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COMPARATIVE ADVANTAGES AND COMPETITIVENESS: EVIDENCE FROM TRADE OF BOSNIA AND HERZEGOVINA WITH ITS MAIN PARTNERS

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Abstract

The paper analyzes revealed comparative advantages and international competitiveness of Bosnia and Herzegovina (BiH) in trade with its main partners between 2008 and 2017. By comparing results of two different concepts of success in trade, the paper aims to identify characteristics of BiH position in its most important bilateral trade relations. Several indicators of international specialization and competitiveness at macro and meso level are employed, such as Balassa index of revealed comparative advantage (RCA), trade balance and the difference between export and import price units. Research results indicate that position of BiH in bilateral trade should be improved: revealed comparative advantage exists only in trade with Serbia, import dominates in one-way flows, while trade categories representing unsuccessful price and quality competition of BiH industries prevail in two-way matched trade. The analysis discovered some structural shift in terms of increasing shares of categories with successful competition in trade with all trading partners. The test of consistency between RCA index and two-dimensional international competitiveness measures indicated more consistent results when comparing revealed comparative disadvantage to unsuccessful competition.

Keywords: revealed comparative advantage (RCA), international competitiveness, price competition, quality competition, Bosnia and Herzegovina (BiH)

1. INTRODUCTION

For small developing countries foreign trade is mostly geographically oriented to a limited number of foreign markets. Therefore, an analysis of a small country's position in bilateral trade with its main partners reflects its overall trade performance and international competitiveness to a great extent.

Following the aformentioned thesis the aim of the paper is to investigate the position of Bosnia and Hercegovina (BiH) in its most important bilateral trade relations. BiH conducts more than a half of its foreign trade with the following five countries: Croatia, Germany, Italy, Slovenia – all members of the European Union (EU), and Serbia, which has the EU candidate status[1]. The time framework of analysis refers to the period between 2008 and 2017 in which, except for the moment when Croatia entered the EU, trade regimes with main partners were stable and mostly liberalized on the basis of free trade agreements (either on the Stabilization and Association Agreement with the EU or the Central European Free Trade Agreement with regional partners).

Taking into account multiple interpretations of international competitiveness concept in economic literature, this research combines two methodological approaches based on different theoretical views – traditional (narrower) and modern (broader) ones. Research begins with an in-depth empirical analysis of patterns and dynamics of revealed comparative advantages using Balassa index adjusted for bilateral trade. The second part of the analysis aims at identifying trade categories classified by succes in price or quality competition according to procedure based on Gehlhar and Pick (2002) and testing consistency of trade categories with revealed comparative advantage pattern.

The paper is organized as follows: The second section, after introduction, explains conceptual framework for international specialization and competitiveness analysis. The third section refers to applied methodology (indicators and data). In the fourth section research results are presented and discussed in several steps – the first step pertains to findings on revealed comparative advantages of BiH by trading partners, the second one deals with findings on identifying dominant direction of trade and competition categories in terms of price or quality, and the final step pertains to comparing results of RCA and competition analysis. The fifth section consists of concluding remarks, including implications and suggestions for policy makers.

2. CONCEPTUAL FRAMEWORK

Traditional theoretical view limited an explanation of international competitiveness to a country’s exporting ability based on its comparative advantages. Traditional theories sought a reason for differences in comparative

[1] Share of these five countries in total exports from BiH amounted to 55.7% in 2017, while their share in total imports to BiH amounted to 49.3% (MOFTER, 2018).

advantages between countries primarily in the supply side – in factor endowment (Heckscher-Ohlin model) or in productivity of factors' use (Ricardo's model). What traditional theory considers as international competitiveness is today viewed as a narrow concept representing export competitiveness. Export competitiveness is often defined in the way expressed in the following selected definitions: "increase in ability to sell domestic goods and services in the world market" (Ketels, 2010) or "a country's ability to sell commodities in foreign markets, at the price and quality that can be compared to competitors" (US International Trade Commission, 2010).

Modern theory introduces a broader and multidimensional concept of international competitiveness, connecting it with both supply and demand side, exports and imports, a nation and an industry/product. Contemporary view on international competitiveness moves out of the framework of international trade theory. Its roots stemmed from Porter's theory of competitive advantages. Porter (1990) presented an integrated concept as the so-called "diamond model", with four basic determinants of competitive advantages such as factor conditions, demand conditions, related and supporting industries, and firm strategy, structure and rivalry, associated with two supporting factors – government policy and chance. As opposed to the classical approach that focuses mainly on competitiveness at the macro-level or to other modern concepts that shift from a country to an industry or product, Porter integrated all three levels – macro, meso and micro. According to Porter (1990) and Krugman (1994), long-term productivity is considered as the main driver of such competitiveness understood in this way. Discussing competitiveness, Krugman (1994) emphasizes that a country's ability to improve its living standard depends on its ability to raise productivity. Scott and Lodge (1985) understand a country's competitiveness as the ability to most rationally employ the national resources in accordance with international specialization and trade, so that this leads to the growth of real income and living standard. Fagerberg (1988) defines international competitiveness as a country's ability to achieve main economic policy goals, especially growth in income and employment, without running into balance of payment difficulties.

It is obvious that the concept of international competitiveness is broadly determined and multidisciplinary. There is no generally accepted definition or theory explaining international competitiveness; explanation comes from different disciplines – economics, management, politics, culture, etc. Therefore, modern theoreticians propose an integrated and eclectic approach, combining different schools of thought and multiple measurements, as the most suitable way to study international competitiveness issues (Olczyk, 2016).

Different definitions of international competitiveness and different levels of examination of competitiveness[2] imply different ways of its measurement. Analysis could employ one-dimensional, two-dimensional and multidimensional (composite) measures, measures that are quantitative or quality in nature, ex-ante measures assessing potential competitiveness or ex-post measures based on the past information (Siudek and Zawojska, 2014). Depending on the level of economic activity, international competitiveness could be analyzed from a macro, meso or micro perspective.

The international competitiveness at meso level (i.e. industrial level), which is in focus of this research, is usually measured combining some of ex-post measures such as: revealed comparative advantage index (RCA), net-export index (relative trade balance index), export market shares, trade balance, Grubel-Lloyd index and relative unit values.

Following Lafay's notion (Lafay, 1992), comparative advantages can be understood in a broader sense apart from discussion on its theoretical basis, so the use of indices of comparative advantages are often a part of modern international competitiveness analysis. However, the measurement of comparative advantages is subject to a considerable debate for decades, especially because of long searching for fully theoretically based measure. The problem stems from difficulties to measure relative prices in pre-trading position that Ricardo's concept is founded on. One of the first and the most famous attempts was made by Balassa (1965) who created the index of so called "revealed comparative advantages" (RCA). The basis of Balassa concept relies on the following assumption: if differences in relative costs/prices (i.e. relative productivity) in autarky determine trade patterns, then it is not necessary to determine price or non-price factors that affect comparative advantages – the pattern of trade can be used to infer differences in relative productivity and determine comparative advantages. Although a widely used index in international trade research, Balassa index is often criticized for its questionable theoretical foundation and empirical performances. Index uses the variables generated from ex-post equilibrium and cannot isolate exporter sector (ex-ante) specific factors which are the source of comparative advantages presented in the traditional trade model (Sanidas and Shin, 2010). The index has been subjected to a critique for its inconsistency and incomparability across space and time[3], when using it for ordinal and cardinal comparisons.

[2] Competitiveness can be measured at different levels of economic analysis: mega (global), macro (nations, regions), meso (economic sectors and industries) and micro (firm's) level (Siudek and Zawojska, 2014).

[3] Incomparability of the index stems from its assimetry (variation between zero and infinity), unstable mean and aggregation effect (dependence on number of countries and sectors). (Hoen and Oosterhaven, 2006)

There have been numerous attempts of transforming Balassa RCA index to overcome its shortcomings and creating alternative indices[4] for measuring revealed comparative advantages. Ballance et al. (1987) classified new indices into three categories:

- indices containing only export variables such as symmetric RCA index (Dalum et al., 1998), weighted RCA index (Proudman and Redding, 2000) and additive RCA index (Costinot et al., 2012; Hoen and Oosterhaven, 2006);
- indices containing both trade and production variables such as Lafay index (Lafay, 1992);
- indices using hypothetical situation such as comparative advantage neutral point, such as normalized RCA (Yu et al., 2009).

Similar to Balassa index, those indices are based on post-trade flows being therefore theoretically inconsistent with original Ricardo's concept[5]. Alternative indices, however, are successful in overcoming some limitations of Balassa RCA index, but neither of them is perfect and neither completely solves statistic distribution and comparison problems. Therefore, they should be applied in trade analysis according they properties, while their results should be carefully interpreted. However, the original Balassa RCA index, although created in the 1960s and often criticized because of its limitations, is still the most popular index for identifying sectoral comparative advantages.

Modern concepts of competitiveness use a plenty of other measures. Some of the simplest that include both export and import variables and are often used in analysis of BiH competitiveness, are net-export index (relative trade balance) and Grubel-Lloyd index of intra-industry trade (IIT). Net-export index is calculated as the share of trade balance in total trade. Its values range from -1 to +1. Standard Grubel-Lloyd index (Grubel and Llyod, 1975) is the most used measure of IIT. It indicates share of IIT i.e. extent of overlapping of export and import in a certain sector as a part of total trade of the sector.

3. APPLIED METHODOLOGY

Some of previous research of BiH competitiveness used different combination of aforementioned indices depending on the aim of research. Brkić (2014) used Balassa RCA index and net-export index in the research of trade patterns of BiH in trade with its most important trading partners for the period 2008-2012. The use of different indices yielded different results in terms of the number of groups with comparative advantages in the trade with three out of the five analyzed countries. In cases of Germany and Slovenia the use of both indices

[4] There can be as many RCA indices as there are combinations and transformations of ex-post trade variables. (Sanidas and Shin, 2010)

[5] According to some opinions (Hoen and Oosterhaven, 2006) the addition index created by Costinot et al. (2012) conceptually fits the ex-ante and country/sector nature of Ricardian comparative advantage.

yielded similar results. Some industries lost their comparative advantage due to the negative value of net-exports. Comparative advantages of BiH were identified in relatively few industries in the trade with all the main trade partners and their patterns stayed fairly stable. Brkić and Balić (2014) employed Balassa RCA index, relative export/import coverage and relative trade balance in their analysis of BiH trade position in its bilateral relations with three EU members in period 2009-2012. Research findings indicated significant export concentration and thus comparative advantages of BiH in a small number of product groups in trade with all three EU partners. The research gave no evidence of changes in comparative advantages patterns of BiH in observed bilateral trade. Findings on comparative advantages measured by export-only RCA index slightly differed from those measured using indices based on both exports and imports. The consistency was more prominent in case of trade with Slovenia. Brkić, Halilbašić and Bosić (2015) conducted a more comprehensive research of BiH export competitiveness in trade with the world for the same period, using a number of indices such as Balassa RCA index, Michaely index, Herfindahl-Hirschmann index of geographical and product export concentration, export quality indicator (export product classification by technology content) and Lorenz curve. The analysis of a larger number of aspects, which employed more indicators than previous works on competitiveness that took BiH as a case study, enabled to obtain a more reliable and complete assessment of the country's export performance. In general, the research findings indicated that the export competitiveness of BiH needed to be significantly improved in many of its aspects. Some improvement was noted with regard to the scope and trend of export while high dependence of export upon a limited number of markets and products (mainly of low-technology industries) still remained. The stagnant comparative advantages pattern was observed as well.

For the purpose of this research we combine Balassa RCA index, trade balance and difference between export and import unit values, following the approach applied by Bojnec and Ferto (2007). The approach aims not only to identify the country's position in its main bilateral trade relations but also to examine potential difference in results of comparative and competitive advantages concepts. We may hypothesize that analysis of revealed comparative advantage and of competition/trade types will not necessary give the same results and conclusions, when investigating trade position of a country – product groups with revealed comparative advantage might not be successful in terms of price or quality competition, and *vice versa*.

Quantitative determination of export competitiveness is based on the analysis of dynamics and structure of export flows mostly using Balassa RCA index. Following the main aims and the hypothesis of the research, we selected Balassa RCA index on bilateral level which proved to be appropriate as a dichotomous measure i.e. for identifying product groups having revealed comparative advantage which the most part of research refers to. It is the one-dimensional index which relies exclusively on exports and reflects the relative

export structure[6]. Balassa index is expressed by the following formula (according to Balassa, 1989):

$$RCA_{ijk}^{B} = \frac{\frac{X_{ijk}}{\sum_i X_{ijk}}}{\frac{X_{ij}}{\sum_i X_{ij}}}$$

where *X* represents exports, while *i, j* and *k* point to a specific sector, an analysed country and a targeted market (world, a group of countries or a single country), respectively.

The index follows an asymmetric distribution with a lower bound and with a variable (across countries and across time) upper bound (De Benedictis and Tamberi, 2002). Values of Balassa index are non-negative and range from 0 to +∞ with a fixed demarcation value of 1. For value $0 \leq RCA < 1$, a sector has comparative disadvantage in market *k*, while for value $RCA > 1$, it has comparative advantage. The higher is a value, the stronger is an advantage of a given sector, and *vice versa*. There is no commonly accepted classification of the index values into categories that will allow more adequate interpretation of research results. Hinloopen and Van Marrewijk, Bojnec and Ferto (2007) following Hinloopen and Van Marrewijk approach (2001) divide RCA index into four classes: Class a: $0 \leq RCA \leq 1$; Class b: $1 < RCA \leq 2$; Class c: $2 < RCA \leq 4$; Class d: $4 < RCA$.

As our research identified a small number of BiH industries belonging to class "c" and only a few to class "d", we applied classification of RCA index into two basic categories: Class *a*: $1 < RCA$; and Class *b*: $0 \leq RCA \leq 1$. For analytical purposes we present class *b* divided in two sub-classes: $RCA = 0$ and $0 < RCA \leq 1$.

Indicators based exclusively on exports such as Balassa index give a different perspective of competitiveness from indicators based on both exports and imports – those indicators allow measuring competitiveness on both foreign and domestic market. Industry trade balance was applied in some research of industry competitiveness such as Buckley et al (1988), Zhang et al (2012) etc., mostly to assess price competition. On the basis of the pioneer work of Abd-El-Rahman in 1986, unit values are often applied as a product quality indicator[7]. Application of this criterion stems from the assumption that, in the situation of perfectly informed consumers, differences in quality are mirrored in price differences. According to Stiglitz (1987) even in case of imperfect consumer awareness quality differences will be reflected in different prices.

Export and import unit values are calculated as follows:

[6] Index uses relative export structure for identification of sectors in which an economy has comparative advantages (Mikić and Gilbert, 2009).

[7] Fontagné, Freudenberg and Gaulier (2006) stressed that the assumption on association of price (unit values) with the quality of traded goods is only acceptable with the detailed trade data.

$$UVX_{ijk} = \frac{X_{ijk}}{QX_{ijk}} \qquad UVM_{ijk} = \frac{M_{ijk}}{QM_{ijk}}$$

Unit values difference is calculated as:

$$UVD_{ijk} = UVX_{ijk} - UVM_{ijk}$$

Combination of trade balance and unit value difference, both calculated by product groups, allows separation of two-way trade flows in several categories which differ by price competition and quality competition. As ranking and comparison of indices' values is not the primary aim of the research, those two indicators fit better than either relative trade balance or Grubel-Lloyd index of IIT. Selected indicators give necessary information on success of competition in trade of different product groups as well as additional information on success in price or quality competition, which will not be the case when using other two aforementioned indices.

Based on Gehlhar and Pick's (2002) procedure, somewhat modified for the purpose of this research, we identify the following six types[8] of trade (including one-way and two-way trade flows):

Table 1

Categorization of Trade Types

Type of Trade	Trade Balance	Unit Values Disparity
One-way trade OWT		
Exports only	$TB_{ijk}>0$ ($X_{ijk}>M_{ijk}$; $X_{ijk}>0$, $M_{ijk}=0$)	not applicable
Imports only	$TB_{ijk}<0$ ($X_{ijk}<M_{ijk}$; $X_{ijk}=0$, $M_{ijk}>0$)	not applicable
Two-way trade TWT		
Category 1	$TB_{ijk}>0$ ($X_{ijk}>M_{ijk}$; X_{ijk}, $M_{ijk}\neq 0$)	$UVD_{ijk}>0$ ($UVX_{ijk}>UVM_{ijk}$; UVX_{ijk},$UVM_{ijk}\neq 0$)
Category 2	$TB_{ijk}>0$ ($X_{ijk}>M_{ijk}$; X_{ijk}, $M_{ijk}\neq 0$)	$UVD_{ijk}<0$ ($UVX_{ijk}<UVM_{ijk}$; UVX_{ijk},$UVM_{ijk}\neq 0$)
Category 3	$TB_{ijk}<0$ ($X_{ijk}<M_{ijk}$; X_{ijk}, $M_{ijk}\neq 0$)	$UVD_{ijk}>0$ ($UVX_{ijk}>UVM_{ijk}$; UVX_{ijk},$UVM_{ijk}\neq 0$)
Category 4	$TB_{ijk}<0$ ($X_{ijk}<M_{ijk}$; X_{ijk}, $M_{ijk}\neq 0$)	$UVD_{ijk}<0$ ($UVX_{ijk}<UVM_{ijk}$; UVX_{ijk},$UVM_{ijk}\neq 0$)

Legend: TB_{ijk} – trade balance of product group i in trade of the home country j with a country k; X_{ijk}, M_{ijk} – values of exports and imports respectively of product group i in trade of the home country j with a country k; UVX_{ijk}, UVM_{ijk} – export unit value and import unit value respectively of product group i in trade of the home country j with a country k; UVD_{ijk} – difference between unit export and unit import values;

Source: Author, according to methodology presented in Bojnec and Ferto (2007).

Trade balance indicates successful or unsuccessful competition in trade while unit values difference indicates price or quality competition (Bojnec and Ferto, 2007). The first and second categories of two-way trade indicate success of the home country in quality and price competition respectively, while the third and fourth categories indicate unsuccessful competition in quality and price.

[8] Categorization applied in our research differs from Gehlhar and Pick's categorization by order of listing of different trade types.

The consistency test has been conducted as a cardinal measure between revealed comparative advantage classes and competitiveness categories. In order to perform consistency analysis we constructed statistical frequency tables for every trade partner and every year, classifying product groups with calculated indices in comparative advantages/disadvantages classes and trade/competition type categories. The consistency test is based on the calculation of relative frequency between pairs of RCA index classes and trade/competition types' categories.

The whole analysis has been conducted on a special database created by the author for the purpose of the research. The database uses the Agency for Statistics of BiH trade data aggregated at the division level of Standard International Trade Classification (SITC), by countries and by years.

4. RESEARCH RESULTS AND DISCUSSION

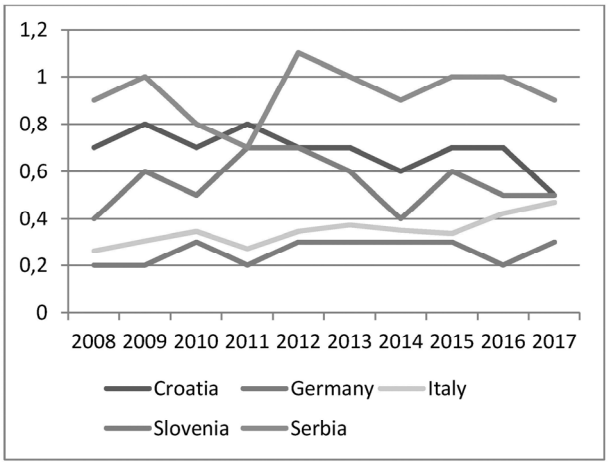
4.1. Revealed Comparative Advantage

Median value of RCA index higher than 0.8 and share of product groups with the RCA index above 1 indicate a country's revealed comparative advantage in a certain market (Bojnec and Ferto, 2007).

According to both applied criteria, BiH has revealed comparative advantage only in trade with Serbia: the median value of RCA varies mostly between 0.8 and 1.1 (it dropped to 0.7 only in 2011) while the proportion of product groups with RCA>1 is between 40% and 50% (Appendix Table 1). A slight decrease in both indicators could be observed after 2015 or 2016 respectively. The number of groups with RCA>4 representing strong revealed comparative advantage of BiH was the highest in trade with Serbia compared to other analyzed countries in period 2012-2016 (5 to 8) but fell to the number of 3 in 2017 (Appendix Table 1). Export share of product groups with BiH comparative advantage varies between 72% and 82% suggesting a successful performance in the Serbian market.

Shares of product groups with comparative advantage are much lower in trade with other main partners and amount to 20-30% only, except in the case of Croatia – 40% for the most part of the analyzed period. Median value of RCA index is the lowest in trade with Germany and Italy[9] (0.2–0.3). In trade with Slovenia it varied in the interval 0.4–0.7 and in trade with Croatia in the interval 0.6–0.8 till 2017, when it dropped to the level of 0.5 for both countries. BiH has the highest revealed comparative disadvantage in trade with Germany – the lowest value of median RCA (0.2–0.3) and only 20% of product groups with RCA value higher than 1.

[9] In the case of Italy median RCA increased to 0.4-0.5 in two last years.



Graph 1 Median Value of RCA index

Source: Author's own calculation based on data of the Agency for Statistics of BiH.

However, export shares of product groups with comparative advantage exceed 70% on average for all analyzed countries. The pattern of comparative advantage has been relatively stable during the whole observed period.

4.2. Trade Types and Competitiveness

The number of product groups that appeared in bilateral one-way trade is significantly lower than that in two-way matched trade, especially in the case of BiH trade with Serbia – on average, 4% of total trading product groups with that country (only 2% in 2017), and also with Croatia (6%). The highest average participation of "one-way trade" product groups is in trade with Germany (16%) and Italy (15%), then Slovenia (11% but decreased to the level of 8% in 2017). One-way trade in the observed BiH bilateral trade mostly pertains to imports, thus indicating relatively lower competitiveness of the country. The difference between shares of product groups that only export from BiH and those that only import to BiH is especially high in trade with Germany and Italy.[10]

Within two-way matched trade with all main partners the largest category is category 4, which represents unsuccessful price competition on sectoral level. The average share of this category varies in the interval 38-44% from one country to another, except in the case of Croatia where it amounts to 50%. It is mostly followed by category 3, which indicates unsuccessful competition in terms of quality. The total share of both categories representing unsuccessfully competitive product groups in trade with most partners was decreasing since 2008 and reached 48-62% in 2017.

[10] Author's own calculation based on data in Table 2.

Table 2

Categories in BiH Trade with Its Main Trading Partners

Country/Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Croatia										
OWT	0.03	0.05	0.06	0.05	0.03	0.07	0.10	0.09	0.08	0.08
Exports	0.00	0.00	0.00	0.02	0.00	0.03	0.00	0.00	0.00	0.02
Imports	0.03	0.05	0.06	0.03	0.03	0.04	0.10	0.09	0.08	0.06
TWT	0.97	0.95	0.94	0.95	0.97	0.93	0.90	0.91	0.92	0.92
Category 1	0.05	0.06	0.06	0.03	0.06	0.08	0.03	0.08	0.08	0.11
Category 2	0.17	0.19	0.17	0.20	0.18	0.20	0.20	0.21	0.19	0.19
Category 3	0.20	0.21	0.19	0.19	0.21	0.14	0.17	0.19	0.14	0.19
Category 4	0.55	0.49	0.52	0.53	0.52	0.51	0.50	0.43	0.51	0.43
Germany										
OWT	0.17	0.18	0.15	0.17	0.14	0.17	0.15	0.17	0.13	0.18
Exports	0.00	0.03	0.03	0.00	0.00	0.00	0.01	0.02	0.00	0.02
Imports	0.17	0.15	0.12	0.17	0.14	0.17	0.14	0.15	0.13	0.16
TWT	0.83	0.82	0.85	0.83	0.86	0.83	0.85	0.83	0.87	0.82
Category 1	0.11	0.11	0.11	0.11	0.14	0.16	0.17	0.15	0.14	0.14
Category 2	0.05	0.05	0.11	0.11	0.11	0.09	0.11	0.15	0.11	0.11
Category 3	0.29	0.26	0.19	0.20	0.17	0.13	0.18	0.13	0.18	0.23
Category 4	0.38	0.40	0.44	0.41	0.44	0.45	0.39	0.40	0.44	0.34
Italy										
OWT	0.17	0.18	0.19	0.11	0.15	0.15	0.15	0.14	0.13	0.16
Exports	0.00	0.00	0.02	0.00	0.00	0.02	0.02	0.01	0.02	0.02
Imports	0.17	0.18	0.17	0.11	0.15	0.13	0.13	0.13	0.11	0.14
TWT	0.83	0.82	0.81	0.89	0.85	0.85	0.85	0.86	0.87	0.84
Category 1	0.02	0.08	0.08	0.08	0.08	0.11	0.14	0.18	0.15	0.16
Category 2	0.13	0.14	0.13	0.11	0.11	0.11	0.06	0.05	0.06	0.11
Category 3	0.27	0.16	0.17	0.24	0.24	0.27	0.24	0.24	0.21	0.23
Category 4	0.41	0.44	0.43	0.46	0.42	0.36	0.41	0.39	0.45	0.34
Serbia										
OWT	0.07	0.03	0.04	0.02	0.07	0.05	0.04	0.03	0.05	0.02
Exports	0.02	0.00	0.02	0.00	0.02	0.02	0.02	0.00	0.02	0.00
Imports	0.05	0.03	0.02	0.02	0.05	0.03	0.02	0.03	0.03	0.02
TWT	0.93	0.97	0.96	0.98	0.93	0.95	0.96	0.97	0.95	0.98
Category 1	0.09	0.10	0.09	0.09	0.06	0.06	0.02	0.05	0.06	0.06
Category 2	0.08	0.11	0.06	0.08	0.09	0.11	0.12	0.11	0.09	0.09
Category 3	0.37	0.38	0.30	0.33	0.34	0.36	0.34	0.37	0.37	0.40
Category 4	0.39	0.38	0.51	0.48	0.44	0.42	0.48	0.44	0.43	0.43
Slovenia										
OWT	0.14	0.15	0.10	0.11	0.09	0.10	0.14	0.10	0.12	0.08
Exports	0.00	0.02	0.02	0.00	0.00	0.02	0.02	0.02	0.03	0.00
Imports	0.14	0.13	0.08	0.11	0.09	0.08	0.12	0.08	0.09	0.08
TWT	0.86	0.85	0.90	0.89	0.91	0.90	0.86	0.90	0.88	0.92
Category 1	0.08	0.08	0.08	0.14	0.13	0.13	0.16	0.16	0.11	0.14
Category 2	0.18	0.20	0.20	0.22	0.22	0.28	0.17	0.24	0.30	0.30
Category 3	0.23	0.12	0.21	0.14	0.14	0.14	0.16	0.16	0.16	0.11
Category 4	0.37	0.45	0.41	0.39	0.42	0.35	0.37	0.34	0.31	0.37

Legend: OWT – one-way trade; TWT – two-way matched trade;

Source: Author's own calculation based on data of the Agency for Statistics of BiH.

Shares of product groups belonging to categories 1 and 2, which present successful competition (in price or in quality), amount to less than 1/6 in trade with Serbia, more than 1/5 in trade with Germany and Italy, 2/5 in trade with Slovenia and

almost 1/3 in the case of Croatia. Shares of categories 1 and 2 have been increasing in trade with all partners, especially with Slovenia in the last several years. Category 1 (successful quality competition) has increased compared to the beginning of the analyzed period in trade with four main partners – it almost doubled with Croatia and Slovenia, and increased eightfold with Italy. Category 1 decreased only in the case of Serbia. (Table 2)

4.3. Consistency between Revealed Comparative Advantages and Competitiveness Measures

The consistency test should indicate if product groups with revealed comparative advantage are successful in terms of price or quality competition on the selected markets, and *vice versa*.

The results for BiH trade with Germany show that in 2017 only 44% of product groups with successful quality competition and 57%[11] with successful price competition have comparative advantage. However, the consistency is very high when analyzing product groups with unsuccessful competition (in quality or price) and comparative disadvantage – 80% and 95% respectively in 2017. A significant growth in consistency was recorded in categories 2 and 4 during the period 2008-2017.

In the case of trade with Italy a significant difference appeared in distribution of product groups between 2008 and 2017. Less consistency is recorded for categories 1 and 2: the share of product groups with comparative advantage in successful quality competition category decreased from 100% to 70%, while for category with successful price competition and comparative advantage it decreased from 75% to 43%. For categories representing unsuccessful competition (3 and 4) the consistency significantly increased.

Trade with Slovenia is a case similar to trade with Italy in terms of decreasing consistency between successful competition and comparative advantage, and an increasing share of unsuccessful competition categories with comparative disadvantage. When comparing 2008 and 2017, a decline from 80% to 44% for category 1 and from 55% to 47% for category 2 are evident, while at the same time the shares of unsuccessful quality and price competition categories with comparative disadvantage increased from 79% to 100%, and 74% to 78% respectively.

In BiH trade with Croatia in 2017 only 57% of product groups with successful quality competition and 42% with successful price competition had comparative advantage. A dramatic fall in consistency for category 1 (by more than 40 percentage points) and an increase for category 3 (by 20 percentage points) are evident. Other two categories did not experience such large changes.

The analysis of bilateral trade with Serbia indicates consistency between successful competition and comparative advantage, as well as between unsuccessful competition in price and comparative disadvantage. In 2017 more than 75% of product

[11] Only 33% in 2008.

groups with successful quality competition and 83% with successful price competition had comparative advantage in trade with Serbia. At the same time 74% of product groups with unsuccessful price competition had comparative disadvantage. Compared with 2008, we discovered a decrease in consistency for category 1, but a significant growth for all other categories.

Table 3

Revealed Comparative Advantage (RCA) and Trade Categories of BiH, 2008 and 2017

Croatia	RCA Classes							
	2008				2017			
Trade Categories	*a*	*B*			*a*	*B*		
	RCA>1	*0<RCA≤1*	*RCA=0*	*total b*	*RCA>1*	*0<RCA≤1*	*RCA=0*	*total b*
0	0.00	0.00	1.00	1.00	0.00	0.20	0.80	1.00
1	1.00	0.00	0.00	0.00	0.57	0.43	0.00	0.43
2	0.45	0.55	0.00	0.55	0.42	0.58	0.00	0.58
3	0.54	0.46	0.00	0.46	0.33	0.58	0.08	0.67
4	0.26	0.71	0.03	0.74	0.25	0.61	0.14	0.75
Germany	RCA Classes							
	2008				2017			
Trade Categories	*a*	*B*			*a*	*B*		
	RCA>1	*0<RCA≤1*	*RCA=0*	*total b*	*RCA>1*	*0<RCA≤1*	*RCA=0*	*total b*
0	0.00	0.00	1.00	1.00	0.09	0.00	0.91	0.91
1	0.43	0.57	0.00	0.57	0.44	0.56	0.00	0.56
2	0.33	0.67	0.00	0.67	0.57	0.43	0.00	0.43
3	0.06	0.72	0.22	0.94	0.20	0.60	0.20	0.80
4	0.33	0.46	0.21	0.67	0.05	0.73	0.23	0.95
Italy	RCA Classes							
	2008				2017			
Trade Categories	*a*	*B*			*a*	*B*		
	RCA>1	*0<RCA≤1*	*RCA=0*	*total b*	*RCA>1*	*0<RCA≤1*	*RCA=0*	*total b*
0	0.00	0.00	1.00	1.00	0.10	0.00	0.90	0.90
1	1.00	0.00	0.00	0.00	0.70	0.30	0.00	0.30
2	0.75	0.25	0.00	0.25	0.43	0.57	0.00	0.57
3	0.29	0.42	0.29	0.71	0.14	0.64	0.22	0.86
4	0.27	0.58	0.15	0.73	0.24	0.57	0.19	0.76
Serbia	RCA Classes							
	2008				2017			
Trade Categories	*a*	*B*			*a*	*B*		
	RCA>1	*0<RCA≤1*	*RCA=0*	*total b*	*RCA>1*	*0<RCA≤1*	*RCA=0*	*total b*
0	0.00	0.25	0.75	1.00	0.00	0.00	1.00	1.00
1	0.83	0.17	0.00	0.17	0.75	0.25	0.00	0.25
2	0.57	0.43	0.00	0.43	0.83	0.17	0.00	0.17
3	0.59	0.36	0.05	0.41	0.44	0.52	0.04	0.56
4	0.32	0.64	0.04	0.68	0.26	0.74	0.00	0.74
Slovenia	RCA Classes							
	2008				2017			
Trade Categories	*a*	*B*			*a*	*B*		
	RCA>1	*0<RCA≤1*	*RCA=0*	*total b*	*RCA > 1*	*0<RCA≤1*	*RCA=0*	*total b*
0	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
1	0.80	0.20	0.00	0.20	0.44	0.56	0.00	0.56
2	0.55	0.36	0.09	0.45	0.47	0.53	0.00	0.53
3	0.21	0.72	0.07	0.79	0.00	0.86	0.14	1.00
4	0.26	0.65	0.09	0.74	0.22	0.65	0.13	0.78

Legend: *a* – share of product groups with comparative advantage; *b* – share of product groups with comparative disadvantage; 0 – share of product groups with one-way trade; 1 and 2 – shares of product groups with successful price or quality competition respectively; 3 and 4 – shares of product groups with unsuccessful price or quality competition respectively.

Source: Author's own calculation based on data of the Agency for Statistics of BiH.

When analyzing consistency within comparative advantage class only, a higher consistency has been discovered between product groups with comparative advantage and successful price competition in 2017 for BiH bilateral trade with Germany, Slovenia and Serbia. The similarity between BiH trades with the same countries existed in 2008 as well but the results of testing were quite opposite, indicating existence of a higher consistency between comparative advantage class and category with successful quality competition. The case of Slovenia is proved to be relatively more specific in this group of countries because the difference in levels of consistency of successful price and quality competition categories with comparative advantage class was almost annulled in 2017.

In case of trade of BiH with Croatia and Italy, the consistency was higher when comparing class of product groups with comparative advantage and category of successful quality competition both in 2008 and 2017. The difference between levels of consistency of successful price and quality competition categories was much larger to the favour of quality competition in trade with both countries in 2008.

5. CONCLUDING REMARKS

The aim of the paper is to determine the position of BiH in its most important bilateral relations by applying and comparing two different concepts of success in trade – the traditional concept of comparative advantage and the modern concept of international competitiveness. In general, research results indicate an unfavourable position of BiH, despite some improvement achieved in the last decade.

The comparative advantage of the country has been revealed only in trade with Serbia while the highest comparative disadvantage (expressed in the number of product groups with low RCA index and low median value) has been registered in trade with Germany. However, the analysis discovered more prominent comparative disadvantage of the country in its trade with “old” EU members than in its trade with “new” EU members, Slovenia and Croatia. During the observed period the revealed comparative advantage of BiH shows a relatively stable pattern with all its main trading partners.

For the purpose of the analysis of international competitiveness product groups have been classified into one-way trade category and two-way matched trade category. In one-way trade results point to a significant asymmetry between exports and imports in terms of dominant imports in trade with all main partners, except in trade with Serbia. In two-way matched trade unsuccessful competition prevails, especially in terms of price competition. Dominant imports in one-way trade and dominant unsuccessful competition categories in two-way matched trade with all partners indicate, similar to the analysis of revealed comparative advantage, an unfavorable position of BiH in its main bilateral trade relations. The analysis, however, identified a structural shift in terms of increasing shares of

product groups with successful competition either in terms of price (Germany, Slovenia) and/or quality (Germany, Slovenia, Italy, Croatia), except for Serbia where it slightly decreased.

Research discovered more consistent results in trade with all partners when comparing product groups that have revealed comparative disadvantage and product groups in categories representing unsuccessful competition, similar to the case of Hungary's trade with three main EU partners (Bojnec and Ferto, 2007). Only the case of Serbia shows consistency between successful competition and comparative advantage.

Regardless of the significant changes in the distribution of some product groups between 2008 and 2017 in the direction of more consistency, research results suggest the need to supplement one-dimensional measures such Balassa RCA index with other indicators when investigating international competitiveness and determining trade position of countries. More specifically, comparisons of results of two approaches discovered some differences in terms of success in trade and dynamics of competitiveness, confirming the main hypothesis on possible inconsistency. First, the analysis of RCA indicates stable bilateral trade patterns over the observed period, while the analysis of other two indicators discovers an improvement of BiH competitiveness, especially in terms of quality competition. Secondly, BiH has revealed comparative advantage only in trade with Serbia, while at the same time it has the highest number of unsuccessful competitive industries in matched two-way trade with Serbia as well. Consequently, results of research of RCA should be interpreted with care in terms of competitiveness.

Indicators based exclusively on exports such as Balassa index give a different perspective of competitiveness from indicators based on both exports and imports which give information on competitiveness on foreign as well as domestic market. Considering only export variable, especially in case of countries such as BiH with a large trade imbalance in total and bilateral trade, could lead to overlooking evidence of a significant level of intra-industry trade and the fact that the large part of domestic market is left to foreign competition even in industries with revealed comparative advantage.

Taking into account research results and thesis that trade patterns mostly depend on production structure, consumption and trade regime, in the present situation of already largely liberalized trade with main trade partners, policy makers should concentrate efforts on industrial level measures (on supply and demand side) aiming not only to raise exports than to take a bigger market share on domestic market as well.

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Appendix

Table 1

RCA by Trading Partners, 2008-2017

Country	RCA Indicators	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Croatia	Median RCA	0.7	0.8	0.7	0.8	0.7	0.7	0.6	0.7	0.7	0.5
	Max RCA	3.9	3.8	4.7	4.4	4.3	6.5	5.0	4.8	5.0	21.5
	Export share of RCA>1	0.68	0.70	0.71	0.79	0.67	0.70	0.66	0.69	0.60	0.63
	Share of number RCA>1	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.3	0.3
	Number RCA>4	0	0	1	2	2	2	2	5	3	2
Germany	Median RCA	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.3
	Max RCA	4.0	6.8	6.5	4.4	6.5	3.3	6.4	6.4	3.8	6.9
	Export share of RCA>1	0.73	0.75	0.68	0.68	0.68	0.69	0.70	0.71	0.71	0.77
	Share of number RCA>1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Number RCA>4	0	3	1	1	1	0	1	1	0	1
Italy	Median RCA	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.5
	Max RCA	6.3	5.3	5.1	5.2	5.0	4.4	4.5	5.9	6.9	7.2
	Export share of RCA>1	0.79	0.89	0.83	0.78	0.79	0.84	0.73	0.75	0.76	0.75
	Share of number RCA>1	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Number RCA>4	3	4	5	3	2	1	1	1	1	3
Serbia	Median RCA	0.9	1.0	0.8	0.7	1.1	1.0	0.9	1.0	1.0	0.9
	Max RCA	5.4	5.8	7.9	6.1	9.5	9.2	7.4	9.9	11.4	9.5
	Export share of RCA>1	0.79	0.74	0.77	0.80	0.76	0.78	0.72	0.82	0.79	0.73
	Share of number RCA>1	0.5	0.5	0.4	0.4	0.5	0.5	0.4	0.5	0.5	0.4
	Number RCA>4	3	4	5	3	5	7	5	5	8	3
Slovenia	Median RCA	0.4	0.6	0.5	0.7	0.7	0.6	0.4	0.6	0.5	0.5
	Max RCA	6.9	11.9	8.5	11.2	9.1	9.0	9.9	11.9	10.7	7.5
	Export share of RCA>1	0.73	0.65	0.72	0.70	0.60	0.71	0.75	0.70	0.67	0.76
	Share of number RCA>1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3
	Number RCA>4	5	6	5	6	6	5	2	4	4	3

Source: Author's own calculation based on data of the Agency for Statistics of BiH.

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KOMPARATIVNE PREDNOSTI I KONKURENTNOST: PRIMJER TRGOVINE BOSNE I HERCEGOVINE S NJEZINIM GLAVNIM PARTNERIMA

Sažetak

Rad se bavi analizom izraženih komparativnih prednosti i međunarodne konkurentnosti Bosne i Hercegovine (BiH) u trgovini s njezinim glavnim partnerima od 2008. do 2017. godine. Usporedbom rezultata dvaju različitih koncepata uspješnosti u trgovini, u radu se nastoje identificirati karakteristike položaja BiH u njezinim najvažnijim bilateralnim trgovinskim odnosima. Korišteno je nekoliko pokazatelja međunarodne specijalizacije i konkurentnosti na makro i mezzo razini, poput Balassinog indeksa izraženih komparativnih prednosti (RCA), trgovinske bilance i razlike između jediničnih vrijednosti izvoza i uvoza. Rezultati istraživanja pokazuju potrebu unaprijeđenja položaja BiH u bilateralnoj trgovini: izražena komparativna prednost postoji samo u trgovini sa Srbijom, uvoz dominira u jednosmjernim trgovinskim tokovima BiH, dok kategorije trgovine koje predstavljaju neuspješnu cjenovnu konkurentnost i neuspješnu konkurentnost u kvaliteti proizvoda, prevladavaju u dvosmjernoj trgovini BiH. Analiza je otkrila i izvjestan strukturni zaokret u pogledu povećanja udjela kategorija s uspješnom konkurentnošću kod trgovine sa svim partnerima. Test konzistencije između RCA indeksa i dvodimenzionalnih mjera međunarodne konkurentnosti pokazao je konzistentnije rezultate pri usporedbi udjela industrija s komparativnim nedostacima s udjelom industrija s neuspješnom konkurentnošću.

Ključne riječi: izražena komparativna prednost (RCA), međunarodna konkurentnost, cjenovna konkurentnost, konkurentnost u kvaliteti, Bosna i Hercegovina (BiH).

JEL klasifikacija: F10, F14, L60, O52.