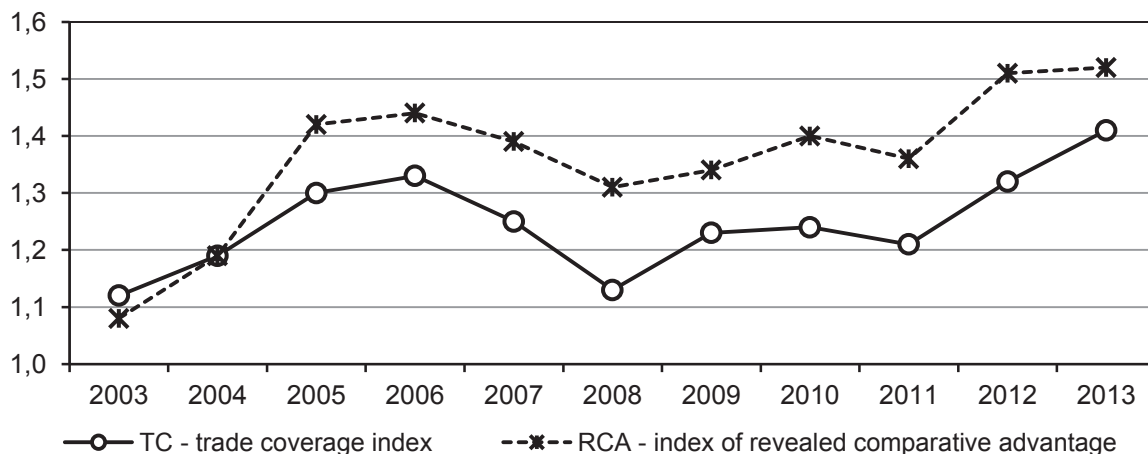
### **Assessment of the Polish competitive position in foreign trade in agri-food products based on the selected indices**

The changes in the Polish competitive position in trade in agri-food products were assessed on the basis of two quantitative indices, i.e. trade coverage index (TC) and B. Balassa index

of revealed comparative advantage (RCA) (Szczepaniak, 2014; b). The trade coverage index determines the extent to which the proceeds from the export of a given group of agri-food products cover the costs of their import. The index value of  $TC > 1$  means a surplus in Polish trade in a given product group, while  $TC < 1$  means a deficit in this trade. The B. Balassa index of revealed comparative advantage allows to determine whether the share of a given group of agri-food products in the total Polish export to the world market is higher or lower than the share of this product group in the global export. The index value of  $RCA > 1$  means that Poland has the revealed comparative advantages in the export of a given product group to the world market, while  $RCA < 1$  – that Poland has no such advantages.

The trade coverage index of these products after Poland's accession to the EU showed small fluctuations, but during all years its level was higher than one. In 2003-2013, the TC index rose from 1.12 to 1.41 (Fig. 1), which means that in 2013 the value of the export of agri-food products exceeded the import of those products by as much as 41%. The TC values higher than one and their growth during the period of Poland's membership in the EU means the increased specialisation and an improvement in the international competitive position of the Polish food sector.

*Fig. 1. Trade coverage index (TC) and B. Balassa index of revealed comparative advantage (RCA) in Polish foreign trade in agri-food products*



*Source: study based on the WITS – Comtrade data.*

In 2013, the B. Balassa index of revealed comparative advantage in the Polish export of agri-food products to the world market amounted to 1.52, which means that the share of this product group in the total Polish export was by 52% higher than the share of those products in the total world export (Fig. 1). Therefore, in comparison with the year immediately preceding accession, there was a significant increase in revealed comparative advantages in the export (in 2003, the RCA index amounted to 1.08), which confirms the definite improvement in the competitive position of Polish food producers in the world market.

In most sections of the agri-food sector, the trade coverage index in 2013 was also higher than one, which evidences a high degree of coverage of the national import by the national export.

*Table 2. Indices of the competitive position in Polish trade in agri-food products, by HS sections*

Number and name of the HS section		TC indices			RCA indices		
		2003	2013	Change in pp	2003	2013	Change in pp
01	Live animals	3.98	0.28	-3.70	2.29	0.87	-1.42
02	Meat and offal	5.28	2.33	-2.95	1.58	2.94	+1.36
03	Fish and seafood	0.55	0.68	+0.13	0.53	1.09	+0.57
04	Dairy products	5.60	2.57	-3.43	1.48	2.23	+0.75
05	Other animal products	0.80	1.07	+0.27	3.68	2.31	-1.37
06	Live plants and cut flowers	0.60	0.57	-0.03	0.71	0.66	-0.05
07	Vegetables	3.06	1.65	-1.41	2.08	1.59	-0.49
08	Fruit and nuts	0.77	1.01	+0.24	1.64	1.40	-0.24
09	Coffee, tea, spices	0.25	0.85	+0.60	0.52	1.26	+0.74
10	Cereals	0.59	2.55	+1.96	0.25	0.76	+0.51
11	Milling products, malt, starches	0.66	1.02	+0.36	1.00	1.06	+0.06
12	Oil seeds and oleaginous fruit	0.35	1.07	+0.72	0.22	0.46	+0.24
13	Vegetable extracts	0.13	0.16	+0.03	0.23	0.17	-0.06
14	Other vegetable products	1.73	0.02	-1.71	0.94	0.28	-0.65
15	Animal or vegetable fats and oils	0.09	0.70	+0.61	0.10	0.59	+0.50
16	Meat and fish preparations	4.19	4.24	+0.05	1.60	2.25	+0.65
17	Sugars and confectionery	2.44	1.48	-0.96	1.63	1.35	-0.28
18	Cocoa and cocoa preparations	0.73	1.61	+0.88	1.48	2.95	+1.47
19	Cereal products and pastrycooks' products	2.17	1.97	-0.20	1.33	1.99	+0.66
20	Fruit and vegetable preparations	2.99	1.90	-1.09	2.40	2.02	-0.38
21	Other food preparations	0.91	1.67	+0.76	1.69	2.32	+0.63
22	Non-alcoholic and alcoholic beverages	0.63	0.94	+0.31	0.26	0.56	+0.30
23	Waste and animal fodder	0.23	0.45	+0.22	0.60	0.87	+0.26
24	Tobacco and tobacco products	1.25	3.24	+1.99	0.53	4.43	+3.91
Agri-food products		1.12	1.41	+0.29	1.08	1.52	+0.44

*Source: calculations based on the WITS-Comtrade data*

The particularly high TC values have been registered in the sectors of meat and fish preparations, tobacco and tobacco products, dairy products, cereals, meat and offal, cereal products, and fruit and vegetable preparations. This index was the lowest in such sections as other vegetable products, vegetable extracts, live animals, and waste and animal fodder, thus in sections, where the turnover balance was negative. In 2003-2013, the changes in the TC index in the individual sections of the agri-food sector were multi-directional, but with a clear predominance of the increase in that index.

The highest RCA indices in 2013 characterised such product groups as tobacco and tobacco products, cocoa and cocoa preparations, meat and offal, various food preparations, other animal products, meat and fish preparations, dairy products, fruit and vegetable preparations as well as cereal products and pastrycooks' products. In 2003-2013, the competitive position

of most of those groups strengthened. The positive changes applied also to cereals, non-alcoholic and alcoholic beverages, waste and animal fodder and animal or vegetable fats and oils.

The comparison of the values of both indices enables the total assessment of the Polish competitive position in trade in agri-food products in the world market. It allows to separate four variants of the situation, two of which are of primary importance, as they allow to draw the same conclusions as to the competitive position in the export of a given product group (Fig. 2). These two variants are:

- the given country has comparative advantages in trade in a given product group in the world market, which is confirmed by the TC index ( $TC > 1$ ) and RCA index ( $RCA > 1$ );
- the given country has no comparative advantages in trade in a given product group in the world market, which is confirmed by the TC index ( $TC < 1$ ) and RCA index ( $RCA < 1$ ).

No clear assessment of the competitive position in trade in agri-food products in the world market stems from the other two variants because the results of both indices are incompatible.

Fig. 2. Agri-food products (HS sections) by values of the TC and RCA indices in 2013

		RCA index	
		above 1	below 1
TC index	above 1	Meat and offal (02) Dairy products (04) Other animal products (05) Vegetables (07) Fruit and nuts (08) Milling products, malt, starches (11) Meat and fish preparations (16) Sugars and confectionery (17) Cocoa and cocoa preparations (18) Cereal products and pastrycooks' products (19) Fruit and vegetable preparations (20) Other food preparations (21) Tobacco and tobacco products (24)	Cereals (10) Oil seeds and oleaginous fruit (12)
	below 1	Fish and seafood (03) Coffee, tea, spices (09)	Live animals (01) Live plants and cut flowers (06) Vegetable extracts (13) Other vegetable products (14) Animal or vegetable fats and oils (15) Non-alcoholic and alcoholic beverages (22) Waste and animal fodder (23)

Source: study based on Table 2.

According to the assessment based on both indices, in 2013, the following product groups were competitive ( $TC > 1$  and  $RCA > 1$ ): meat and offal, dairy products, other animal products, vegetables, fruit and nuts, milling products, meat and fish preparations, sugars and confectionery, cocoa and cocoa preparations, cereal products and pastrycooks' products,

fruit and vegetable preparations, tobacco and tobacco products, other food preparations. Their share in the Polish agri-food export in 2013 exceeded 70%. Whereas Poland had no competitive advantages ( $TC < 1$  and  $RCA < 1$ ) in trade in: live animals, live plants and cut flowers, other vegetable products, animal or vegetable fats and oils, non-alcoholic and alcoholic beverages, and waste and animal fodder. The share of those products in the Polish agri-food export in 2013 amounted to slightly more than 20%. Trade in other product groups was competitive only when assessed based on one of the above-mentioned indices.

### **Competition strategies in Polish trade in agri-food products**

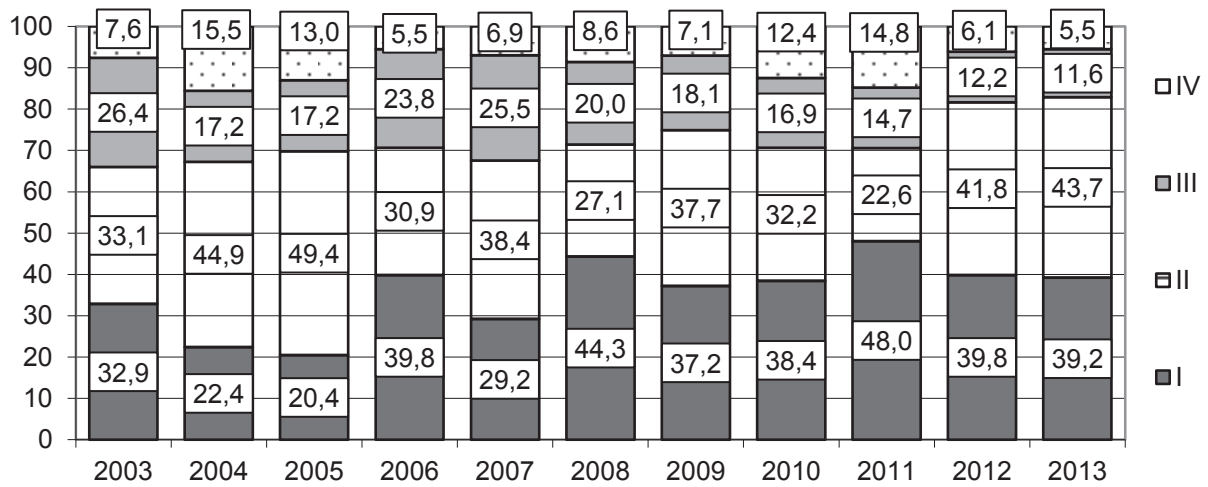
One of the methods for analysing foreign trade competition strategies in international markets is the quality and price method, proposed by K. Aiginger [Aiginger 1998, 1997], which applies two competitiveness indices, i.e. relationship of average export prices to average import prices (UV) and foreign trade balance in quantitative terms (Sq). The relationship of prices (UV) may be greater than or equal to one ( $UV \geq 1$ ) or less than one ( $UV < 1$ ). The quantitative trade balance (Sq) may be positive or equal to 0 ( $Sq \geq 0$ ) or negative ( $Sq < 0$ ). A comparison of the values of both these indicators may be used for dividing products traded in the given foreign country into four segments:

- I. Effective quality competition strategy – applies to these commodity groups, for which the relationship of export prices to import prices is greater than or equal to 1 ( $UV \geq 1$ ) and the trade balance in physical units is positive or equal to zero ( $Sq \geq 0$ ).
- II. Effective low price competition strategy – applies to these product groups, for which the relationship of export prices to import prices is lower than 1 ( $UV < 1$ ) and the trade balance in physical units is positive or equal to zero ( $Sq \geq 0$ ).
- III. Potentially effective quality competition strategy – applies to these product groups, for which the relationship of export prices to import prices is greater than or equal to 1 ( $UV \geq 1$ ) and the trade balance in physical units is negative ( $Sq < 0$ ).
- IV. Ineffective low price competition strategy – applies to these product groups, for which the relationship of export prices to import prices is lower than 1 ( $UV < 1$ ) and the trade balance in physical units is negative ( $Sq < 0$ ).

An analysis of the competitiveness of the given country in terms of assigning exported products to one of these four segments allows to conclude on the competition strategies of this country, as the value of the UV indicator informs about the adopted competition strategy, while the sign of the Sq indicator provides information about the effectiveness of the adopted form of competition.

The quality and price method may also be used to break down the value of the total export into product groups, which are characterised by one of the competition strategies distinguished by this method. An analysis of the structure of the Polish export of agri-food products to the EU in 2003-2013 (Fig. 3) shows that after accession of Poland to the EU, it was rather variable, whereby changes have taken place mainly in that part of the export which was characterised by the effective quality competition strategy or effective price competition strategy.

Fig. 3. Structure of the Polish export of agri-food products by applied competition strategies, in %



Source: own calculations based on the WITS-Comtrade data.

In the first years after accession (2004-2005) – compared with the year preceding it directly – we saw the increased share of the Polish agri-food export, resulting from the application of the effective low price competition strategy to the detriment of the effective quality competition strategy and potentially effective quality competition strategy. This means that Polish food producers, wishing to sell their products in the EU market, used their cost advantages in an efficient manner. In the following years (2006-2008), the opposite occurred – the importance of the effective low price competition strategy clearly decreased in favour of the effective quality competition strategy, indicating the progress in the process of Poland's integration with the EU. During the global economic crisis (2009-2010), the price competitiveness gained in importance again. In 2011-2013, there was another increase in the importance of both the differentiation strategy, based on the effective quality competition, and the cost strategy, based on the effective price competition. As a result, the share of the export of products competitive in terms of quality or price increased in the Polish agri-food export. In 2013, as much as 39% of the export of agri-food products could be linked to the application of the effective quality competition strategy (by 6 pp more than in 2003), and 44% – of the effective low price competition strategy (by 11 pp more). The role of the other two strategies in the export structure was much smaller (about 17% in total).

### Support for the Polish food industry within the framework of the Common Agricultural Policy

The great investment recovery, which took place in the food industry after Poland's accession to the European Union was possible, *inter alia*, thanks to supporting that sector with the public funds. Poland's membership in the EU has, in fact, created the possibility for Polish entrepreneurs to benefit from support coming from various aid schemes (provided for in the CAP). Measures specially dedicated to the food industry were



launched under the schemes. These measures were to support the process of modernisation of enterprises and their adjustment to the functioning in the SEM. In 2003-2013, PLN 5.9 billion from the aid schemes was spent for supporting various kinds of investments in the Polish food industry, including PLN 4.3 billion from the EU budget (73.6%). The whole support accounted for ca. 8.4% of the total value of investments made at that time in that industry. However, since the entrepreneur, in order to get funding for investment activities, had to launch his own funds, this meant that the final value of implemented investments was at least two or three times higher. The biggest investment support from the EU aid schemes was granted to enterprises from the meat industry, and dairy, fruit and vegetable, cereal and fish industries [Tereszczuk 2013].

After Poland's accession to the EU, Polish food enterprises also gained the possibility of using the CAP "market support" mechanisms. These were, in particular, the following measures: market intervention (purchase, sale, private storage, exceptional market support measures), subsidies to the production and processing, subsidisation of the export of agri-food products and support for the consumption and promotion. Some of them were to stabilise the market, some to increase the production, and some to increase the consumption. In 2004--2013, the agri-food sector in Poland received "market support" in the amount of PLN 11.3 billion, of which 33.4% were used for intervention measures, 25.9% for subsidies to the production and processing, 22.2% for support of the consumption and for promotional measures, and 18.5% were paid in the form of subsidies to the export of agri-food products to non-EU markets. The largest funding was allocated to the sugar, dairy and cereal industries and also the meat and fruit and vegetable industries. The funds obtained under "market support" contributed to the greater predictability of the conditions of the functioning of food industry enterprises in Poland. Thus, they had a positive impact on the development of those enterprises and improved their competitive position in the domestic and international market.

## Conclusions

The first decade of Poland's membership in the European Union in the sphere of the international competitiveness appeared to have been a very beneficial period for Polish food producers. This is demonstrated by dynamically growing foreign trade in agri-food products (especially the export and trade balance) and a significant improvement in the competitive position of Polish food producers in the world market, measured by the selected indices of the international competitive position.

The analysis of the competition strategy showed that after accession, the importance of the diversification strategy, based on the effective quality competition, increased in the Polish export of food products. On the other hand, the importance of the cost leadership strategy, consisting in the effective low price competition, decreased, although the price advantages remained an important determinant of the international competitiveness of that sector.

The increased international competitiveness of Polish food producers resulted mainly from such external conditions as free access to the EU market and the development of the global market. However, it would not be so significant but for the impact of the CAP.

## References

- Aiginger K. (1998), *Unit Values to Signal the Quality Position of CEECs*, [in:] *The Competitiveness of Transition Economies* (coordinator Y. Wolfmayr), OECD proceedings, WIFO, WIIW, OECD.
- Aiginger K. (1997), *The Use of unit values to discriminate between price and quality competition*, "Cambridge Journal of Economics", vol. 21, no 5, Oxford University Press, Cambridge.
- Handel zagraniczny produktami rolno-spożywczymi. Stan i perspektywy, (2004-2015), series "Analizy Rynkowe", no. 19-41, IERiGŻ-PIB, ARR, MRiRW, Warszawa.
- Kurkowiak B., (2013) *Comparative price levels for food, beverages and tobacco. Significant differences in price level for food, beverages and tobacco across Europe in 2012*, Statistics in focus, Economy and Finance, No. 15, Eurostat.
- Luderer B., Nollau V., Vettters K. (2009), *Mathematical Formulas for Economists*, Springer, Chemnitz, Dresden.
- Misala J., (2011) *Międzynarodowa konkurencyjność gospodarki narodowej*, Polskie Wydawnictwo Ekonomiczne, Warszawa.
- Porter M.E., (2006) *Strategia konkurencji. Metody analizy sektorów i konkurentów*, MT Biznes Sp. z o.o., Warszawa.
- Szczepaniak I. (ed.) (2014; a), *Monitoring i ocena konkurencyjności polskich producentów żywności (5). Synteza*, series "Multiannual Programme 2011-2014", no 115, IAFE-NRI, Warsaw.
- Szczepaniak I. (ed.) (2014; b), *Assessment of the competitiveness of Polish food producers in the European Union*, series "Multiannual Programme 2011-2014", no 126.1, IAFE-NRI, Warsaw.
- Tereszczuk M. (2013), *Wpływ Wspólnej Polityki Rolnej na konkurencyjność polskiego przemysłu spożywczego*, [in:] I. Szczepaniak (ed.), *Monitoring i ocena konkurencyjności polskich producentów żywności [3] Potencjał konkurencyjny – wybrane elementy*, series "Multiannual Programme 2011-2014", no 73, IAFE-NRI, Warsaw.
- Wheelen T.L., Hunger J.D., (2008), *Concepts in Strategic Management Business Policy*, 11th ed., Prentice Hall, Upper Sadle River.