
COMPARATIVE ADVANTAGES AND COMPETITIVENESS OF BULGARIAN EXPORTS

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Abstract: The research analyses the comparative advantages and competitiveness of Bulgarian production and exports. The paper consists of two parts. Part one reviews some theoretical concepts about the nature of comparative advantages and interprets the indexes designed by B. Balassa and M. Amir. Part two provides computations of B. Balassa and M. Amir indexes and analyses obtained results to identify the comparative advantages and disadvantages of Bulgarian production and exports for certain commodities and commodity groups in the period from 2012 to 2016. Based on the findings of the analysis, we identify and summarise available opportunities for expanding or limiting the exports of certain commodity groups and raising the competitiveness of Bulgarian economy. The research employs mathematical and statistical methods, mainly the index method, in addition to the methods of analysis and synthesis.

Key words: exports and foreign trade; comparative advantages; competitiveness.

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Introduction

Foreign trade and especially exports are a major factor contributing to the higher and more sustainable growth of aggregate production. Foreign trade relates to establishing and consolidating relations and interaction between the economies of EU member-states and at the same time

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transmits the impulses of economic crises and cycles. It was precisely the exports and imports flows which dropped significantly (by 12% and by more than 20% on an annual basis in 2009) that largely contributed to the dramatic decline in the GDP in 2009. The decline was overcome in the years that followed with the comparatively prompt response on behalf of Bulgarian companies and their foreign partners. As a result, the upward trend in economic growth was resumed, although growth rate was somewhat lower at first. Within the context of improving and consolidating the external factors which determine growth and in order to make Bulgarian economy more competitive, Bulgarian companies obviously needed to increase the share of products with higher value added in the structure of their exports. Another priority issue which was identified was 'ensuring the sustainable competitiveness of the industry' (Keymeks T., 2001, p. 95), so that more sophisticated products which are subject to more stages of processing could be manufactured.

Except for the exports of products with higher value added which have a substantial impact upon growth, the exports of products with revealed comparative disadvantages has to be limited. Instead, economic agents should focus on making the most of the opportunities for increasing the exports of products with established comparative advantages.

The primary objective of this research is to analyse the comparative advantages of Bulgarian production and exports and to identify prospects for ensuring higher growth rates and increased competitiveness of Bulgarian economy. In order to accomplish this, we need to: 1.) systematize and interpret some of the basic theoretical concepts of comparative competitive advantages, including the approaches and methods proposed by B. Balassa and M. Amir for measuring and ranking comparative advantages of commodities and groups of commodities; 2.) compute and analyse B. Balassa and M. Amir indexes for Bulgarian exports of certain commodity groups in the period from 2012 to 2016. Based on these indexes, we need to identify the revealed comparative advantages (or disadvantages) of Bulgarian production and exports of certain commodities and commodity groups. In conclusion, we review the opportunities for expanding or restricting the exports of certain commodity groups and hence, for raising the competitiveness of Bulgarian economy.

The research employs mathematical and statistical methods (primarily the index method) as well as the methods of synthesis and analysis.

Theoretical Concepts of and Approaches to the Analysis of Comparative Advantages

The development of international trade is based on the specialisation of different countries in the production and exports of commodities which has become well established over time. This specialization facilitates trade between countries with different absolute or comparative advantages in the production and exports of commodities, as different countries develop certain spheres and branches of their economy and thus produce goods which are sold on the domestic and the international markets. The fundamental concepts of competitive advantages which were introduced earlier have been subject to further elaboration by applying various theoretical and econometric models.

The first theoretical concepts of absolute and comparative advantages were formulated by Adam Smith and David Ricardo in the 18th and 19th centuries when they analysed their role in conducting mutually beneficial exports (Smith A., 2010; Ricardo D., 2015). Absolute advantages refer to the availability of production resources which enable a country to produce a larger volume of output at lower production costs. Hence, it is within the best interest of each country to specialize in the production of goods with low production costs since lower selling prices facilitate exports and thus generate higher receipts.

D. Ricardo arrived at somewhat different conclusions while formulating the principles of comparative advantages. According to him, alternative, or opportunity, costs are more important than really incurred costs. In other words, a country could gain a comparative advantage in the production of a particular commodity provided that the alternative cost of producing a commodity in that country is lower than it is in other countries. Similar views and Ricardo's approach to foreign trade as being based on the different labour productivity in different countries have been adopted and further developed by a number of contemporary scientific research workers, one of them being Freebairn (Freebairn, 1986). According to Freebairn, competitive opportunities should be approached as 'an indicator employed to evaluate the ability of a production system to duly supply the types of goods and services which meet consumer demand at more attractive prices than those of other potential suppliers while at the same time incurring the lowest alternative costs to restore exploited resources' (quotation after: Aleksiev Al., D. Tsvetanov, 2009, p. 27).

D. Ricardo's ideas were further elaborated in the Heckscher-Ohlin model. The major contribution of E. Heckscher and B. Ohlin is that they emphasise the correlation which exists between the competitiveness of a country in terms of producing and exporting certain goods and the abundance of spe-

cific production resources in that country (Rauch J., 1990). In general, all countries have different amount of different natural resources available, i.e. some of the available resources are plentiful, whereas others are scarce. This fact largely determines both the price level of resources and the price of the commodities for the production of which these resources are exploited. Each country therefore seeks to produce and export products for which it has plentiful, and therefore cheaper, production factors. This ensures relatively low production costs (price competitiveness) and at the same time enables countries to store for a longer period of time or deplete more slowly scarce or insufficient resources.

Since scarce resources are more expensive, a country may shrink or totally discontinue the production of goods with high input costs and begin to import them instead. By specializing in the production of commodities that require labour-intensive or capital-intensive technologies, countries gain a comparative competitive advantage and at the same time contribute to mutually beneficial exchange, i.e. exports and imports.

Some modern concepts developed in the 20th and the 21st century are both theoretical and empirical in nature and offer various approaches to and classification of competitiveness factors. They also propose models and construct and compute specific indexes of comparative advantages.³ A good example is the model designed by B. Balassa (1965, 1979), which states that comparative advantages do not only depend on the physical and human capital that is initially available, but may also change in the process of their accumulation in a given country. The index designed by B. Balassa is still widely employed in large-scale empirical research, including in terms of the production of certain commodities or commodity groups in Bulgaria. This type of empirical research produces specific result, yet the index has been subject to criticism as it has a few shortcomings. Alex Hoen and Jan Oosterhaven believe that such shortcomings are largely due to the multiplicative specification of the index and suggest that an additive variety of the index should be used instead (Hoen and Oosterhaven, 2006).

M. Amir suggests and employs an upgraded alternative of B. Balassa index which takes into account changes in market shares over the period that

³ Some of the concepts and models we refer to in this paper have been presented by Velinova D., (2006), Vanshnata targoviya na Balgariya s Evropeyskiya sayuz – konkurentosposobnost na iznosa i efekti ot targovskata liberalizatsiya varhu vnosa, Agentsiya za ikonomicheski analizi i prognozi, Seriya ikonomicheski izsledvaniya1/2006, <https://www.minfin.bg/upload/9109/V.T.2006.pdf>; Hadzhiev V., (2014), Obshto proyaveni sravnitelni predimstva v savremennite usloviya na mezhdunarodna targoviya, Ikonomicheska misal 4/2014, p. 65-79, lib-serv.vfu.bg/ft/STA/F0025886.PDF

is subject to research (Amir. M., 2000). Recently, the substantial progress in the technical and technological development of some countries has prompted scholars to pay more attention to the role of technologies in the different level of specialization of countries, since technologies too can be approached as a potential source of more sustainable comparative advantages (Dollar D., 1993).

Some relatively new research works focus on rejecting (Falvey R., 1981) or confirming (Rauch J., 1990; Deadorff, 1980) the opportunities projected in the theories developed by D. Ricardo and Heckscher-Ohlin about comparative advantages. Thomas Vollrath (Vollrath, 1991) has also contributed to the design of approaches for examining and measuring revealed comparative advantages. In an effort to make employed methods and approaches and the results they produce more precise, he constructed three different indexes – the index of ‘relative commercial advantages’; the index of ‘relative export advantages’ and the index of ‘revealed competitiveness’ (Hadzhiev V., 2014). A lot of empirical research has been conducted lately on the comparative advantages in the trade between individual countries or groups of countries, as well as between EU member states (Mora C., 2001; Tullio Gr., 2016; Zhelev P., 2009). The findings of that research also contribute to systematizing the major factors and to identifying and measuring specific comparative advantages. When employed in production and exports, such advantages are helpful in identifying the sectors and branches in which a country has the potential to develop faster and more sustainable trade and to achieve economic growth.

The focus of our research paper is on the indexes constructed by B. Balassa and M. Amir since they complement each other and make it possible to identify priority economic sectors for each country by analyzing data series about export flows over certain periods of time. The approach proposed by B. Balassa enables us to quantify the so-called Revealed Comparative Advantages (RCA). The concept of Revealed Comparative Advantages was first introduced by H. Liesner (1958), yet it was Bela Balassa (1965, 1979) who developed it into a model and a procedure for computing different coefficients, it is therefore referred to as Balassa Index. Strong export-oriented sectors in the economy of each country and ‘revealed comparative advantages’ are identified based on the analysis of real exports. Some of the shortcomings of the index designed by Balassa may be overcome by employing the upgraded version of the index which was proposed by M. Amir.

In order to measure competitiveness by employing Balassa index, we need to collect and process input data about the commodities which a country has exported over a specified period of time, both as a total volume and by groups of commodities. The underlying idea of the index is that the exports

structure of a country reveals above all price, as well as some non-price (qualitative) features of commodities and economies. The index does not necessarily require employing data about major production factors (labour and capital) and may ignore certain inaccuracies. Data and details about the commodity structure of a country's exports are compared to data and details about the commodity structure of the exports from another country, a group of countries, or global exports. Our research compares Bulgarian exports and world exports for certain commodity groups based on data provided by the International Trade Centre (ITC).

In order to determine the relative advantages of Bulgarian exports by commodity groups in comparison to global exports we employ the following formula for computing Balassa index (Yarliyska M., N. Dimitrova, 2012):

$$RCA_B^{BG} = \frac{Exp_i^{BG}}{Exp^{BG}} \div \frac{Exp_i^W}{Exp^W}, \quad (1)$$

where:

RCA_B^{BG} is Balassa index for Bulgaria;

Exp_i^{BG} is the exports of commodity i from Bulgaria;

Exp^{BG} is total exports from Bulgaria;

Exp_i^W is the global exports of commodity i ;

Exp^W is total global exports.

Formula (1) helps ascertain the existence or lack of a competitive advantage and specialization of Bulgaria in the exports of a commodity/commodity group compared to the exports and the share of the same commodity in global exports. When a competitive advantage of a Bulgarian commodity is revealed, it can be presumed that any country in the world will prefer to have that commodity imported from Bulgaria to having it supplied and imported from another country.⁴ A competitive advantage is present when the value of the index exceeds 1. This indicates that the level of Bulgarian export specialization in the production and exports of a commodity is higher than that of any other country in the world. In such cases, it would be appropriate to promote and increase the volume of exports of the commodity and thus

⁴ Research has also been conducted by employing the method designed by B. Balassa. The findings of that research describe the comparative advantages of Bulgarian production and exports within the framework of trade with EU member states. See also: Zhelev P., (2009), *Eksporna spetsializatsiya na Balcariya v otnosheniyata s Evropeyskiya sayuz 1997-2007 g.*, 2009, http://ips.bg/Uploads/ResearchPapers/Research%20Papers_vol1_2009_No8_P%20Jelev.pdf

raise the competitiveness of Bulgarian exports and economy at large. A value of the index which is less than 1 indicates a disadvantage of trading in a particular commodity. Hence, it would be appropriate to limit or avoid the production and exports of the commodity/commodity group and have them imported or export other good which are more competitive.

Despite the excellent analytical opportunities it provides, sometimes Balassa index is not adequate to employ. This is due to the fact that its value is determined both by the relative share of a commodity in the total exports of a country and its share in global exports. The index can therefore acquire too high or inaccurate value – for example, when the share of a commodity in the exports of a country is significant, yet it accounts for a negligibly small share of global exports. Such values of the index result from dividing the first quotient in formula (1), which is too big, into the second quotient, which is too small (i.e. the quotients are employed as a dividend and a divisor, respectively). Unrealistically high values of the index are more likely to be obtained for small economies and may be expected for some commodity groups in Bulgarian exports. In order to overcome that shortcoming M. Amir suggested an upgraded alternative of the index in 2000.

Amir index takes into account changes in the market shares over different periods and is computed by employing a different formula (Yarliyska M., N. Dimitrova, 2012). The value of Amir index for Bulgaria is computed with the formula:

$$RCA_A^{BG} = \frac{Exp_{it}^{BG}}{Exp_{it}^W} \div \frac{Exp_{it-1}^{BG}}{Exp_{it-1}^W}, \quad (2)$$

where:

RCA_A^{BG} is the value of Amir index for Bulgaria;

Exp_{it}^{BG} is the value of Bulgarian exports of commodity i over the current period t ;

Exp_{it-1}^{BG} is the value of Bulgarian exports of commodity i over a previous period $t-1$;

Exp_{it}^W is the value of global exports of commodity i over the current period t ;

Exp_{it-1}^W is the value of global exports of commodity i over a previous period $t-1$;

When interpreting the results obtained by employing the method designed by Amir, both the values of the index are taken into consideration and identified trends in the changes registered in these values. A value of the index above 1 which keeps growing over years indicates that a country is com-

petitive in the production and exports of a commodity and that competitiveness is increasing. A value of the index which is below 1 and keeps declining over years and a declining market share indicate that a country is not competitive in the exports of a commodity and its competitiveness is deteriorating. The comparative competitive advantages thus defined based on Amir index determine the position of a country in terms of individual commodities/commodity groups in global exports, for example. They also help countries identify potential opportunities for expanding/shrinking their exports in future in order to raise their competitiveness, i.e. Bulgaria in our example.

When analysing the competitiveness of Bulgarian exports we employed statistical data provided by the International Trade Centre about Bulgarian and global exports in US Dollar millions (see: Appendix 1). The commodity structure of exports is in line with the Harmonised Commodity Description and Coding System. We employed yearly data about a five-year period, from 2012 to 2016.⁵

Comparative Competitive Advantages of Bulgarian Production and Exports

At the end of the 20th and the beginning of the 21st century the relations and interaction among national economies became more intensive as evident from the significant growth of foreign trade flows and foreign direct investment on a regional and global scale. Within such an environment, the competitiveness of any national economy is subject to the increasingly growing impact of external conditions, the level of its openness to the rest of the world, and its involvement in the processes of integration and globalization. We therefore need to approach exports and imports indicators as an element of the criteria system and to take them into account when evaluating the competitiveness of a country. Such evaluations have been made annually since 1989 for a large group of countries (since 2006 for our country) and published in the World Competitiveness Yearbook of the Institute for Management Development (IMD), Switzerland. When ranking different countries according to their competitiveness, special attention is paid to a secondary criterion referring to prices, which complements the evaluation of the competitiveness of a coun-

⁵ Data about Bulgarian exports are accessible on the webpage of the International Trade Centre at: https://www.trademap.org/Product_SelCountry_TS.aspx?nvpm=1|100|||TOTAL|||2|1|1|2|2|1|1|1|

Data about global exports are accessible at: https://www.trademap.org/Product_SelProduct_TS.aspx?nvpm=1|||TOTAL|||2|1|1|2|2|1|1|1|1|

try's economy and exports and makes it possible to rank countries according to their score.

The report which the IMD published about the period 2017-2018 contains summarized and detailed indexes about the foreign trade of our country and the position which Bulgaria occupies in terms of each indicator. According to IMD, our country ranks 55th in terms of the size of its foreign market. Bulgaria ranks better in terms of the criteria applied to the exports and imports of commodities as a percentage of the GDP, occupying the 20th and the 27th position in 2017 (The Global Competitiveness Report 2017–2018, pp. 74-75). This has contributed to the higher score given to the overall performance of our foreign trade – Bulgaria moved up three places from 20th to 17th in 2017 (World Competitiveness Ranking 2017, Country Profile – Bulgaria). This is largely due to the growing price competitiveness of Bulgarian production and exports, an indicator for which Bulgaria moved up from 11th to 5th over a year. Hence the conclusion that our country has good comparative advantages in terms of the index components referring to foreign trade. This renders it necessary to analyse and systematize the prerequisites that have led to the registered progress.

Expanding foreign trade flows affect competitiveness, as well as economic growth rates, and largely depend on the branch and commodity structure of exports. Since different economic sectors and branches have different level of competitiveness, it is obviously necessary to identify those spheres and branches of the economy which have revealed comparative competitive advantages in order to take advantage of the opportunities for increasing the volume of exports of the commodities produced in them.

Statistical data about the relative shares and dynamic changes in the commodity structure of Bulgarian exports during the researched period is essential for identifying comparative competitive advantages. The data presented in table 1 which includes commodity groups and sectors according to the Standard International Trade Classification (SITC) indicate substantial changes over the last eight years (from 2009, when the economic crisis hit, till 2016, which is the last year about which there are available processed data). The share of commodities with little manufacturing processing is still high in Bulgarian exports and continues to grow. Towards the end of the period, for instance, the exported value of unprocessed (raw) materials nearly doubled, except for fuels; the exports of mineral fuels and mineral oils increased by nearly 50 per cent as well. At the same time, there has been a positive trend in the structure of our exports, since there has been a marked increase in other commodity groups, especially over the last couple of years. These changes mainly refer to the growing share of products with higher value added in the volume of our exports, for example, the commodity group 'machinery, mechanical applianc-

es and vehicles' and the group of chemical substances and products. A significant increase was registered during the researched period for both commodity groups – by nearly 200 % and 170% respectively. As a result, a change was registered in the commodity groups which occupied the top positions in Bulgarian exports in 2016. The commodity group of machinery and transport equipment ranked first, their relative share in Bulgarian exports being the highest – 22%. The group was followed by manufactured goods classified chiefly by material (20%) and miscellaneous manufactured articles (18%). The growing share of products with high value added which are manufactured in the processing industry in the volume of our exports at the expense of products with lower value added which are manufactured in resource-intensive production processes contribute to raising the competitiveness of the country. Nevertheless, Bulgaria is still lagging behind in the production of more sophisticated end products which involve more stages of processing raw materials; introducing a greater number of Bulgarian innovative solutions and entering European and world markets with their own brand (Iliev, V., 2016). If the changes registered at this stage are based on a growing share of products with established competitive advantages in Bulgarian exports, this will have more substantial and sustainable effects upon the competitiveness of our country and GDP growth.

Within the context of the sustainability and the magnitude of the effects produced by these changes in the commodity structure of exports, it would be interesting to establish whether there has been an upward trend in the exports of commodities manufactured in branches with revealed comparative advantages; whether any of these advantages have not been sufficiently exploited; and whether commodities manufactured in branches with established comparative disadvantages have been exported at the same time. This will enable us to identify future trends in the changes in the commodity structure of exports and in the overall final effect on export activities and opportunities for promoting exports growth in the long run.

The conclusions made above are based on data published by the NSI according to the Standard International Trade Classification (SITC), which is presented in a more summarized format for a limited number of commodity groups by sectors. Figures will differ if we employ the commodities and commodity groups researched by the International Trade Centre (ITC), Geneva, since the data presented by ITC are much more detailed and render it possible to make uniform comparisons between the commodity structure of the exports (and imports) of numerous countries around the world.

Table 1

Exports by sections of the Standard International Trade Classification (SITC) about 2009-2016*

(Unit: BGN million)

	2009	2010	2011	2012	2013	2014	2015	2016
Total	22881.6	30435.0	39633.6	40622.9	43559.2	43233.5	44949.5	47186.3
of which EU	14857.7	18520.1	24652.1	23779.8	26111.1	26921.1	29049.4	31157.6
Food and live animals	2373.9	3261.2	3796.7	4135.3	5057.2	4679.1	4857.4	5399.5
of which EU	1852.7	2472.7	2924.5	3183.2	3394.2	3168.4	3260.5	3746.5
Beverages and tobacco	676.9	679.1	797.7	877.4	946.7	869.3	823.9	810.9
of which EU	361.3	278.2	322.9	315.5	356.5	296.5	288.2	368.8
Crude materials, inedible (except fuel)	1650.5	2647.9	3978.2	3565.6	3686.3	3112.9	2953.8	3134.3
of which EU	960.8	1553.4	2317.4	1687.7	1960.6	1881.5	1850.8	2108.6
Mineral fuel, lubricants and related materials	2956.8	4111.5	5452.2	6746.6	6551.5	5610.7	4859.4	4275.4
of which EU	975.7	995.5	1254	1531.1	1505.1	1234.6	1388.3	1195.5
Animals and vegetable oils, fats and waxes	154.8	203.0	294.9	303	394.6	440.8	471.6	483.4
of which EU	110.5	152.5	225.5	230.8	303.6	333.9	323.1	314.3
Chemical and related products	1759.4	2424.1	3160.6	3371.8	3546.3	3945.3	4437.3	4732.6
of which EU	711.2	971.9	1461.7	1601.7	1851.8	2102.9	2576.4	3140.5
Manufactured goods classified chiefly by material	5263.8	7062.4	9805.5	9275	9658.3	9634.7	9968.6	9595.8
of which EU	3507.4	4404.9	6523.7	5805.1	6350.6	6428.3	6859.5	6617.5
Machinery and transport equipment	3853.3	5094.5	6695.2	6741.4	7830.3	8392	9400.8	10163.4
of which EU	2787.3	3647.5	4918.3	4822.6	5517.3	6137.3	6891.9	7383.9
Miscellaneous manufactured articles, n.e.c.	4166.1	4921.6	5601.9	5517.9	5783.7	6437.3	7058.2	8466.4
of which EU	3584.2	4031.6	4684.8	4579.3	4827	5264.3	5522.7	6195.4
Commodities and transactions, n.e.c.	26.1	29.7	50.7	88.9	104.3	111.4	118.5	124.6
of which EU	6.6	11.9	19.3	22.8	44.4	73.4	88	86.6

* Source: Data of the NSI. See: <http://www.nsi.bg/bg/content/7512/по-сектори-на-стандартната-външнотърговска-класификация>
 [In English: <http://www.nsi.bg/en/content/7993/sections-standard-international-trade-classification>]

According to the primary data provided by the ITC, the highest exported value in Bulgarian exports in 2016 was that of cathode copper, despite a slight decline in its exports. That was followed by the exports of light and medium fuel oils, wheat and medications. These commodities accounted for 15% of Bulgarian exports. The trends registered in the commodity structure of our exports over the last years indicate that Bulgaria has a relatively good potential to increase its exports of pharmaceutical products; cathode and anode copper; sunflower seeds; wheat; corn, etc. (Iliev V., 2017). Thus, in addition to the commodities and commodity groups we have already identified, detailed data indicate that Bulgaria still exports predominantly products with low or insufficiently high value added, therefore the effects of exports on Bulgaria's economic growth are not likely to be significant. Further problems may arise due to the fact that half of our exports is highly concentrated and the country has no access to diversified markets. A number of goods are only or predominantly exported to a single EU country or a few countries in Europe and the rest of the world. A lot of Bulgarian products, for instance, are mainly exported to EU countries; wheat, which is a major cereal crop that is grown on more than 60% of the cultivated land in Bulgaria, is chiefly imported to countries in our region, some EU member states and several countries in Africa (Alexiev A., 2009). Hence, a collapse in the economy of any of these foreign trade partners may result in a dramatic decline in our exports of certain commodities or commodity groups and total Bulgarian export value. The delayed effects of the economic crisis and lower demand for foreign and Bulgarian produce on the markets of some EU countries were some of the reasons for the latest economic crisis (2009) which hit our country. Therefore, in addition to increasing our foreign trade contacts, we also need to diversify our foreign markets.

The competitiveness of our exports for different commodities and commodity groups may be made by evaluated more precisely by analysing further the comparative competitive advantages of Bulgarian production and exports by employing the indexes designed by B. Balassa and M. Amir.

The findings of the comparative analysis we conducted of Bulgarian and global exports of more than 100 commodities and commodity groups over the period from 2012 to 2016 by employing B. Balassa and M. Amir methods indicate that Bulgaria could expand the exports of some commodity groups. Although the comparative competitive advantages we have identified mainly refer to the production of goods with low value added, our GDP may be increased if our country takes advantage of new opportunities for expanding Bulgarian exports. What is more, it is possible to identify commodity groups that may be exported despite their revealed comparative disadvantages or whose exports should be limited or discontinued.

The values of the indexes computed by employing B. Balassa method indicate that Bulgaria had several major comparative competitive advantages in 2016. They were mainly in the production and exports of lead and articles thereof; copper and articles thereof; wheat; zinc and articles thereof; wool; raw hides and skins; tobacco and manufactured tobacco substitutes; oil seeds and oleaginous fruits; industrial or medicinal seeds and plants; glass and glassware; fertilizers; articles of apparel and clothing accessories, not knitted or crocheted, etc. (see: Appendix 2). Despite their relatively low value added, the exports of these commodity groups has the potential to be expanded and to contribute to raising the competitiveness of our economy.

Most of these commodity groups are part of 85 commodity groups which were identified as the major groups with revealed competitive advantages in 2011-2012, according to an analysis conducted by the Ministry of Economy and Energy in 2013 by employing the B. Balassa method (Konkurentni predimstva na balgarskite eksportni proizvodstva, 2013). We should point out that the findings of our research and the analysis conducted by the Ministry of Economy and Energy about an earlier year are similar in that Bulgaria hardly has revealed competitive advantages in the commodity groups with high value added. The only exception is the highest value of the B. Balassa index for the first 20 commodity groups of machinery for energy generation and consumption, according to the analysis conducted by the Ministry of Economy and Energy (Konkurentni predimstva na balgarskite eksportni proizvodstva, 2013, p. 4). The analysis conducted by the Ministry of Economy and Energy arrived at two more alarming conclusions. The first one refers to the weak presence of high-technology products as our country has revealed competitive advantages in only 3 out of 18 commodity groups, their share accounting for as little as 2.5% of Bulgarian exports. Secondly, in terms of products manufactured with medium-high technology, Bulgaria has comparative advantages in 17 out of 73 commodity groups, their share accounting for 10.8% of our exports ((Konkurentni predimstva na balgarskite eksportni proizvodstva, 2013, p. 5 and p.15). Hence the conclusion that in the next years an increase in the value of Bulgarian export and its contribution to economic growth and competitiveness will largely continue to depend on the price competitiveness we have gained so far.

Our findings also provide evidence of the partial disadvantage of Balassa index – the values of the index for the year 2016 are higher and do not fluctuate below or above 1. This is the case with lead and articles thereof (13.4); copper and articles thereof; (8.6); wheat and cereals (7.2); zinc and articles thereof, etc. There is a significant difference between their relative share in Bulgarian exports and in global exports. Therefore any findings about those commodity groups which are based on Balassa index should be inter-

puted tentatively while the results obtained by employing Amir index should be attributed greater weight.

When approached from a more general perspective and without being ranked in a strict order, the figures obtained by employing Balassa index indicate that the majority of commodity groups which are part of Bulgarian exports have revealed competitive advantages. Commodities with revealed comparative disadvantages are exported too, although their number is lower. In such cases, the value of Balassa index is below 1 and indicates that the exports of five commodity groups should be limited, namely that of iron and steel; pulp of wood or of other fibrous cellulosic material; recycled (waste and scrap) paper; articles of apparel and textiles; mineral fuels and products of their distillation; bituminous substances; pharmaceutical products. Although there are a few commodities with higher value added in these commodity groups, if the volume of exports of other goods with competitive advantages is increased, they will contribute more substantially to competitiveness and economic growth. These five commodity groups account for 14.7% of our exports. It is vital to limit the exports of mineral fuels, mineral oils and products of their distillation which accounted for 9.2 of Bulgarian exports in 2016. It should be noted that Balassa index for these commodity groups with comparative disadvantages has lower values, yet they still fluctuate around 1. Hence, it is possible to make some effort and gain comparative advantages in the production and exports of these commodities.

The values if the indexes computed by employing M. Amir method indicate that Bulgaria had stronger comparative competitive advantages in the period from 2012 in terms of other commodities and commodity groups. According to these indexes it would be feasible to increase the production and exports of wheat; oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal use; ores, slag and ash; articles of apparel and clothing accessories, knitted or crocheted; toys, games and sports requisites; parts and accessories thereof; dairy produce; bird eggs; natural honey; essential oils and resinoids; perfumery, cosmetic or toilet preparations; sugar and sugar confectionery; wadding, felt and nonwovens; special yarns; twine, cordage, ropes and cables and articles thereof; articles made of tin, iron and steel; chemical products; rubber and articles thereof; plaster, cement, asbestos, mica, etc. (see: Appendix 2)

The values of Amir index were higher over the researched period and there was a constant upward trend for these commodity groups when comparing figures about 2013 and about 2016. According to the approach we have adopted to interpreting these indexes, the upward trend in the exports of these commodities is more important than the value of the index. We should point out that the different commodity groups identified by employing Balassa in-

dex in most cases demonstrate different dynamics when employing Amir index, i.e. the values of the index decline or fluctuate, in other words, there was a decline in their exports during some of the years in the researched period. This confirms the conclusion we arrived at earlier that the competitive advantages which our country has in these commodity groups are not convincing enough. According to Amir index, the group of commodities with declining advantages included lead and articles thereof; copper and articles thereof; tobacco and manufactured tobacco substitutes; products of the milling industry; malt; starches, etc. The value of Amir index for these commodities declined in the period from 2013 to 2016.

It is obvious, though, that our country needs to reduce the exports of goods with constant downward trend in the values of Amir index over the researched period. These include tobacco and manufactured tobacco substitutes; articles of apparel and clothing accessories, not knitted or crocheted; other textile articles; umbrellas, sun umbrellas, walking sticks, seat-sticks, whips, riding-crops and parts thereof; aircraft, spacecraft, and parts thereof. Although their number is relatively small, most of these commodity groups are present in Bulgarian exports and sometimes their exported value is not insignificant.

Regardless of the conclusions we have arrived at and some slight differences between them depending on whether we employ Balassa index or Amir index, the commodity groups indicate that Bulgarian production and exports are lagging behind in terms of sustainability and revealed higher-order advantages. There are still opportunities for creating comparative lower-order advantages that are due to the cheap high-skilled labour available; the generation and consumption of comparatively cheap electricity; the abundance of primary raw materials and the favourable tax regime. The competitive advantages gained by Bulgarian companies are mainly due to these prerequisites and are chiefly in terms of the lower prices of exported commodities, i.e. their price competitiveness. As we noted earlier, according to the analysis conducted by IMD, Bulgaria moved up from 11th to 5th place over the last year. Such advantages cannot be approached as sustainable, though, but rather as unsustainable and short-term ones. The effects they produce are limited in scope and are highly dependent on changes in the international business environment, They could therefore easily transform into disadvantages under the impact in fluctuating prices on international markets. In general, such advantages are essential when producing and exporting products with lower value added and the focus is on resource extraction, labour-intensive production or the assembly of products. At the same time, such advantages are becoming less significant in the contemporary highly competitive environment, especially under the influence of the ongoing processes of trade liberalization and mar-

ket globalization. Maintaining the recently registered trend towards an increase in the share of products with higher value added requires gaining more sustainable advantages of higher order. Such advantages relate to the ability to develop high-technology production; to produce and export commodities which involve more stages of processing and whose design and manufacturing entail more intellectual labour. The production of such commodities has higher long-term competitive potential and may produce a more sustainable and significant effect upon our aggregate production and generate steady long-term economic growth. These should become priorities for both local and foreign investors and the support provided by the government. Creating favourable prerequisites and achieving investment-driven, innovative and export-oriented economic growth requires more substantial public and private investment in scientific and research work; more efficient business-oriented education and training; incentives to new businesses; establishing new, high-tech companies. As stated in the Operational Programme for Development of the Competitiveness of Bulgarian Economy 2014-2018 (Programa za povishavane na konkurentosposobnostta na natsionalnata ikonomika i Balgariya za perioda 2014-2018 godina, 2014, p. 1), 'Competitiveness is a relative, rather than an absolute value and is therefore subject to changes as a result of the development of the inner drivers of economic growth (resources, technologies, competences), as well as changes in the external competitive environment'.

Conclusion

Over the last years, there have been positive changes in the commodity structure of Bulgarian exports and a weak trend towards a transition to exporting products with comparatively higher value added. The findings of the research we conducted by employing Balassa index and Amir index to analyse Bulgarian exports tend to differ, yet they make it possible to identify commodity groups with revealed competitive advantages, as well as commodity groups with competitive disadvantages. Regardless of the different level to which these commodities are processed, expanding the exports of products with revealed competitive advantages and limiting the exports of those with competitive disadvantages will undoubtedly produce positive effects upon the GDP of the country. The production and exports of hi-tech products should also be promoted and expanded in order to ensure high-order competitiveness of Bulgarian economy.

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*Appendix 1: Bulgarian and Global Exports by Commodity Groups, 2012-2016**

**Unit : US Dollar
thousands
Bulgaria**

Bulgaria	Product label	Exported value in 2012	Exported value in 2013	Exported value in 2014	Exported value in 2015	Exported value in 2016
'TOTAL	All products	26698780	29510574	29386540	25778746	26087706
'85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	1852029	2323551	2491128	2509752	2531512
'27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	4319617	4348054	3705473	2737981	2406162
'84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	1848493	2135344	2296710	2043119	2082623
'74	Copper and articles thereof	2787053	3001757	2717826	2289684	1682092
'10	Cereals	1061191	1579626	1231611	973495	1112363
'99	Commodities not elsewhere specified	316201	323136	530215	655892	969906
'62	Articles of apparel and clothing accessories, not knitted or crocheted	949452	1021449	1056250	904332	947272
'30	Pharmaceutical products	743554	888283	1023735	898226	823557
'87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	557715	694451	743943	711843	780328
'39	Plastics and articles thereof	599831	733895	793728	743146	741403
'12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal ...	728109	1009698	796141	611088	734460
'61	Articles of apparel and clothing accessories, knitted or crocheted	711828	813329	843061	679282	733713
'94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; ...	468626	530179	634421	594759	646013

world

Exported value in 2012	Exported value in 2013	Exported value in 2014	Exported value in 2015	Exported value in 2016
18459708910	18960159283	18970339459	16522585105	15862044431
2195126794	2335905031	2403875743	2341918208	2332358812
3393026283	3290844969	3045703878	1832063298	1525707478
2082248229	2102020648	2160470707	1939245366	1892407158
173549530	166088633	156259279	130222858	119025151
120311259	123172743	119543275	105118803	93407663
302978922	325416992	369778988	403952483	266198997
193387078	208629455	234257478	220625936	221478157
469677940	490813200	516553337	502746009	505632740
1308767389	1355209293	1396237144	1325193827	1345616893
570361184	603608080	622338322	553761334	546550067
93729964	100967623	100522627	87617941	88984342
211725222	231619273	240427392	221728939	220645836
210776271	228816421	243774595	238847058	235326924

'26	Ores, slag and ash	738818	741613	632145	534048	563410
'73	Articles of iron or steel	454475	482191	513354	473951	530329
'72	Iron and steel	922933	819160	728191	455483	442401
'70	Glass and glassware	328433	340682	397942	391251	423829
'38	Miscellaneous chemical products	69453	76814	99983	121692	350193
'76	Aluminium and articles thereof	315929	357569	393738	364934	346724
'24	Tobacco and manufactured tobacco substitutes	447296	507942	477062	373748	345684
'90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...	342603	287772	307457	285189	318750
'44	Wood and articles of wood; wood charcoal	352795	364403	420476	352820	315128
'40	Rubber and articles thereof	175765	233501	268309	261161	292162
'33	Essential oils and resinoids; perfumery, cosmetic or toilet preparations	196634	221305	247195	250517	281680
'15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal ...	203901	273892	305635	273947	279217
'95	Toys, games and sports requisites; parts and accessories thereof	149865	181285	218924	231936	270477
'28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, ...	302683	278248	298595	283159	262062
'48	Paper and paperboard; articles of paper pulp, of paper or of paperboard	189105	236570	261546	241960	254955
'31	Fertilisers	260406	226063	241410	263557	243314
'19	Preparations of cereals, flour, starch or milk; pastrycooks' products	194967	225888	241489	237342	237049
'64	Footwear, gaiters and the like; parts of such articles	244949	262176	283426	236096	224640
'23	Residues and waste from the food industries; prepared animal fodder	193937	254712	276256	233445	210570

237423365	249293800	233903965	158831203	158803414
306488411	312230592	319412217	280946420	260001185
427777933	397838484	413529639	327575249	301120127
71734209	74850209	74336688	69533364	69094426
177994975	184777300	192318074	170280547	172158131
161200664	165881589	176011843	165592321	158774822
43816441	45656761	45728055	40451309	41179877
554588009	564133374	575095532	543869609	536587572
119090107	132880599	141572756	126246464	128462011
221584576	208200370	193835699	167998707	162775777
105414920	113436461	118140237	111475061	115638075
106597550	99226445	96989562	86209014	87204330
91923029	90581865	95356708	95597018	97683707
129659430	126119710	121642216	110923462	99763006
167608136	172851166	174640988	157042655	154350570
74911199	66999808	65081516	64254991	49904314
57987076	64727263	68159251	63264203	65560636
117820675	129196468	142105686	134258404	135070716
73035475	81607877	82909078	71779635	68563029

'02	Meat and edible meat offal	216055	187408	200993	167460	199195
'04	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere ...	186802	231678	244671	207662	186443
'69	Ceramic products	193880	190320	201260	174298	176275
'18	Cocoa and cocoa preparations	74538	106270	135594	167877	172469
'79	Zinc and articles thereof	166870	153934	187726	161009	163001
'78	Lead and articles thereof	139458	171117	191081	159930	154807
'20	Preparations of vegetables, fruit, nuts or other parts of plants	123399	132385	140023	133749	137554
'22	Beverages, spirits and vinegar	165738	166752	147662	134275	136187
'83	Miscellaneous articles of base metal	79454	84665	101254	107085	128200
'55	Man-made staple fibres	115083	129175	136822	120098	124472
'51	Wool, fine or coarse animal hair; horsehair yarn and woven fabric	107593	122976	129893	125295	117937
'25	Salt; sulphur; earths and stone; plastering materials, lime and cement	102843	105892	110037	110323	114774
'08	Edible fruit and nuts; peel of citrus fruit or melons	95265	116604	113394	112455	112019
'09	Coffee, tea, maté and spices	83406	78140	100415	96196	105063
'68	Articles of stone, plaster, cement, asbestos, mica or similar materials	73221	73536	77429	79380	96804
'07	Edible vegetables and certain roots and tubers	73281	77535	90566	78658	94824
'63	Other made-up textile articles; sets; worn clothing and worn textile articles; rags	106433	111632	108998	89524	94762
'17	Sugars and sugar confectionery	146738	130717	103878	89013	94504
'21	Miscellaneous edible preparations	61191	71385	82620	83687	90783
'86	Railway or tramway locomotives, rolling stock and parts thereof; railway or tramway track fixtures ...	100099	98366	95808	87603	79795

117630751	124635571	131689693	109617492	113418302
81626334	93536885	97658045	75009013	72505318
47394719	51574478	56033434	57046900	50385688
43954524	43961513	49851422	47680972	49545272
14980095	14031487	15752674	14802073	14419545
6875395	7513019	7576719	6643689	7023905
57252982	61227268	61694658	62851740	58748363
107945103	113676609	113438252	104699069	106141318
58821441	62706486	67013129	64239841	62788763
39886235	41087320	42333892	39092190	36512990
14552331	14516498	14347952	13260683	12551266
46226048	45746955	46875951	42123248	38106987
90745108	99578053	105365162	103815656	107233198
48407674	45185670	49945858	48016409	47300137
45221587	49665843	52612145	50494306	49081198
58646583	66397955	67170263	61345189	69251988
56681613	62444385	66432108	61266206	60087849
52950833	51893883	46894414	40240643	42851900
56861913	63095996	66566931	62362286	64809884
44351554	40294501	43356197	38324080	32183071

'34	Soap, organic surface-active agents, washing preparations, lubricating preparations, artificial ...	57379	78144	79646	69589	76454
'29	Organic chemicals	107442	94102	93042	92251	75694
'16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates	31398	45884	65102	57061	75506
'71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...	219906	120505	101334	65544	75089
'35	Albuminoidal substances; modified starches; glues; enzymes	64566	80414	86273	81260	73945
'47	Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or ...	58388	74710	72898	63930	65279
'42	Articles of leather; saddlery and harness; travel goods, handbags and similar containers; articles ...	54189	56027	65808	64108	64712
'54	Man-made filaments; strip and the like of man-made textile materials	45157	46182	46003	43854	63627
'56	Wadding, felt and nonwovens; special yarns; twine, cordage, ropes and cables and articles thereof	24464	32986	35698	40815	49044
'11	Products of the milling industry; malt; starches; inulin; wheat gluten	83159	85401	95419	51741	47111
'96	Miscellaneous manufactured articles	36489	56286	56690	48798	45929
'01	Live animals	33349	24861	18919	26199	43991
'52	Cotton	30774	38438	41586	39520	41670
'49	Printed books, newspapers, pictures and other products of the printing industry; manuscripts, ...	27031	29258	33563	40866	38878
'82	Tools, implements, cutlery, spoons and forks, of base metal; parts thereof of base metal	39568	41041	43117	38657	38026

56077563	58329673	60056592	53679858	54162205
446629207	452114818	434907214	370637883	350800123
47445802	50037023	49946639	44324289	44639733
777547712	863857693	719694330	635642378	637581441
26566670	28529468	29909081	26989428	26473008
45477016	46465871	46358156	44143158	43087110
69218316	75075898	76631969	74998666	73749129
48116333	50358793	51264591	47034659	44617907
22408428	23879860	25420803	23970435	23465892
18456192	19407493	19689985	18192968	17019204
43648325	47426162	50193253	48269152	48911492
22261263	23310349	24512600	19226935	20367860
67758062	72036985	64078701	56354331	51183868
43619311	45993654	46127858	38581388	36268262
62923588	65035467	68129281	62202017	60324632

'60	Knitted or crocheted fabrics	28390	31317	34346	32135	31070
'03	Fish and crustaceans, molluscs and other aquatic invertebrates	28379	31169	26745	27925	30697
'32	Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring ...	27575	32598	32746	32790	26567
'41	Raw hides and skins (other than furskins) and leather	36151	30855	26707	29413	24435
'89	Ships, boats and floating structures	53642	5036	15785	8491	16999
'91	Clocks and watches and parts thereof	15324	18735	14018	17207	16634
'57	Carpets and other textile floor coverings	12136	16305	20291	18783	16520
'58	Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery	5553	8575	11420	10894	12003
'06	Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage	8342	9357	8748	7508	11008
'81	Other base metals; cermets; articles thereof	14859	11764	12556	10425	10302
'05	Products of animal origin, not elsewhere specified or included	3851	6702	9278	6755	7339
'59	Impregnated, coated, covered or laminated textile fabrics; textile articles of a kind suitable ...	3446	4148	6089	6596	6801
'88	Aircraft, spacecraft, and parts thereof	55817	35323	16006	9415	6750
'65	Headgear and parts thereof	3317	4529	5678	4088	4541
'92	Musical instruments; parts and accessories of such articles	3023	2693	3939	3508	3701
'36	Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combustible preparations	6109	6132	5000	4310	3474
'43	Furskins and artificial fur; manufactures thereof	1070	2775	1638	1181	3120

30302333	32845395	34086135	33677694	32337159
95867197	104826130	112889371	97394141	109921485
79646926	82057921	83892226	73893685	73943426
31944871	35692322	36402535	30163436	26342115
158413279	146612793	138798883	133241520	123637347
52824048	55408912	57550594	55326989	49947040
14834147	15915818	16407043	14770721	14673576
12708084	13394112	13639767	12628177	12121569
20858874	22152782	22484695	19318596	19846441
18519124	17764610	18753586	16835225	15619472
9500890	10448149	10741767	8636471	8540887
24581973	25498411	26299293	24033104	23915631
287301601	313657254	322087459	331954984	328657803
7648146	8465489	9135945	8885990	9163539
6643367	6538383	6658552	6320981	6182091
4395087	4647848	6535704	4460129	4176609
12231489	14873309	12565476	11116066	8215224

'66	Umbrellas, sun umbrellas, walking sticks, seat-sticks, whips, riding-crops and parts thereof	3342	4047	3636	3210	3087	3561440	3756255	4019199	3868794	3536314
'13	Lac; gums, resins and other vegetable saps and extracts	1352	1634	2492	2978	2484	12722531	9312264	8703323	7092869	7026654
'50	Silk	2561	2388	2444	1965	2222	3136902	3112103	2865962	2457651	2139408
'53	Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn	2640	2897	2507	2761	1951	4004404	4282180	4718070	4675223	4139813
'37	Photographic or cinematographic goods	20817	3770	3278	1647	1765	17935116	17263190	16486031	14647533	14536761
'97	Works of art, collectors' pieces and antiques	901	1617	3323	2041	1745	23524488	24773812	27703010	29207824	28383064
'67	Prepared feathers and down and articles made of feathers or of down; artificial flowers; articles ...	2566	2714	2553	1320	1709	7174940	7908811	8652090	8867710	7337399
'45	Cork and articles of cork	421	639	675	571	775	1700561	1761244	1822703	1596275	1642808
'14	Vegetable plaiting materials; vegetable products not elsewhere specified or included	872	702	702	967	646	803514	818029	899200	904494	905445
'46	Manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork	185	344	391	360	229	2520211	2440519	2451225	2367703	2253668
'75	Nickel and articles thereof	2351	12180	395	615	171	28671896	29128241	31751921	26272486	19326367
'80	Tin and articles thereof	537	365	557	282	155	8331101	8045403	7855204	5406786	5147798
'93	Arms and ammunition; parts and accessories thereof	1	0	2	2	2	15910717	18524488	13438935	16209664	14790498

* *Source*: International Trade Centre data.

*Appendix 2: B. Balassa Index and M. Amir Index about Bulgaria, 2012-2016**

Commodity Groups		Balassa index Bulgaria / World						Amir index Bulgaria / World											
Code	Product label	Balassa 2012		Balassa 2013		Balassa 2014		Balassa 2015		Balassa 2016		Amir 2013		Amir 2014		Amir 2015		Amir 2016	
'78	Lead and articles thereof	14.024	n/a	14.633	↑	16.280	↑	15.429	↓	13.401	↓	15.568	n/a	16.410	↑	15.533	↓	14.758	↓
'74	Copper and articles thereof	11.103	n/a	11.612	↑	11.228	↓	11.269	↑	8.593	↓	10.819	n/a	10.558	↓	10.783	↑	8.181	↓
'10	Cereals	6.098	n/a	8.240	↑	6.651	↓	5.936	↓	7.241	↑	8.213	n/a	6.451	↓	5.993	↓	6.702	↑
'79	Zinc and articles thereof	7.702	n/a	7.048	↓	7.693	↑	6.972	↓	6.873	↓	6.428	n/a	8.632	↑	7.522	↓	6.974	↓
'51	Wool, fine or coarse animal hair; horsehair yarn and woven fabric	5.112	n/a	5.443	↑	5.844	↑	6.056	↑	5.713	↓	5.286	n/a	5.773	↑	6.426	↑	5.633	↓
'24	Tobacco and manufactured tobacco substitutes	7.058	n/a	7.148	↑	6.735	↓	5.922	↓	5.104	↓	7.251	n/a	6.742	↓	6.015	↓	5.412	↓
'12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal ...	5.371	n/a	6.425	↑	5.113	↓	4.470	↓	5.019	↑	6.738	n/a	5.087	↓	4.474	↓	5.309	↑
'70	Glass and glassware	3.166	n/a	2.924	↓	3.456	↑	3.606	↑	3.730	↑	2.971	n/a	3.430	↑	3.873	↑	3.860	↓
'31	Fertilisers	2.403	n/a	2.168	↓	2.395	↑	2.629	↑	2.965	↑	1.888	n/a	2.325	↑	2.980	↑	2.398	↓
'62	Articles of apparel and clothing accessories, not knitted or crocheted	3.395	n/a	3.146	↓	2.911	↓	2.627	↓	2.601	↓	3.304	n/a	3.267	↓	2.841	↓	2.719	↓
'99	Commodities not elsewhere specified	0.722	n/a	0.638	↓	0.926	↑	1.041	↑	2.215	↑	0.667	n/a	1.051	↑	1.305	↑	1.521	↑
'19	Preparations of cereals, flour, starch or milk; pastrycooks' products	2.325	n/a	2.242	↓	2.287	↑	2.405	↑	2.198	↓	2.437	n/a	2.407	↓	2.562	↑	2.373	↓
'26	Ores, slag and ash	2.152	n/a	1.911	↓	1.745	↓	2.155	↑	2.157	↑	1.954	n/a	1.636	↓	1.680	↑	2.247	↑
'69	Ceramic products	2.828	n/a	2.371	↓	2.319	↓	1.958	↓	2.127	↑	2.512	n/a	2.518	↑	2.289	↓	1.957	↓
'18	Cocoa and cocoa preparations	1.172	n/a	1.553	↑	1.756	↑	2.257	↑	2.117	↓	1.512	n/a	1.990	↑	2.478	↑	2.291	↓
'55	Man-made staple fibres	1.995	n/a	2.020	↑	2.086	↑	1.969	↓	2.073	↑	2.026	n/a	2.149	↑	2.088	↓	2.017	↓
'61	Articles of apparel and clothing accessories, knitted or crocheted	2.325	n/a	2.256	↓	2.264	↑	1.964	↓	2.022	↑	2.403	n/a	2.348	↓	2.079	↓	2.096	↑
'15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal ...	1.323	n/a	1.773	↑	2.034	↑	2.037	↑	1.947	↓	1.607	n/a	1.987	↑	2.079	↑	2.051	↓
'23	Residues and waste from the food industries; prepared animal fodder	1.836	n/a	2.005	↑	2.151	↑	2.084	↓	1.867	↓	2.182	n/a	2.184	↑	2.072	↓	1.858	↓
'25	Salt; sulphur; earths and stone; plastering materials, lime and cement	1.538	n/a	1.487	↓	1.515	↑	1.679	↑	1.831	↑	1.433	n/a	1.552	↑	1.732	↑	1.726	↓

'35	Albuminoidal substances; modified starches; glues; enzymes	1.680	n/a	1.811	↑	1.862	↑	1.930	↑	1.698	↓	1.893	n/a	1.951	↑	1.999	↑	1.735	↓
'95	Toys, games and sports requisites; parts and accessories thereof	1.127	n/a	1.286	↑	1.482	↑	1.555	↑	1.684	↑	1.234	n/a	1.559	↑	1.790	↑	1.792	↑
'11	Products of the milling industry; malt; starches; inulin; wheat gluten	3.115	n/a	2.827	↓	3.128	↑	1.823	↓	1.683	↓	2.894	n/a	3.172	↑	1.934	↓	1.640	↓
'94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; ...	1.537	n/a	1.489	↓	1.680	↑	1.596	↓	1.669	↑	1.573	n/a	1.789	↑	1.795	↑	1.713	↓
'28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, ...	1.614	n/a	1.417	↓	1.585	↑	1.636	↑	1.597	↓	1.342	n/a	1.528	↑	1.713	↑	1.496	↓
'04	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere ...	1.582	n/a	1.591	↑	1.617	↑	1.774	↑	1.564	↓	1.775	n/a	1.688	↓	1.565	↓	1.574	↑
'86	Railway or tramway locomotives, rolling stock and parts thereof; railway or tramway track fixtures ...	1.560	n/a	1.568	↑	1.427	↓	1.465	↑	1.508	↑	1.387	n/a	1.534	↑	1.487	↓	1.319	↓
'44	Wood and articles of wood; wood charcoal	2.048	n/a	1.762	↓	1.917	↑	1.791	↓	1.492	↓	1.914	n/a	2.042	↑	1.834	↓	1.581	↓
'33	Essential oils and resinoids; perfumery, cosmetic or toilet preparations	1.290	n/a	1.253	↓	1.351	↑	1.440	↑	1.481	↑	1.313	n/a	1.406	↑	1.560	↑	1.600	↑
'20	Preparations of vegetables, fruit, nuts or other parts of plants	1.490	n/a	1.389	↓	1.465	↑	1.364	↓	1.424	↑	1.446	n/a	1.476	↑	1.595	↑	1.386	↓
'09	Coffee, tea, maté and spices	1.191	n/a	1.111	↓	1.298	↑	1.284	↓	1.351	↑	1.010	n/a	1.434	↑	1.417	↓	1.386	↓
'17	Sugars and sugar confectionery	1.916	n/a	1.618	↓	1.430	↓	1.418	↓	1.341	↓	1.544	n/a	1.292	↓	1.397	↑	1.487	↑
'76	Aluminium and articles thereof	1.355	n/a	1.385	↑	1.444	↑	1.413	↓	1.328	↓	1.388	n/a	1.531	↑	1.526	↓	1.326	↓
'01	Live animals	1.036	n/a	0.685	↓	0.498	↓	0.873	↑	1.313	↑	0.699	n/a	0.524	↓	0.787	↑	1.449	↑
'56	Wadding, felt and nonwovens; special yarns; twine, cordage, ropes and cables and articles thereof	0.755	n/a	0.887	↑	0.907	↑	1.091	↑	1.271	↑	0.921	n/a	0.965	↑	1.182	↑	1.296	↑
'83	Miscellaneous articles of base metal	0.934	n/a	0.867	↓	0.975	↑	1.068	↑	1.241	↑	0.900	n/a	1.042	↑	1.176	↑	1.264	↑
'73	Articles of iron or steel	1.025	n/a	0.992	↓	1.038	↑	1.081	↑	1.240	↑	0.984	n/a	1.061	↑	1.092	↑	1.196	↑
'38	Miscellaneous chemical products	0.270	n/a	0.267	↓	0.336	↑	0.458	↑	1.237	↑	0.270	n/a	0.349	↑	0.466	↑	1.303	↑
'68	Articles of stone, plaster, cement, asbestos, mica or similar materials	1.119	n/a	0.951	↓	0.950	↓	1.008	↑	1.199	↑	1.017	n/a	1.006	↓	1.110	↑	1.214	↑
'40	Rubber and articles thereof	0.548	n/a	0.721	↑	0.894	↑	0.996	↑	1.091	↑	0.659	n/a	0.831	↑	0.991	↑	1.101	↑
'02	Meat and edible meat offal	1.270	n/a	0.966	↓	0.985	↑	0.979	↓	1.068	↑	0.997	n/a	1.040	↑	0.936	↓	1.151	↑

'16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates	0.458	n/a	0.589	↑	0.841	↑	0.825	↓	1.028	↑	0.605	n/a	0.839	↑	0.841	↑	1.079	↑
'64	Footwear, gaiters and the like; parts of such articles	1.437	n/a	1.304	↓	1.288	↓	1.127	↓	1.011	↓	1.392	n/a	1.415	↑	1.223	↓	1.060	↓
'48	Paper and paperboard; articles of paper pulp, of paper or of paperboard	0.780	n/a	0.879	↑	0.967	↑	0.988	↑	1.004	↑	0.883	n/a	0.976	↑	1.020	↑	1.028	↑
'30	Pharmaceutical products	1.095	n/a	1.163	↑	1.279	↑	1.145	↓	0.990	↓	1.183	n/a	1.346	↑	1.280	↓	1.037	↓
'27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	0.880	n/a	0.849	↓	0.785	↓	0.958	↑	0.959	↑	0.802	n/a	0.726	↓	0.662	↓	0.832	↑
'63	Other made-up textile articles; sets; worn clothing and worn textile articles; rags	1.298	n/a	1.149	↓	1.059	↓	0.937	↓	0.959	↑	1.232	n/a	1.126	↓	0.992	↓	0.980	↓
'47	Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or ...	0.888	n/a	1.033	↑	1.015	↓	0.928	↓	0.921	↓	1.028	n/a	1.012	↓	1.015	↑	0.937	↓
'72	Iron and steel	1.492	n/a	1.323	↓	1.137	↓	0.891	↓	0.893	↑	1.198	n/a	1.181	↓	0.811	↓	0.855	↑
'54	Man-made filaments; strip and the like of man-made textile materials	0.649	n/a	0.589	↓	0.579	↓	0.598	↑	0.867	↑	0.600	n/a	0.589	↓	0.630	↑	0.857	↑
'34	Soap, organic surface-active agents, washing preparations, lubricating preparations, artificial ...	0.707	n/a	0.861	↑	0.856	↓	0.831	↓	0.858	↑	0.872	n/a	0.881	↑	0.853	↓	0.902	↑
'21	Miscellaneous edible preparations	0.744	n/a	0.727	↓	0.801	↑	0.860	↑	0.852	↓	0.785	n/a	0.845	↑	0.925	↑	0.922	↓
'07	Edible vegetables and certain roots and tubers	0.864	n/a	0.750	↓	0.870	↑	0.822	↓	0.833	↑	0.827	n/a	0.880	↑	0.862	↓	0.979	↑
'39	Plastics and articles thereof	0.727	n/a	0.781	↑	0.823	↑	0.860	↑	0.825	↓	0.805	n/a	0.848	↑	0.879	↑	0.848	↓
'22	Beverages, spirits and vinegar	1.062	n/a	0.942	↓	0.840	↓	0.822	↓	0.780	↓	0.966	n/a	0.838	↓	0.871	↑	0.824	↓
'57	Carpets and other textile floor coverings	0.566	n/a	0.658	↑	0.798	↑	0.815	↑	0.685	↓	0.688	n/a	0.823	↑	0.842	↑	0.708	↓
'84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	0.614	n/a	0.653	↑	0.686	↑	0.675	↓	0.669	↓	0.641	n/a	0.705	↑	0.696	↓	0.680	↓
'85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	0.583	n/a	0.639	↑	0.669	↑	0.687	↑	0.660	↓	0.662	n/a	0.688	↑	0.768	↑	0.685	↓
'49	Printed books, newspapers, pictures and other products of the printing industry; manuscripts, ...	0.428	n/a	0.409	↓	0.470	↑	0.679	↑	0.652	↓	0.420	n/a	0.471	↑	0.652	↑	0.638	↓
'08	Edible fruit and nuts; peel of citrus fruit or melons	0.726	n/a	0.752	↑	0.695	↓	0.694	↓	0.635	↓	0.804	n/a	0.735	↓	0.785	↑	0.683	↓
'50	Silk	0.564	n/a	0.493	↓	0.551	↑	0.512	↓	0.632	↑	0.476	n/a	0.507	↑	0.505	↓	0.573	↑

'58	Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery	0.302	n/a	0.411	↑	0.540	↑	0.553	↑	0.602	↑	0.422	n/a	0.550	↑	0.588	↑	0.602	↑
'60	Knitted or crocheted fabrics	0.648	n/a	0.613	↓	0.650	↑	0.612	↓	0.584	↓	0.646	n/a	0.675	↑	0.694	↑	0.584	↓
'96	Miscellaneous manufactured articles	0.578	n/a	0.763	↑	0.729	↓	0.648	↓	0.571	↓	0.807	n/a	0.771	↓	0.715	↓	0.603	↓
'41	Raw hides and skins (other than furskins) and leather	0.782	n/a	0.555	↓	0.474	↓	0.625	↑	0.564	↓	0.604	n/a	0.483	↓	0.595	↑	0.513	↓
'42	Articles of leather; saddlery and harness; travel goods, handbags and similar containers; articles ...	0.541	n/a	0.479	↓	0.554	↑	0.548	↓	0.534	↓	0.506	n/a	0.566	↑	0.616	↑	0.546	↓
'66	Umbrellas, sun umbrellas, walking sticks, seat-sticks, whips, riding-crops and parts thereof	0.649	n/a	0.692	↑	0.584	↓	0.532	↓	0.531	↓	0.711	n/a	0.625	↓	0.588	↓	0.505	↓
'05	Products of animal origin, not elsewhere specified or included	0.280	n/a	0.412	↑	0.558	↑	0.501	↓	0.522	↑	0.441	n/a	0.573	↑	0.463	↓	0.538	↑
'36	Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combustible preparations	0.961	n/a	0.848	↓	0.494	↓	0.619	↑	0.506	↓	0.873	n/a	0.694	↓	0.485	↓	0.493	↑
'52	Cotton	0.314	n/a	0.343	↑	0.419	↑	0.449	↑	0.495	↑	0.355	n/a	0.372	↑	0.454	↑	0.468	↑
'14	Vegetable plaiting materials; vegetable products not elsewhere specified or included	0.750	n/a	0.551	↓	0.504	↓	0.685	↑	0.434	↓	0.547	n/a	0.554	↑	0.791	↑	0.452	↓
'81	Other base metals; cermets; articles thereof	0.555	n/a	0.425	↓	0.432	↑	0.397	↓	0.401	↑	0.397	n/a	0.456	↑	0.409	↓	0.388	↓
'82	Tools, implements, cutlery, spoons and forks, of base metal; parts thereof of base metal	0.435	n/a	0.405	↓	0.409	↑	0.398	↓	0.383	↓	0.408	n/a	0.428	↑	0.418	↓	0.387	↓
'92	Musical instruments; parts and accessories of such articles	0.315	n/a	0.265	↓	0.382	↑	0.356	↓	0.364	↑	0.254	n/a	0.389	↑	0.388	↓	0.371	↓
'90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...	0.427	n/a	1.831	↑	0.345	↓	0.336	↓	0.361	↑	0.325	n/a	1.965	↑	0.365	↓	0.371	↑
'87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	0.295	n/a	0.329	↑	0.344	↑	0.344	↑	0.353	↑	0.332	n/a	0.354	↑	0.375	↑	0.373	↓
'06	Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage	0.277	n/a	0.271	↓	0.251	↓	0.249	↓	0.337	↑	0.281	n/a	0.255	↓	0.246	↓	0.361	↑

'65	Headgear and parts thereof	0.300	n/a	0.344	↑	0.401	↑	0.295	↓	0.301	↑	0.370	n/a	0.433	↑	0.329	↓	0.324	↓
'45	Cork and articles of cork	0.171	n/a	0.233	↑	0.239	↑	0.229	↓	0.287	↑	0.235	n/a	0.247	↑	0.231	↓	0.307	↑
'53	Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn	0.456	n/a	0.435	↓	0.343	↓	0.379	↑	0.287	↓	0.453	n/a	0.378	↓	0.431	↑	0.264	↓
'43	Furskins and artificial fur; manufactures thereof	0.060	n/a	0.120	↑	0.084	↓	0.068	↓	0.231	↑	0.142	n/a	0.071	↓	0.069	↓	0.178	↑
'32	Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring ...	0.239	n/a	0.255	↑	0.252	↓	0.284	↑	0.218	↓	0.256	n/a	0.257	↑	0.288	↑	0.228	↓
'13	Lac; gums, resins and other vegetable saps and extracts	0.073	n/a	0.113	↑	0.185	↑	0.269	↑	0.215	↓	0.080	n/a	0.173	↑	0.252	↑	0.222	↓
'91	Clocks and watches and parts thereof	0.201	n/a	0.217	↑	0.157	↓	0.199	↑	0.202	↑	0.222	n/a	0.163	↓	0.220	↑	0.190	↓
'59	Impregnated, coated, covered or laminated textile fabrics; textile articles of a kind suitable ...	0.097	n/a	0.105	↑	0.149	↑	0.176	↑	0.173	↓	0.106	n/a	0.154	↑	0.185	↑	0.179	↓
'03	Fish and crustaceans, molluscs and other aquatic invertebrates	0.205	n/a	0.191	↓	0.153	↓	0.184	↑	0.170	↓	0.203	n/a	0.165	↓	0.182	↑	0.200	↑
'67	Prepared feathers and down and articles made of feathers or of down; artificial flowers; articles ...	0.247	n/a	0.220	↓	0.190	↓	0.095	↓	0.142	↑	0.237	n/a	0.208	↓	0.112	↓	0.122	↑
'29	Organic chemicals	0.166	n/a	0.134	↓	0.138	↑	0.160	↑	0.131	↓	0.132	n/a	0.133	↑	0.156	↑	0.129	↓
'89	Ships, boats and floating structures	0.234	n/a	0.022	↓	0.073	↑	0.041	↓	0.084	↑	0.020	n/a	0.069	↑	0.045	↓	0.081	↑
'37	Photographic or cinematographic goods	0.803	n/a	0.140	↓	0.128	↓	0.072	↓	0.074	↑	0.131	n/a	0.123	↓	0.074	↓	0.076	↑
'71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...	0.196	n/a	0.090	↓	0.091	↑	0.066	↓	0.072	↑	0.097	n/a	0.076	↓	0.067	↓	0.075	↑
'46	Manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork	0.051	n/a	0.091	↑	0.103	↑	0.097	↓	0.062	↓	0.085	n/a	0.103	↑	0.108	↑	0.061	↓
'97	Works of art, collectors' pieces and antiques	0.026	n/a	0.042	↑	0.077	↑	0.045	↓	0.037	↓	0.043	n/a	0.087	↑	0.054	↓	0.038	↓
'80	Tin and articles thereof	0.045	n/a	0.029	↓	0.046	↑	0.033	↓	0.018	↓	0.027	n/a	0.045	↑	0.026	↓	0.018	↓
'88	Aircraft, spacecraft, and parts thereof	0.134	n/a	0.072	↓	0.032	↓	0.018	↓	0.012	↓	0.077	n/a	0.033	↓	0.022	↓	0.013	↓
'75	Nickel and articles thereof	0.057	n/a	0.269	↑	0.008	↓	0.015	↑	0.005	↓	0.266	n/a	0.009	↓	0.014	↑	0.004	↓
'93	Arms and ammunition; parts and accessories thereof	0.000	n/a	0.000	↓	0.000	↑	0.000	↓	0.000	↑	0.000	n/a	0.000	↑	0.000	↑	0.000	↓

Source: Computation made by the author of the paper, data employed from UN COMTRADE statistics.

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