

SECTION 9. INTERNATIONAL ECONOMIC RELATIONS

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9.1 External competitiveness of the European Union and selected countries

The European Commission defines competitiveness as "*the ability of a firm, industry or country to sell and supply goods and services effectively on a given market*" (EC, 2009). Furthermore, we talk about competitiveness if a country can "*take advantage of the opportunities offered by globally integrated markets and reap the benefits of international trade*" (EC, 2009). Taking advantage of these opportunities will lead to an increase in international trade, especially exports, which will have a positive impact on economic growth. The understanding of competitiveness depends on the level of analysis, i.e. at the level of the economy, industry or firms. There are three levels of competitiveness. Competitiveness at *the micro* level refers to a company's ability to sell on the market at a certain profit in the long run. At *the mezo* level (at sector level), competitiveness can be differentiated by competing between sectors that aim to acquire scarce resources, such as labour. *Macroeconomic* level of competitiveness means the ability of the economy to achieve a high standard of living. In this sense, GDP per capita is the most comprehensive measure of material well-being, and export competitiveness is a particularly important determinant of this national competitiveness.

One of the main goals of government development policies is to enhance national competitiveness. The question of the national competitiveness arose in the mid-1980s when new competitors emerged in the world economy. The national competitiveness has broad and diverse interpretation. Scott and Lodge defined national competitiveness in 1985 as that which refers to a country's ability to create, produce, distribute and/or service products in international trade while earning rising returns on its resources.

In the early 1990s, the OECD (1992) defined national competitiveness as follows: „*the degree to which an economy can, under free and fair market conditions,*

produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over longer run”.

Investigating external trade is the obvious way to define the competitiveness of nations because it is a comprehensive concept, expressing the potential of national economies to stand the test of international products. The discussion of international trade performance is relevant especially for small open economies, as any change in imports or exports may influence the economic growth and per capita income of the country.

Competitiveness is closely linked to foreign trade. The concept of competitiveness began to be increasingly discussed especially during the period of integration of European states, when the newly accessing countries began to significantly industrialise. The main objective of creating a Single European Market was to ensure that European countries' production competitiveness is increased so that they are able to establish themselves on world markets.

The European Union is currently the world's largest economy and international trade grouping. Europe is the world's largest exporter of industrial goods and services and an export market for around 80 countries. The EU member states account for about 16% of global imports and exports. The creation of the European Union was a unique and long-term process that led to trade liberalisation and increased competitive pressures in all Member States, thus competing not only with other countries of the world, but also with other EU Member States. The EU countries have been deeply integrated into global markets. More modern transport and innovation in communication have facilitated the production and sale of goods around the world. The development of trade thus creates opportunities for economic growth. The EU Trade Policy aims to create growth and jobs by increasing opportunities for trade and investment with the rest of the world. Trade creates new jobs, and not just in Europe. More than 36 million jobs in Europe depend on trade with the rest of the world. At the same time, it contributes to higher wages and better living conditions for the population. The EU has a market involving 500 million consumers looking for quality

goods and is the world's largest single market with transparent rules and regulations. Such a large market makes it possible to take advantage of economies of scale and involve in trade also smaller countries without natural comparative advantages. For consumers, this means a larger range of goods at lower prices. This gives European companies of all sizes the potential to trade outside Europe.

The EU benefits from being one of the most open economies in the world and built on the principle of free trade. The high openness of economies (see Figure 1) is due to the long-term removal of trade barriers within the Union, but also to non-EU countries. The average rate of duty applied to imported goods is very low. More than 70% of imports enter the EU at a zero or reduced duty rate. The high openness of EU countries helps to strengthen their position in global trade and creates a region suitable for trade cooperation. Such a high openness of the economies creates suitable conditions for economic growth. Trade and investments bring new ideas and innovations, new technologies and top-level research that lead to improvements in products and services for people. It increases competition and competitiveness. Because of trade, companies have access to resources at a lower price and become competitive both within Europe and externally. Taking advantage of these opportunities leads to a further increase in international trade, especially exports, which has a positive impact on economic growth. The competitiveness of a country from a global point of view is based on the use of comparative advantages that the country has. However, no country can benefit from a competitive advantage in every sector. Recognizing a country's comparative advantages as an essential factor in the competitiveness of the economy and analysing its determinants thus allows countries to benefit from international trade and participation in integration clusters.

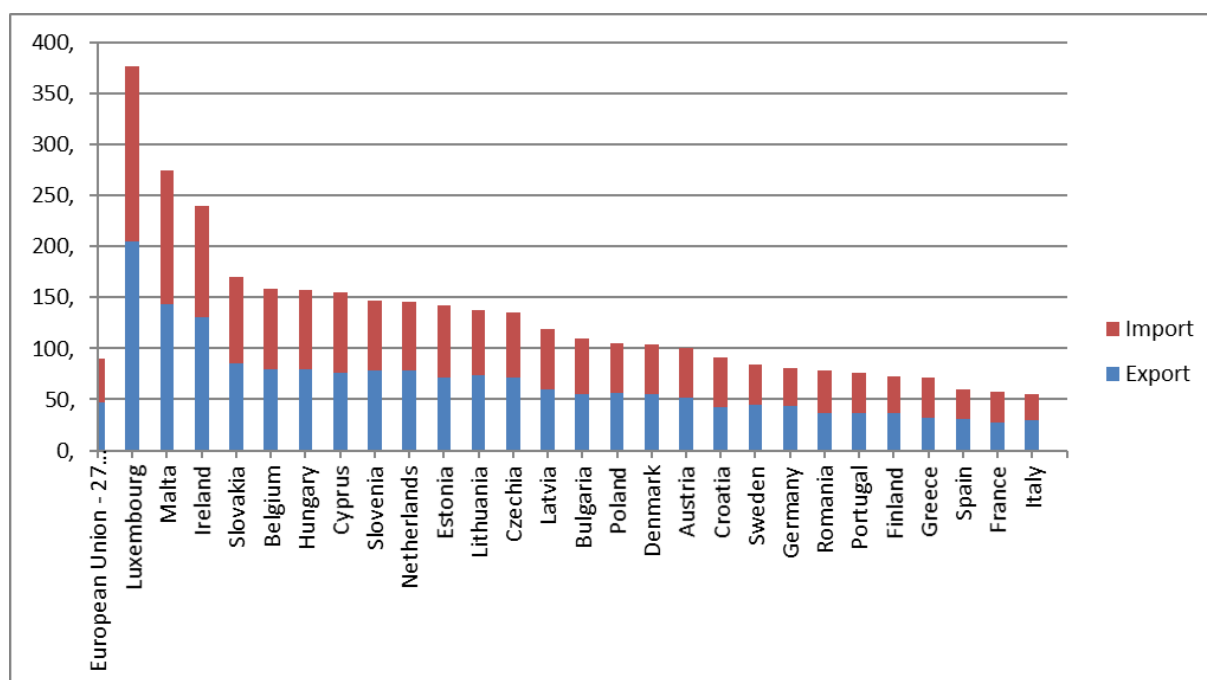


Figure 1. The EU countries' openness rate in 2020

Despite its strong position in the world, the EU faces many challenges that may endanger its position. The pandemic and energy crisis, lack of raw materials and semiproductions, increasing international competition and protectionism can significantly threaten the EU's position as a trading power. In an environment of globally increasing competition, all countries and business groups face the challenge of maintaining their position in international trade. It is therefore important to recognise the competitive advantages of European countries in particular sectors and commodities. Competitive sectors are the main source of economic growth and employment in the EU.

Contemporary literature provides a number of definitions and approaches to measure competitiveness. According to Porter (2003), competitiveness can be explained through its sources. One source of competitiveness is a competitive advantage, which is an alternative expression of a comparative advantage. Theories based on the competitiveness of countries are based on the classical theory of international trade, where the competitiveness of a country is expressed by its success in foreign trade. According to its representatives Ricardo and Heckscher and Ohlin, its source is a comparative advantage, which assumes that trade flows are the result of differences in production costs between countries, and therefore countries specialize in the production of those goods in the production of which they achieve a cost advantage,

that is, the country is able to produce certain goods more efficiently than other countries. To measure a country's competitive advantages in international trade, several indicators are used in various modifications, with indices based on the classical theory of international trade being the most widely used.

Classical theories of international trade are based on the principle of comparative advantages, which are based on the determination of relative prices, namely differences in initial relative prices between countries that are determined by supply and demand for factors of production. There are two basic theories of international trade, which are based on the existence of comparative advantages, that is Ricardo and Heckscher-Ohlin (H-O) theory. Ricardo hypothesized that the comparative advantage arises due to differences in technology between countries, while H-O theory assumes the same technologies in countries. Instead, H-O theory considers comparative advantages to cost differences resulting from differences in the prices of factors of production. According to this theory, the comparative advantage of a country is based on a relative abundance of factors of production (namely, the ratio of ownership of the factor relative to the rest of the world or a group of countries). However, it is widely known that measuring comparative advantages and testing H-O theory is problematic, since, for example, it is impossible to track relative prices in the case of an autarky. On this basis, Balassa (1965) suggested that it was not necessary to define all the components affecting the comparative advantage of the country and the initial relative prices, but it is possible to define the comparative advantage as 'revealed' on the basis of the observed existing pattern of trade. Such a comparative advantage derived from the observed data is referred to as a revealed comparative advantage and is in practice a generally accepted method of analysing the trade data. This method, unlike Ricardo's approach, does not examine the potential competitive advantages but the resulting competitiveness of the country. The result is an indicator of ***the Revealed Comparative Advantages (RCA)***, which is the most commonly used tool for analyzing trade data and comparative advantages. The definition and empirical adaptation of RCA is under discussion and several alternative ways of measuring the comparative advantages and competitiveness of countries have emerged.

Liesner was the first to contribute to RCA theory in 1958, attempting to measure the Great Britain's comparative advantage over the Common Market, the first empirical study in the field of RCA. Liesner's proposed first simple RCA equation was as follows:

$$RCA_1 = X_{ij}/X_{nj}$$

where RCA is a comparative advantage of the country i for the commodity j , X represents export, i is a country, j is a commodity (or industry) and n is a group of countries (e.g. the EU or world).

Balassa (1965) proposed an index (also called the Balassa Index), which is an improved form of measurement of a country's comparative advantage and is widely used in empirical literature. It is expressed as follows:

$$RCA_2 = (X_{ij}/X_{it}) / (X_{nj}/X_{nt}) = (X_{ij}/X_{nj}) / (X_{it}/X_{nt})$$

where X represents exports, i is a country, j is a commodity (or industry), t is a group of commodities (or industries) and n is a group of countries.

RCA_2 thus measures the share of commodity (industry) exports in a country's total exports relative to the export ratio of a given commodity in the total exports of a selected group of countries (or worldwide). In other words, it compares a country's share of the world commodity market with that of the world market for all commodities. A comparative advantage is considered to be revealed if $RCA_2 > 1$, i.e. the commodity's share of a country's exports is higher than its share of world exports. If $RCA_2 < 1$, the country has a comparative disadvantage in exporting the commodity(s).

This index is reproached for being distorted due to the omission of import data. Greenaway and Milner (1993) therefore proposed an alternative index that considers the possibility that the country records both simultaneous exports and imports within a particular commodity or industry. This indicator can also be found in the literature under the designation **Net Export Index (NEI)** and expresses the share of net exports of a certain commodity (industry) in total foreign trade.

$$RCA_3 = NEI = (X_{ij} - M_{ij}) / (X_{ij} + M_{ij})$$

The resulting index takes values from -1 ($X_{ij} = 0$, and the country achieves a revealed comparative disadvantage) to +1 ($M_{ij} = 0$, and the country has a comparative advantage). The disadvantage of this index is that the values around zero are ambiguous.

Vollrath (1991) offered alternative ways of measuring the country's comparative advantage, with their positive values implying a comparative (competitive) advantage and negative values representing a comparative disadvantage for the country. The advantage of these indices is that they include both the supply and demand side of the trade. The first of these indices is the **Relative Trade Advantage (RTA)**, which is the result of the difference between the Relative Export Advantage (RXA) corresponding to the original Balassa Index, and **the Relative Import Advantage (RMA)**, which is an alternative to the Balassa Index for import, i.e.:

$$RMA = (M_{ij}/M_{it}) / (M_{nj}/M_{nt})$$

where M is the value of the import.

The relative trade advantage thus represents the difference between the relative export and import advantage:

$$RTA = RXA - RMA = (X_{ij}/X_{it}) / (X_{nj}/X_{nt}) - (M_{ij}/M_{it}) / (M_{nj}/M_{nt})$$

By using the logarithm of the above equation, we get an indicator of **the Revealed Competitiveness**:

$$RC = \ln RXA - \ln RMA$$

These indicators assume that companies in one country compete only with domestic firms within a group of countries (e.g. the EU) and not with all firms exporting to a given market. Utkulu and Seymen (2004) therefore adjusted the original index, which measures the share of the commodity's domestic exports in its total exports relative to the export of the whole world in a given market (e.g. the EU common market):

$$RCA_4 = (X_{ij}/X_{it}) / (X_{wnj}/X_{wnt})$$

where X represents exports, i is a country, j is a commodity or sector, t is a group of commodities (sectors) and n is a group of countries.

The problem with implementing these methods of measuring RCA is that the observed pattern of trade can be distorted by government interventions in the form of import restrictions, export subsidies or other protectionist measures, which can cause a misinterpretation of the comparative advantage. Fertò and Hubbard (2003) therefore use *Nominal Assistance Coefficients (NCA)* estimated by the OECD for countries and commodities to filter the impact of possible distortions. Greenaway and Milner (1993) use a price-based RCA measurement called *Implicit Revealed Comparative Advantage (IRCA)* to eliminate bias caused by interventions.

Since the Balassa Index was first proposed, the definition of comparative advantage has been refined and modified, and there are now many different forms of it. Some studies measure RCA at the global level, others at national or regional level, while others focus on measuring bilateral trade between two countries or trading partners (Dimelis - Gatsios, 1995). Depending on the alternative version of the index used, inconsistent results may occur. For this reason, careful interpretation of the resulting indices is necessary.

9.1.1 Revealed comparative advantages of the EU-27

We decided to analyse the comparative advantages on which EU-27 exports are based through the Balassa Index of Revealed Comparative Advantages, which is generally used to identify international trade specialisation and sectoral competitiveness. For the purposes of our analysis, we have adjusted the index to calculate the share of exports of a commodity in total EU-27 exports against the share of this commodity in global exports. In other words, it compares the EU's share of the world commodity market with that of the world market for all commodities. As a data base, we used the International Trade Centre (ITC) database, from which we obtained data on the export performance of the EU-27 in the form of total EU-27 trade flows (i.e. both extra- and intra-EU exports) as well as global export values disaggregated into 99 product groups of the Harmonised System (HS-2) for year 2020. The total trade flows were used because the production side of the economy is important for our analysis, which determines economic growth and job creation, not the place of consumption of exported production.

A comparative advantage is considered to be revealed if the RCA index > 1 , i.e. the commodity's share in EU exports is higher than its share in world exports. If the RCA index < 1 , the EU has a comparative disadvantage in exporting the commodity(s) in question. In addition, to determine the strength of comparative advantage, we used a breakdown by Hinloopen and Marrewijk (2001), which classifies the power of comparative advantage as following:

Class a: $0 < RCA \leq 1$ - no comparative advantage.

Class b: $1 < RCA \leq 2$ - a weak comparative advantage.

Class c: $2 < RCA \leq 4$ - a moderate comparative advantage.

Class d: $4 < RCA$ - a strong comparative advantage.

We applied export data from the EU-27 and the world to the RCA index, which allowed us to identify in which sectors the EU-27 has a comparative advantage and their exports are competitive at world level. The sectors with the highest values of this index represent the main source of economic growth and employment in the EU.

Table 1 indicates the RCA index values observed for the 27-member EU in the year 2020 with the RCA values are more than 1, which are sectors where the EU has a comparative advantage over the rest of the world. The higher the value of the index, the greater comparative advantage the EU achieves. It should be stressed that the results reflect the export performance of the EU-27 as a whole and may not correspond to the export specialisation of the individual Member States.

Table 1.
RCA values for the EU-27 (2020)

Code	Product label	RCA
'01	Live animals	1,769
'02	Meat and edible meat offal	1,322
'04	Dairy produce; birds' eggs; natural honey; edible products of animal origin, etc.	1,988
'05	Products of animal origin, not elsewhere specified or included	1,207
'06	Live trees and other plants; bulbs, roots and the like; cut flowers and orn. foliage	2,289
'07	Edible vegetables and certain roots and tubers	1,201
'11	Products of the milling industry; malt; starches; inulin; wheat gluten	1,286
'13	Lac; gums, resins and other vegetable saps and extracts	1,184
'16	Preparations of meat, of fish or of crustaceans, molluscs or other aq. invertebrates	1,170

Continuation of table 1

'18	Cocoa and cocoa preparations	1,616
'19	Preparations of cereals, flour, starch or milk; pastrycooks' products	1,768
'20	Preparations of vegetables, fruit, nuts or other parts of plants	1,511
'21	Miscellaneous edible preparations	1,328
'22	Beverages, spirits and vinegar	1,785
'23	Residues and waste from the food industries; prepared animal fodder	1,162
'24	Tobacco and manufactured tobacco substitutes	1,698
'29	Organic chemicals	1,209
'30	Pharmaceutical products	2,033
'32	Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments, etc.	1,524
'33	Essential oils and resinoids; perfumery, cosmetic or toilet preparations	1,525
34	Soap, organic surface-active agents, washing and lubricating preparations, etc.	1,568
'35	Albuminoidal substances; modified starches; glues; enzymes	1,621
'36	Explosives; pyrotechnic products; matches; pyrophoric alloys; certain preparations	1,082
'38	Miscellaneous chemical products	1,401
'39	Plastics and articles thereof	1,185
'40	Rubber and articles thereof	1,099
'41	Raw hides and skins (other than furskins) and leather	1,379
'42	Articles of leather; saddlery and harness; travel goods, handbags, etc.	1,321
'44	Wood and articles of wood; wood charcoal	1,295
'45	Cork and articles of cork	3,015
'48	Paper and paperboard; articles of paper pulp, of paper or of paperboard	1,636
'49	Printed books, newspapers, pictures and other products of the printing industry	1,510
'51	Wool, fine or coarse animal hair; horsehair yarn and woven fabric	1,146
'53	Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn	1,043
'56	Wadding, felt and nonwovens; special yarns; twine, cordage, ropes and cables	1,162
'59	Impregnated, coated, covered or laminated textile fabrics; textile articles	1,059
'64	Footwear, gaiters and the like; parts of such articles	1,220
'65	Headgear and parts thereof	1,004
'68	Articles of stone, plaster, cement, asbestos, mica or similar materials	1,267
'69	Ceramic products	1,097
'70	Glass and glassware	1,184
'72	Iron and steel	1,120
'73	Articles of iron or steel	1,279
'76	Aluminium and articles thereof	1,131
'79	Zinc and articles thereof	1,293
'82	Tools, implements, cutlery, spoons and forks, of base metal; parts of base metal	1,151
'83	Miscellaneous articles of base metal	1,297
'84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	1,135
'86	Railway or tramway locomotives, rolling stock and parts thereof; railway etc.	1,289
'87	Vehicles other than railway or tramway rolling stock, and parts and accessories	1,546
'88	Aircraft, spacecraft, and parts thereof	1,176
'90	Optical, photographic, cinematographic, measuring, checking, precision, etc.	1,131
'93	Arms and ammunition; parts and accessories thereof	1,036

Continuation of table 1

'94	Furniture; bedding, mattresses, mattress supports, cushions and similar furnishings	1,082
'96	Miscellaneous manufactured articles	1,071

Source: own processing, ITC

Based on the data presented in the table above, we can conclude that the EU-27 has the highest RCA values and thus the highest comparative advantage shown globally, particularly in the pharmaceutical and chemical industries, the production of live animals and plants (flowers and their bulbs), beverages, in some areas of the food industry and in the automotive industry. Relatively high values of the index can also be found in the export of cork and cork products and in the production of paper and printing products. Many of these comparative advantages arise mainly from the headquarter location of their producers, which are multinational companies. In the food industry, these include Unilever, Nestlé and Danone, in paper production Mondi.

The EU-27 is the world's second largest producer of chemicals, accounting for 14.4% of global sales. Together with the pharmaceutical industry, it accounts for the largest percentage of value added in the EU (17.7%), followed by engineering and automotive, and a 12% share of employment in the EU industry. Labour productivity in the chemical industry is 67% higher than the average of other industries. The EU's largest chemical trading partners are the US with 17.1% of trade, the UK with 14.3% and China with 10.2% in the chemicals trade in 2020 (CEFIC, 2022). If we take a closer look at this group, the biggest competitive advantage is in the export of medicals. The most well-known chemical and pharmaceutical companies include Basf, Bayer, Sanofi and Novo Nordisk. The Achilles' heel of the European chemical industry are energy costs, which may seem like a big risk in the current period of rising energy prices.

The EU has a significant comparative advantage in the production of means of transport. Almost 13 million motor vehicles were made in the EU in 2020, 25% of all cars produced around the world are built in Europe. In total, EU countries exported 5,189,538 passenger cars worth €121 billion in 2020. 2.6 million people work in the automotive sector, representing 6.6% of the working population in the EU. The sector accounts for more than 7% of European GDP. 3.5 million car manufacturing jobs (directly and indirectly) account for 11.6% of employment in EU industry (ACEA,

2021). In terms of territorial structure of the automotive industry's exports, the EU-27's largest trading partners are the UK, the US and China. The above figures therefore show that it is one of the most important sectors for economic growth and employment in the EU. At the same time, in view of current economic development, the sector appears to be the most vulnerable.

A higher value of the RCA index, and therefore a comparative advantage, can also be found in the production of semi-finished products and other machinery. These groups include items such as tyres, wires, cables, containers, leather semiproductions that are closely related to automotive production.

The biggest comparative disadvantages of the EU-27 as a whole are in the areas of extraction of mineral resources, the production of electronic and telecommunications equipment, textiles and clothing.

If we look at the development of the RCA index over the last decade, we find that the comparative advantages of the EU are increasing over time, particularly in the automotive industry, the production of optical instruments, clocks, musical instruments, live plants and their roots and bulbs. An increase in competitiveness has also been observed in the export of hides and live animals, in particular sheep, pigs and poultry. On the other hand, the production of textiles, electronic and telecommunications equipment and components is no longer competitive, and worldwide we can see the shift of these productions to other parts of the world that have better conditions and equipment for their production, e.g. China, India, Russia, etc. This is also reflected in the territorial focus of that part of the EU's international trade that goes outside the EU-27. In particular, extra-EU imports reflect the comparative disadvantages of the EU in the form of imports of goods from China and minerals and agricultural products from Russia. From a territorial point of view, China, the US and the UK are the European Union's biggest trading partners.

The question is what are these comparative advantages of the EU based on, what may put them at risk and how they can be preserved so that economic development in Europe is not threatened. An explanation of these EU advantages over the rest of the world can be found in technical and technological equipment and investment and in

high labour productivity. The automotive sector is a key driver of knowledge and innovation and is Europe's largest private contributor to science and research, with almost €62 billion invested annually. Globally, the EU ranks first in spending on science and research in the automotive industry. The expenditure will mainly focus on the development of electric vehicles and their autonomous operations, lithium batteries and self-driving programmes. A similar situation exists in the chemical industry, where the EU ranks 1st, and the health industry, where investment increased by 10.3% in 2020 and the EU ranks 2nd globally (EC, 2021).

This territorial and commodity focus of the EU trade poses a major threat to economic growth and employment in Europe at the moment. The energy and raw material crisis, the move towards a green economy and the impending military conflicts can seriously endanger economic development in Europe. The current trend of digitalisation also has a significant impact on the automotive industry, which is mainly reflected in changes in new car designs, a high share of information and communication technologies, new drive options and alternative energy sources, and in particular new production technologies, which may threaten employment in the sector, which is Europe's most integrated sector, with a comprehensive supply network across Europe and just-in-time production. The European Union is thus faced with the key task of promoting investment and innovation, maintaining good economic relations with its main trading partners and continuing to promote liberalisation in world trade, the restriction of which can seriously undermine further economic development in Europe. According to the European Commission, the EU must face in particular these challenges for economic policy (EC, 2021):

- To keep the leadership in the automotive sector that is facing a double challenge from the required transformation to electric mobility and the increasing integration of digital technology.
- To rebuild a strong health sector with increasing focus on biotechnology that increasingly underpins the development of new drugs.

- To catch-up in ICT technology, reversing the trends observed over the past decade, to bring the benefits of digital technologies to the whole economy and particularly to exploit their great potential to help solve environmental problems.
- To ensure a strategic autonomy in key technology sectors, keeping in-house critical market segments to guarantee the security of supply and stability of essential supply chains.

However, the situation in individual countries can vary considerably compared to the EU as a whole. Therefore, in the next analysis, we decided to examine the competitiveness of exports of selected countries, using the Ballasa index as well.

9.1.2 External competitiveness of the selected EU countries

For the purposes of our analysis, we have adjusted the index to calculate the share of exports of a certain product group in the total exports of a given country against the share of this group of goods in the total exports of the European Union. It is necessary to note that in our analysis we have used the EU-27 market instead of the world market. Thus, the focus is on the position of the country under European conditions. As a data base, we used the Eurostat database from which we obtained data on the export performance of selected countries, as well as the EU extra and intra-export values in 2020. The analysed branches have been classified by the HS sections and chapters (for two-digit classification results – see Appendix). Groups in which the country achieves a comparative advantage are marked in blue.

Table 2.

RCA values for selected EU countries (2020)

HS Sections	AT	CZ	DK	EE	FI	HU	PL	SI	SK
I Live Animals; Animal Products	0,68	0,32	3,99	1,10	0,50	0,65	1,44	0,43	0,26
II Vegetable Products	0,49	0,36	0,83	0,89	0,19	1,02	0,89	0,59	0,51
III Animal or Vegetable Fats and Oils, etc.	0,44	0,44	1,64	1,06	0,08	1,14	0,50	0,26	0,41
IV Prepared Foodstuffs; Beverages, etc.	1,08	0,54	1,23	0,78	0,24	0,78	1,48	0,51	0,36
V Mineral Products	0,52	0,34	0,71	2,68	2,07	0,64	0,40	0,89	0,68
VI Products of the Chemical or Allied Ind.	0,76	0,32	1,57	0,33	0,48	0,65	0,46	1,38	0,16
VII Plastics and Articles Thereof; Rubber	0,92	0,99	0,52	0,60	0,80	1,07	1,28	1,06	1,01
VIII Raw Hides and Skins, Leather, etc.	0,51	0,31	0,93	0,28	0,56	0,43	0,58	0,60	0,42
IX Wood and Articles of Wood; etc.	2,92	1,29	0,84	9,77	4,06	0,60	1,93	2,19	1,05
X Pulp of Wood or of Other Fibr. Cell. Mat.	1,57	0,79	0,55	1,08	7,33	0,53	1,43	1,53	0,74
XI Textiles and Textile Articles	0,98	0,76	1,44	0,76	0,27	0,46	1,28	0,70	0,57
XII Footwear, Headgear, Umbrellas, etc.	0,68	0,61	0,52	0,30	0,19	0,55	1,11	0,64	1,22

Continuation of table 2

XIII Articles of Stone, Plaster, Cement, etc.	1,09	1,32	0,75	1,26	0,69	1,14	1,54	1,08	0,81
XIV Natural or Cultured Pearls, etc.	1,27	0,26	0,12	1,45	1,01	0,12	0,46	0,10	0,13
XV Base Metals and Articles of Base Metal	1,70	1,06	0,74	1,06	1,95	0,59	1,25	1,31	1,16
XVI Machinery and Mechanical Appliances;...	1,16	1,62	0,89	1,02	0,95	1,66	1,07	0,82	1,24
XVII Vehicles, Aircraft, Vessels and Associated Transport Equipment	0,84	1,46	0,27	0,48	0,75	1,13	0,87	1,26	2,61
XVIII Optical, Photographic,... Instruments,...	0,75	0,54	0,99	0,95	1,24	0,78	0,52	0,58	0,27
XIX Arms and Ammunition; Parts etc.	3,48	2,55	0,29	0,26	1,62	0,47	0,25	0,43	1,27
XX Miscellaneous Manufactured Articles	0,90	2,14	1,57	3,20	0,38	0,95	2,84	1,40	1,11
XXI Works of Art, Collectors' Pieces	0,18	0,24	0,84	0,05	0,09	1,08	0,06	0,01	0,06

weak comparative advantage, moderate comparative advantage, strong comparative advantage

Source: own processing, Eurostat

9.1.2.1 Austria

Although Austria is one of the EU's less open economies, foreign trade is crucial for the country. The share of exports of goods and services to GDP is more than 50%. Exports are widely diversified. The strong dependence of the Austrian economy on trade with EU countries is demonstrated by the fact that 67.5% of exports and 68.4% of imports go to/from EU countries. The country is characterised by close links to the German economy (35% of imports and 30% of exports). The industry is heavily dependent on exports, with 6 out of ten euros earned by the country abroad. The most important sectors include the food industry, the engineering and automotive industries, the electrotechnical industry, as well as the chemical and wood industries. At the same time, these sectors represent a large part of Austrian exports. The largest share of exported production in the volume of domestic production belongs to the paper, automotive and electronics industries. Austria is the world's biggest exporter of flavored water, unprocessed artificial staple fibers, iron railway products, cigarette paper, and railway maintenance vehicles.

This industrial and export structure is also reflected in the RCA values of the index. Within the product sections, Austria achieves the highest comparative advantage in export of arms and ammunition. Austria is the 10th largest exporter of arms and ammunition in the world. The most well-known company in this area is Glock. The second most competitive sector is the wood industry, in particular the production of wood and paper. Austria is one of the most forested countries in Europe. The wood

industry in Austria has one of the largest shares of total employment, focuses on exports and is internationally successful. Austria is one of the world's most important exporters of wood and cut wood. But Austria also exports paper, chips/biomass, as well as other processing products such as building wood and furniture or skis (Atomic). In addition, Austrian forestry machinery and services in the forestry sector are also internationally recognised. The Austrian pulp and paper production are another important part of the wood sector.

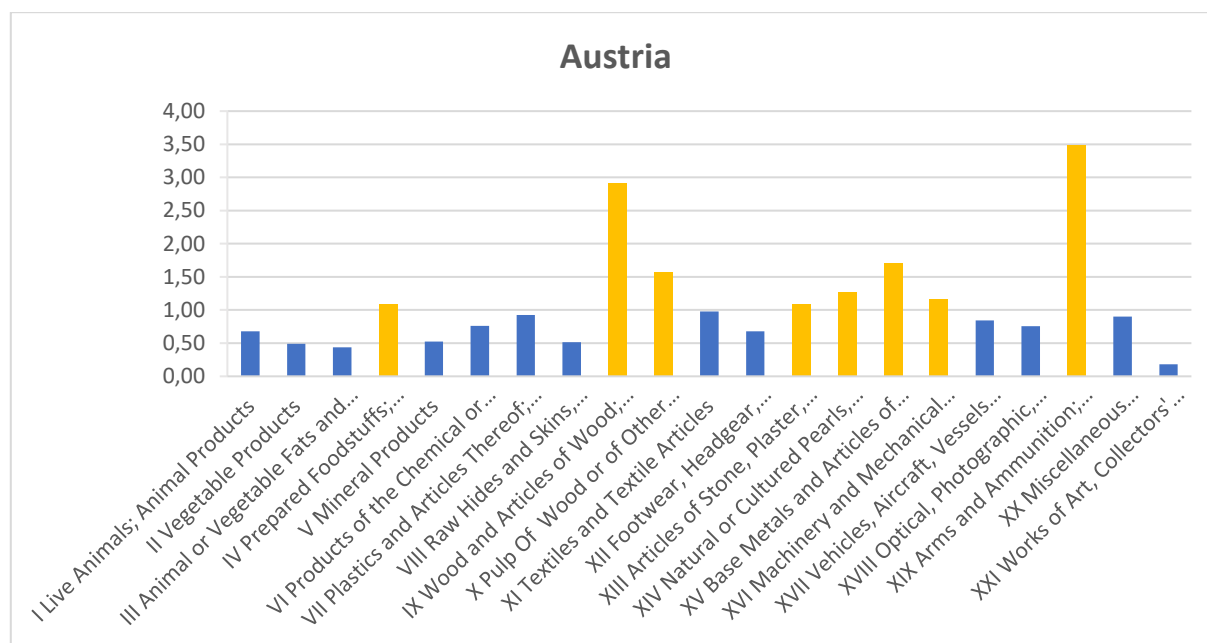


Figure 2. RCA indexes for Austria (HS Sections, 2020)

Austria has a relatively significant comparative advantage in the export of base metals, in particular nickel, aluminium, iron and steel, copper and other base metals and articles thereof. Their production also serves the needs of the engineering industry, which is also competitive in the European comparison. Metal structures, agricultural and forestry machinery, mining machinery, as well as lifting equipment are an important segment in the industry. A high comparative advantage can also be seen in exports of railway production (RCA 3,95).

If we take a closer look at the individual product chapters, the production of part of the food industry is also competitive. The most important product group is undoubtedly soft drinks (e.g. Red Bull). The second and third places belong to animal feed and cheese. Other important groups are meat products and dairy products. Wine

also makes a significant contribution to production. Austria is a leading country in the world in the field of biological agriculture.

Part of the textile and footwear industry is also competitive, in particular the production of staple fibres (RCA 4,36), cotton (3,02), umbrellas and sticks (3,00), feathers articles (2,07) and some fabrics.

9.1.2.2 Czech Republic

The country has the most stable and prosperous economy of all the countries of the former Comecon with relatively high openness. Industry in the Czech Republic employs almost 38% of economically active people, making the Czech Republic the 1st place among the countries of the European Union. Important industries include mechanical engineering – especially the production of means of transport (the country inherited the tradition of Czechoslovakia as a great power in this sector), electrical engineering, engineering, steel production, transport equipment, chemical production and pharmaceuticals. The main agricultural products are cereals, vegetable oils and hops. The top exports of Czechia are cars, vehicle parts, computers, broadcasting equipment, and office machine parts.

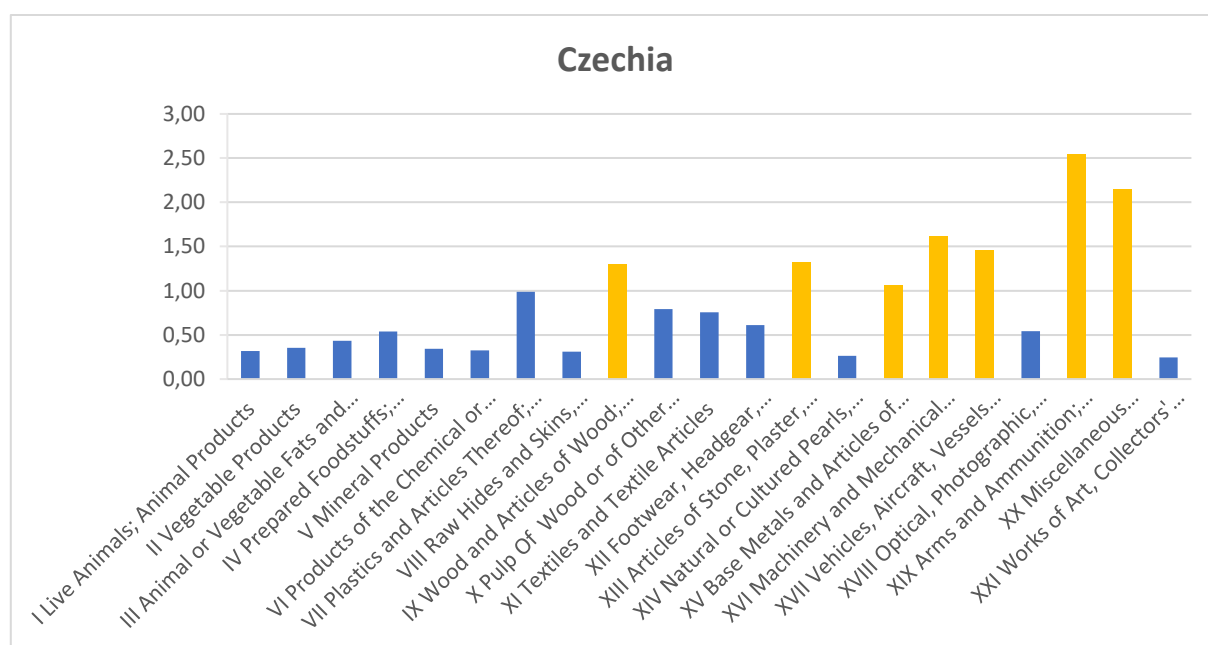


Figure 3. RCA indexes for Czech Republic (HS Sections, 2020)

Like Austria, the Czech Republic has the largest comparative advantage in export of arms and ammunition. Czechia is the world's biggest exporter of spring, air,

and gas guns. Česká zbrojovka, a. s., whose history dates back to 1936, is one of the largest Czech exporters, exporting its products to more than a hundred countries around the world. The company is among the ten largest small arms manufacturers in the world and five that produce automatic weapons. The main focus is the production of weapons for the civilian and service market, especially service, defense and sports semi-automatic pistols, hunting and sports rifles and automatic weapons. In addition, other military equipment such as radars, locators, radio communication, etc. are produced. This sector is also followed by the competitive production and export of explosives and pyrotechnic articles (RCA 4,48).

The second most competitive section is Section XX - Miscellaneous Manufactured Articles, where the Czech Republic is a major producer and exporter of sanitary supplies, children's scooters and tricycles, video and card games and sports equipment.

The production of means of transport represents another competitive sector in the Czech Republic. The automotive industry accounts for almost 10% of the Czech GDP and employs around 180,000 people. In the Czech automotive industry, the production of automotive parts has had a larger market share and employment in the last decade than car production itself. In addition to cars, buses, trucks, freight and electric locomotives, wagons, trams, trolleybuses and motorcycles are also produced in the Czech Republic. The production of means of transport is also related to the production of iron and steel articles and lead, in which the Czech Republic also has a comparative advantage. The engineering industry is connected to the metallurgical industry. It focuses in the production of machine tools, means of transport such as cars and smaller ships, and many other smaller machines (for example, for the textile industry).

Today's electrical industry acts to a large extent as a subcontracting sector of the automotive and mechanical engineering industries. In the field of consumer electronics, there are rather assembly plants in the Czech Republic that assemble products from components imported from abroad, in particular computers, broadcasting equipment, and office machine parts for export.

The specificity of the Czech economy is the production of glass and jewellery (RCA 1.90). Glassmaking has a long tradition in the Czech Republic, mainly due to the amount of raw materials needed for glass production. The glass industry in the Czech Republic developed mainly in mountainous areas due to the abundance of raw materials such as quartz, limestone and others, as well as wood, which the glass industry consumes a huge amount for heating.

A higher comparative advantage can still be seen in the export of rubber and articles thereof (RCA 1.67), wood and wood articles (RCA 1.34), products of printing industry (RCA 1.64). The textile industry processes textile fibres such as wool, cotton, etc. to semi-finished or partly finished products.

The Czech economy is characterized by a high level of diversification, which increases the resistance of the economy to shocks. However, this strength of the Czech economy is not reflected in high added value or national income. The Czech Republic must therefore invest in areas that increase the share of value added in production. The production itself, often simply referred to as an assembly plant, has a relatively low margin, especially if it is part of the supply chain.

9.1.2.3 Denmark

Denmark has got a strong and efficient economy that benefits from openness to innovative solutions. Denmark often sets a European and global trend. The Danish economy is small, relatively open and interconnected with other countries, especially within the EU (Germany, Sweden) and Europe (Norway, UK). Although more than half of foreign trade takes place with the EU countries, Denmark, as the main exporter of food and agricultural products, covers the global market. Exports focus on the agricultural commodities, food, pharmaceuticals, plastics and consumer goods.

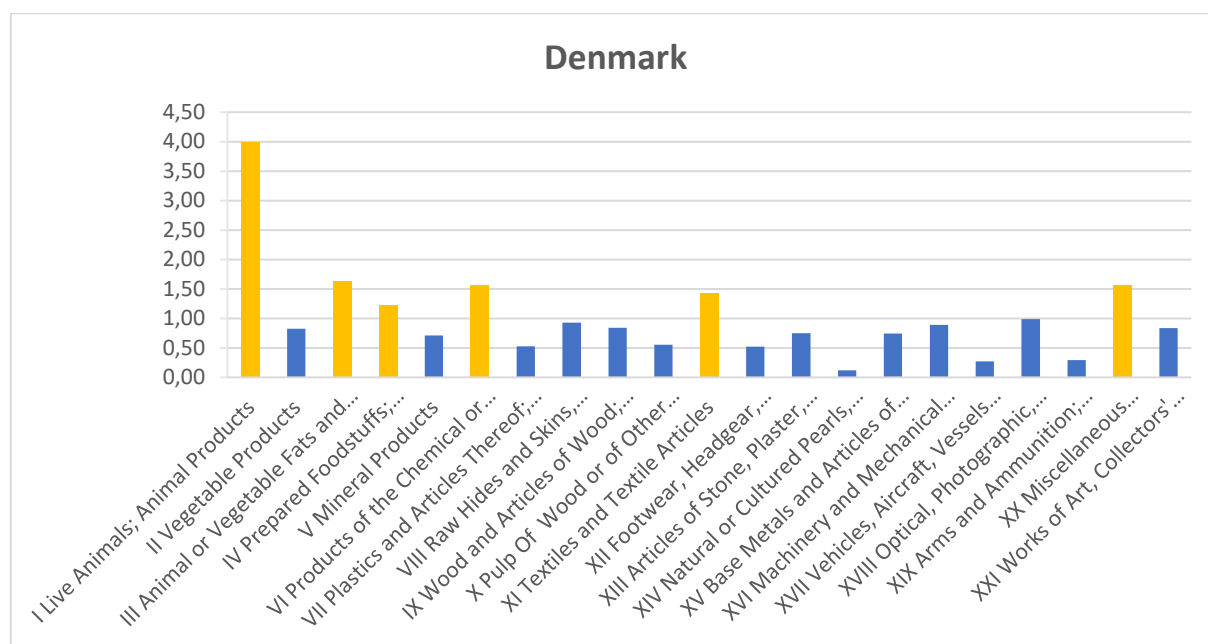


Figure 4. RCA indexes for Denmark (HS Sections, 2020)

The analysis of the comparative advantages shown us that the Danish agricultural and food sector is the most competitive. Despite the fact that Denmark is a small country in size, the strong agrarian sector is a main and traditional basis of the economy. Danish agricultural production is three times higher than domestic demand. Only 6% of the economically active population works in technically active agriculture. Cultivated land accounts for about 56% of the area, which is the most in Europe. Danish agriculture is characterized by high intensity, high productivity and mechanization and wide consumption of artificial fertilizers. In particular, cereals (wheat), potatoes and sugar beet are grown. The basis of agricultural production is the breeding of cattle, pigs and poultry. Denmark is the world's biggest exporter of pigs. Sea fishing is also very important (RCA 6.99). Agricultural production is also followed by food exports. The production of dairy products, cheese, pork, oils, beer and sugar is in a strong position.

The second competitive sector of the Danish economy is the chemical and pharmaceutical industry. It is dominated by the production of pharmacological products such as insulin, packaged medicaments and blood, antisera, vaccines, toxins and cultures. The chemical industry is dominated by the production of fuels, plastics and especially enzymes, where Denmark is the world's biggest exporter of enzymes.

In the consumer goods sector, the textile industry, in particular clothing, furniture and toys (LEGO) are also competitive within the EU. An exceptional product worldwide is the Danish production of raw furskins (RCA 12.36), where Denmark is the world's largest exporter.

9.1.2.4 Estonia

The Estonian economy has become one of the most advanced in the world over the past decade. The World Bank classifies it as a high-income economy. Thanks to successful reforms, Estonia is one of the fastest growing economies in Europe. Due to the high GDP growth in 2000-2007, it was referred to as an economic tiger. The Estonian economy is mainly influenced by the development of economies in Finland, Russia, Sweden and Germany - the four main trading partners. The most important industries are the electrotechnical, woodworking and chemical industries, coal tar oil extraction and shipbuilding. The top exports of Estonia are broadcasting equipment, refined petroleum, coal tar oil, cars, and prefabricated buildings. Estonia has a very open economy.

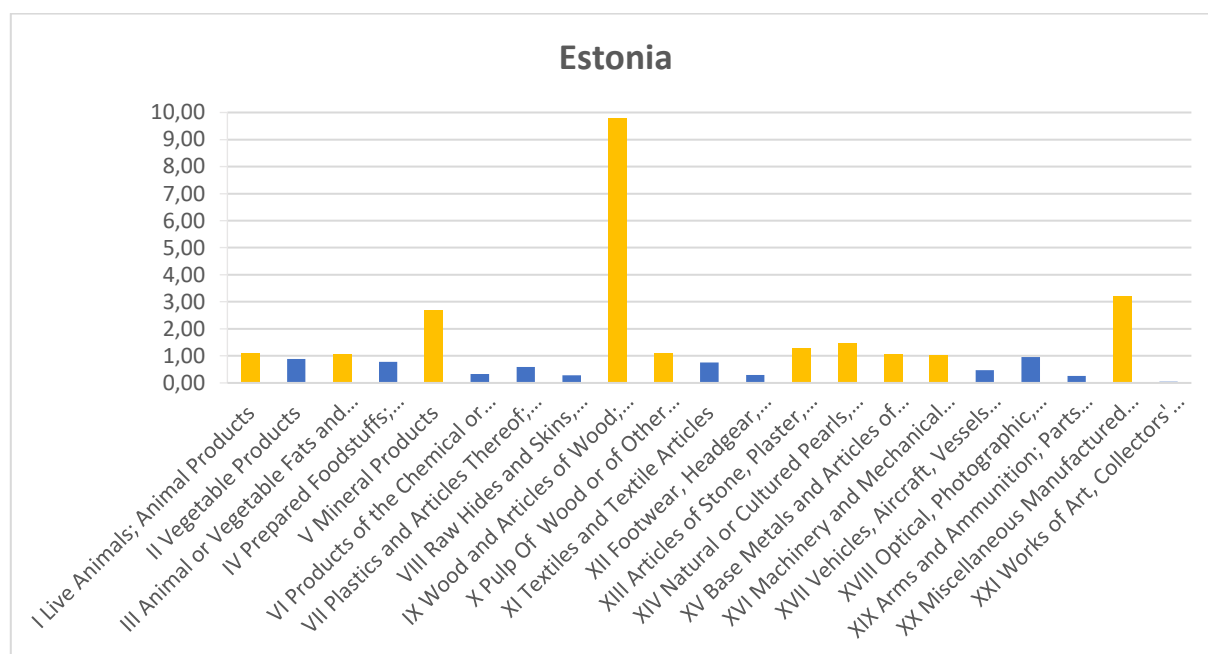


Figure 5. RCA indexes for Estonia (HS Sections, 2020)

Around 32.5% of Estonia's total area is covered by forests. The forest is one of the most important raw materials of Estonia. It provides material for production in the wood, paper and furniture industries. Forestry alone produces 1.7% of total GDP.

Wood and articles of wood is Estonia's most competitive production. This is also related to the high competitiveness of pulp of wood, wood pellets, cellulose and furniture (Sections X and XX), and shipbuilding. Estonia has become the largest exporter of wooden houses in Europe.

Estonia also achieves a high RCA for mineral products, thanks to the production and export of refined petroleum and coal tar oil. From other materials we find a comparative advantage in cement articles, glass, iron, lead and other metals.

The main fields of the agricultural sector are meat and dairy farming, pig farming. Fishing also plays an important role, contributing to the competitiveness of Estonian exports. Other notable items include dairy products (milk and cheese), cereals and oils.

9.1.2.5 Finland

Finland's economy is acclaimed in the world, regularly ranked in the top 5 places in the world in terms of competitiveness assessment. Despite its not-so-high openness, Finland is heavily integrated into the global economy and international trade, which accounts for a third of GDP. Foreign trade with EU countries accounts for 60 % of total foreign trade. The largest trading partners are Germany, Russia, Sweden, the UK, the US, the Netherlands and China. Finland is a traditional supporter of free trade, with the exception of agriculture. It is the only Nordic country which joined the Eurozone.

Finland, one of the richest countries in Europe, has a highly industrialized free-market economy. The key economic sector is industrial production, in particular wood and metal processing, engineering and the telecommunications and electronics sector. Compared to other OECD countries, Finland maintained a high tax burden and a high level of redistribution.

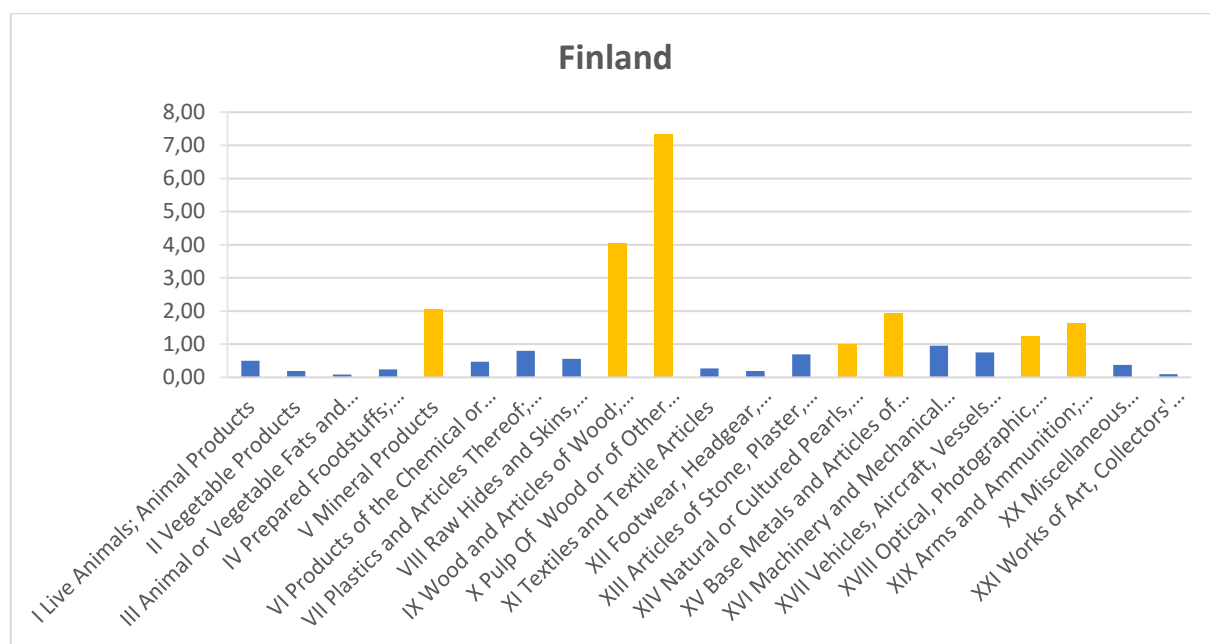


Figure 6. RCA indexes for Finland (HS Sections, 2020)

The country's greatest natural wealth is coniferous forests, which cover two-thirds of the territory, and this also proves to be the source of Finland's greatest competitive advantage. Finland's economy is valuing this wealth on world markets. Finland ranks second in the world in exports of wood, paper and pulp, and achieves the highest comparative advantages in these areas. About 10% of the world's total exports of wood, as well as wood, cellulose and paper products, are from Finland. The export value of printing paper accounts for one fifth of total exports of Finland.

In addition to wood, Finland also has mineral products and minerals, in particular ores, copper, tin, nickel and chromium, which are processed by non-ferrous metallurgy and represent a source of other significant competitive advantage. Finland uses electricity from hydropower plants for their extraction and processing. Finland also has a great comparative advantage in refined petroleum exports.

The engineering (shipbuilding, woodworking and pulp industries) and the electrotechnical industry (mobile phones) are also developed. The production of ships and naval equipment is considered the most powerful industry in the country. Experts estimate the Finnish market at 1% of the total world production of ships, lines, ferries, icebreakers. Today, seven shipyards are built in Finland, the largest of which is located in Turku and specializes in the construction of passenger cruise ships.

Finland's electronics and electrical industries place emphasis on major investments in research and development. It focuses on industrial automation, medical and meteorological technologies. In terms of the volume of production of electronic and electrical goods, it is decreasing in Finland. This is explained by the fact that the country has a very high level of production costs and therefore most companies have already withdrawn part of its technological lines outside the state in order to stabilise the profitability and competitiveness of production.

Finland also has a competitive advantage in the export of arms and ammunition, in particular explosive ammunition. Like Denmark, there has been significant competitiveness in furskins production, which is also related to forest stocks. Comparative advantages can still be found in some items of the chemical, pharmaceutical and biotechnology industries, which are the third largest sector in Finland. A large range of products are produced for use in other industries, especially for forestry and agriculture. In addition, it produces plastics, chemicals, paints, petroleum products, pharmaceuticals, organic products, biotechnological products and petrochemicals. Biotechnology is considered one of the most perspective high-tech industries in Finland.

The industrial structure of the Finnish economy and its competitiveness is based on technology-intensive products and workers' education. Traditional sectors remain the main sectors. However, the wood and paper industry has recently seen a decline in production and demand. Finland is losing market shares in countries where production costs are lower (Russia, Eastern Europe but also Germany). Competition from Asia (China) is pushing into Europe. Finland seeks to reduce its dependence on energy supplies from Russia and to promote the competitiveness of its industry, in particular the energy-intensive steel and wood industries.

9.1.2.6 Hungary

Hungary is a developed market economy strongly export oriented. It is one of the most open economies in the EU. The main industries include heavy industry (steel, coal mining), energy, chemistry, food and automotive production. Along with the transition to a market economy, Hungary has experienced considerable modernisation.

Engineering, the chemical industry (the production of plastics and pharmaceuticals) have played an increasingly important role, while metallurgy, mining and textiles have lost their relevance in the last twenty years. The food industry remains an important component of exports (accounting for 7 to 8% of exports). The top exports of Hungary are cars, vehicle parts, packaged medicaments, spark-ignition engines, and video displays.

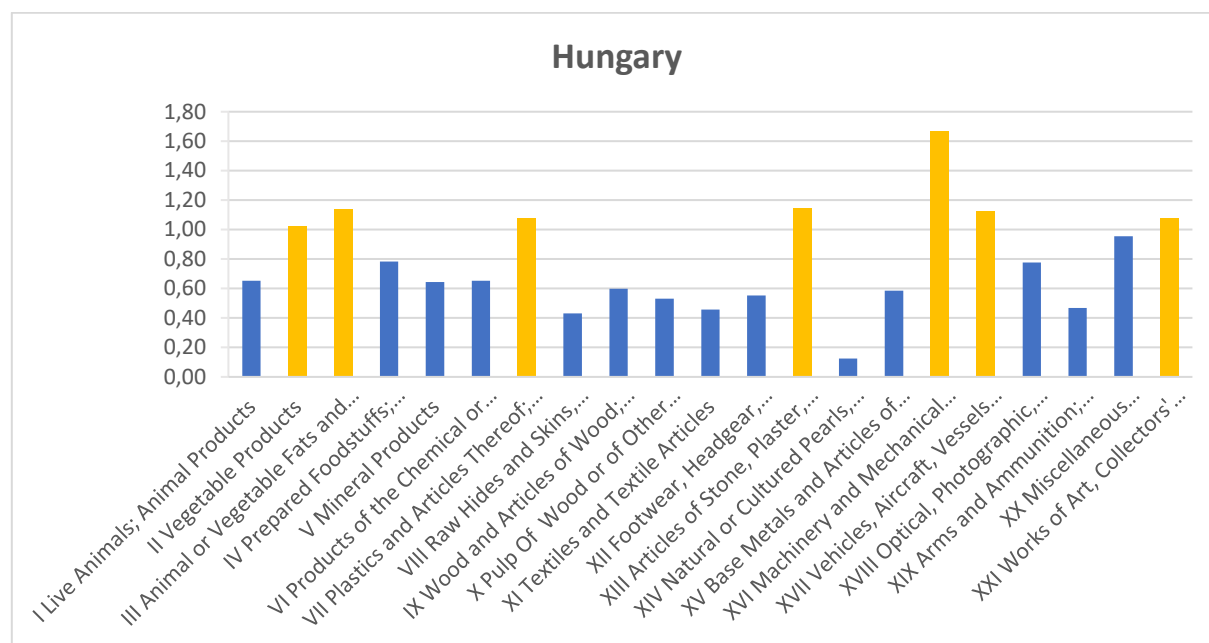


Figure 7. RCA indexes for Hungary (HS Sections, 2020)

From the view of competitiveness, the main sectors of Hungarian economy are automotive, electrotechnical and chemical, especially the rubber industry, on the development of which is also based the concept of further progress of the Hungarian economy.

The electrotechnical industry is a strategic component of the national economy and contributes to a large extend to the creation of the added value of national industry. Almost 80% of export sales are made by the subsector of telecommunications equipment and consumer electronics. The production of electronic and electrical equipment of motor vehicles, appliances for the automotive industry and medical devices is also significant.

The automotive industry is a very strong industry in Hungary. The absence of a national car manufacturer is being replaced by the factories of many of the world's

carproducers. In addition to cars, buses, agricultural machinery, trailers, vehicle and locomotive parts are also produced. The related competitive industry is also the production of rubber products, especially tires.

Comparative advantage is also revealed in agricultural, especially plant production. Hungary's economy has been based on agriculture and the food industry in the past. Of all the countries of the European Union, Hungary has the largest part of the area covered by fertile land, almost half of Hungary's territory is used in agriculture. The vast fertile lowlands and continental climate with warm summers give the opportunity to grow mainly cereals such as wheat, corn, sunflower, sugar beet or potatoes. In addition, a wide variety of fruits such as apples, melons, plums and pears thrive here. Hungary also has several wine-growing areas with world-famous Tokaj wine. An important part of Hungarian culinary heritage is foie gras. The goose liver specialty employs more than 32,000 farmers and puts Hungary second in the world producer rankings. Another symbol of Hungarian cuisine and agriculture in general is peppers.

In addition, Hungary is competitive in the production of glass and ceramic products, seats, and sanitary and hygiene products.

9.1.2.7 Poland

The Polish economy is the largest economy in Central Europe, the sixth largest in the EU. It has a large internal market that is less sensitive to the world development and can stabilise external negative impacts. As a result, the openness of the Polish economy is lower compared to other selected countries. Poland is also not dependent on just one sector of the economy. Poland's economy is fast-growing, and country is one of the leaders in GDP growth compared to other EU countries. Poland is an industrial and agricultural country with significant mineral extraction. The basis of mineral wealth are deposits of black and brown coal, copper ore, sulfur, rock salt, ceramic raw materials and building materials. The main industries are mining, engineering, metallurgy, chemical, electrotechnical, textile and food industries. The top exports of Poland are vehicle parts, cars, seats, other furniture, and computers. Poland is the world's biggest exporter of coke, razor blades, wood crates, newspapers,

and frozen fruits and nuts. Poland is not and will not be a member of the Eurozone in the near future. Thus, the Polish Zloty protects against shocks, protects the standard of living achieved and allows it to be further raised.

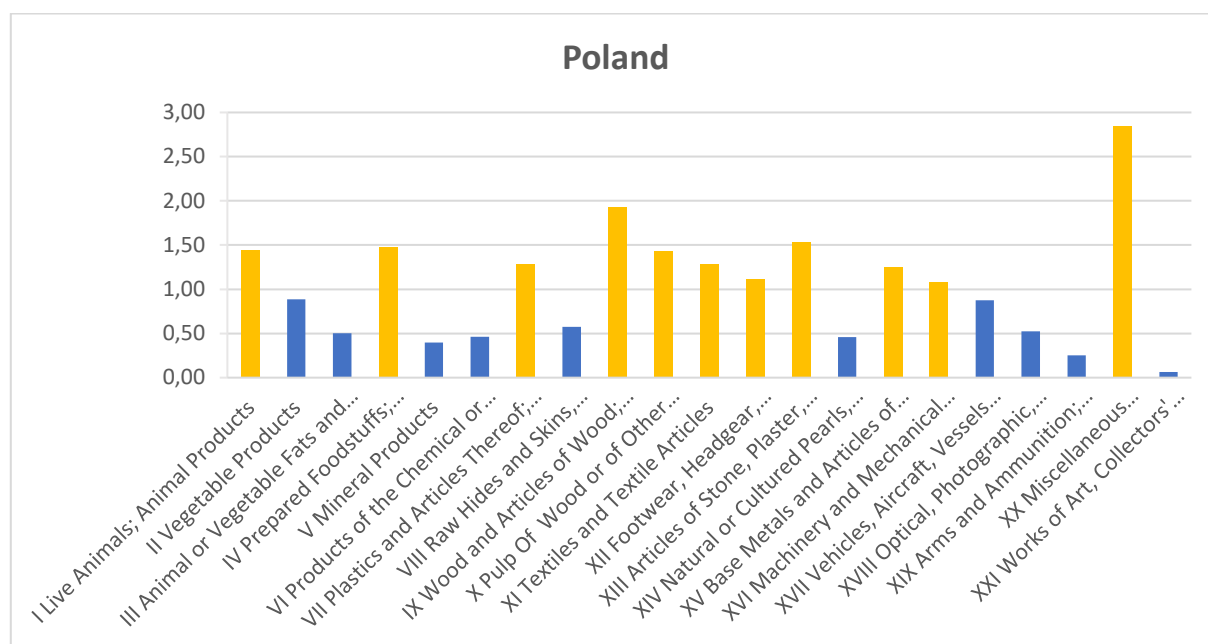


Figure 8. RCA indexes for Poland (HS Sections, 2020)

Based on the calculation of RCA indices, Poland achieves the highest competitiveness in the wood, furniture and paper industries (Sections IX, X and XX). Poland has a great tradition in the wood industry. Poland is one of the leading furniture manufacturers in the world and has an important position in international markets. Thanks to exports, which are responsible for more than 65% of furniture manufacturers' sales, Poland is a leader in furniture exports throughout the European Union. Poland's largest furniture producers have advanced technologies in the most modern production plants that can compete qualitatively and costly with all manufacturers in Europe. After Sweden, where the production of furniture for IKEA began, Poland was the second country, and today almost 20% of IKEA's production comes from this country. In addition to furniture, the production and export of paper products (e.g. paper, products of the printing industry or toilet paper) and ship production are also competitive.

Polish agriculture and food industry are also competitive. Food exports are becoming increasingly important in terms of the total turnover of foreign trade. Poland is an important agricultural country based on a very strong agrarian tradition and

peasant culture. Poland has one of the largest agrosectors in Europe, with more than 10% of the active population working in agriculture. Developed agriculture, focusing on both traditional and organic forms of agriculture, is the result of the introduction of advanced technologies and an upgrade based on the efficient use of EU funds. One of the most important sectors of foreign trade is the export of agri-food products, especially meat and its products, eggs, as well as livestock. Poland is the largest producer of poultry meat in the EU. Poland is one of the world leaders in the cultivation of apples, raspberries, blueberries, as well as one of the top processors of fruit and vegetables and one of the largest producers of frozen fruit and vegetables, fruit and vegetable juices and concentrates. It also has a high comparative advantage in exporting rolled tobacco. The problem with Polish food products is that they often show some misconduct or are dangerous. Up to one third of food from Poland does not suit mainly due to violations of hygiene standards. Poland's Supreme Audit Office itself notes that food from their country is the most dangerous in the entire European Union.

Although the values of the RCA index are not very high for Sections XVI and XVII, mechanical engineering is an important sector of the Polish economy. Poland is one of the major manufacturers of automobiles and their components. The automotive industry is considered one of the largest automotive hubs in Europe. An important role in the Polish automotive industry is played by vehicle manufacturers - passenger cars, vans, trucks and buses. Car manufacturing is followed by other competitive industries producing mechanical components for cars, engines, interior or body parts, rubber parts and others. This is reflected in higher values of RCA indices in the export of metallurgical products, plastics and rubber (tires), glass and glassware, seats or textile articles for industrial use. In light industry, textile, footwear and leather industries play an important role.

9.1.2.8 Slovenia

Slovenia is one of the most advanced countries in south-eastern Europe. It is the gateway to the Balkans, a transit territory to the Adriatic Riviera, it has a maritime transport terminal, a quality workforce and traditionally high-quality and original products, which is reflected in the high openness of the economy. The pharmaceutical

industry is of the greatest importance in the economy. The top exports of Slovenia are packaged medicaments, cars, refined petroleum, vehicle parts, and electrical lighting and signalling equipment.

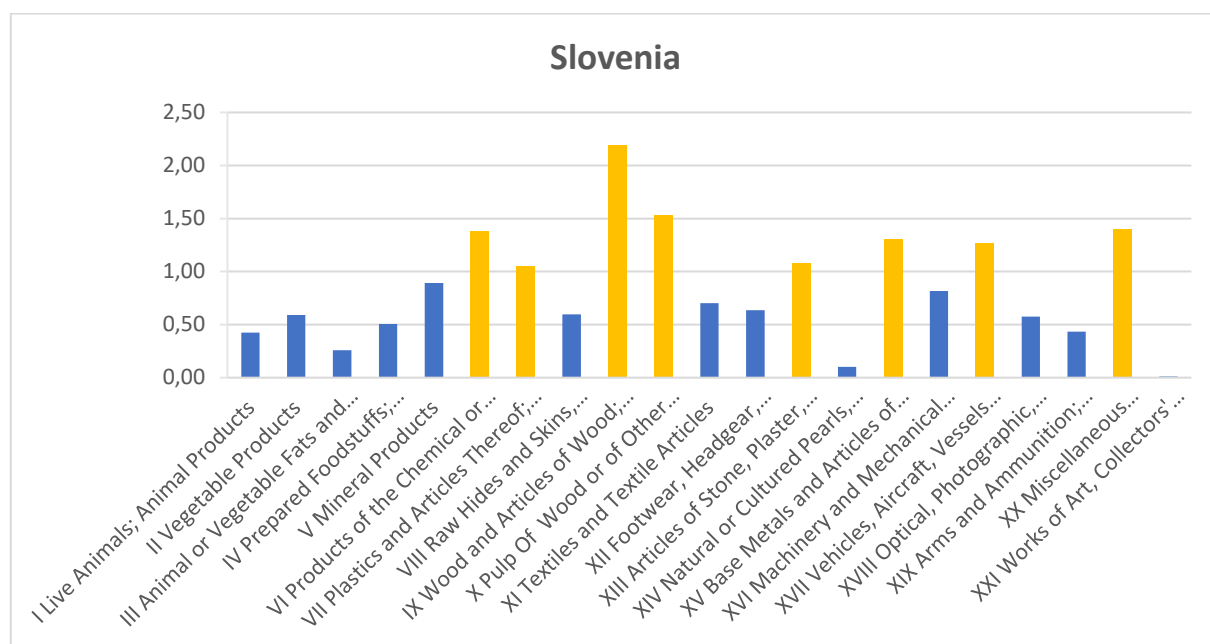


Figure 9. RCA indexes for Slovenia (HS Sections, 2020)

According to the RCA index, the most significant competitive advantage is revealed in the wood, paper and furniture industries (Sections IX, X and XX). The paper and pulp processing industry have a long tradition. There are 23 large and about 50 small plants in Slovenia that produce 600-750 thousand tons of paper and paperboard per year. The wood industry is also connected with the production of sports goods, especially skis (Elan company).

The most important industry is the chemical and pharmaceutical industries (16% of industrial production) and the second highest competitive advantage is shown in the export of its production. The most important products include basic chemicals, pesticides and agrochemicals, paints (especially printing), varnishes, sealants, pharmaceutical products, soaps, cleaning, cosmetic products, artificial fibers, plastics products and tires. The main exporters are Lek (a member of the Novartis Group) and Krka (each of these companies exports about 90 % of its production).

The production of metals and metal products has been a tradition in Slovenia for several centuries. Slovenia started producing steel almost 400 years ago. Similarly,

long is the tradition in the processing of precious metals, gold and silver products. A little shorter is the tradition of producing non-ferrous metals such as lead, zinc and copper. Aluminum production is the youngest industry with more than 50 years of tradition. The technical know-how and experience gained in the production and processing of base metals are of particular importance for the development of downstream industrial production, in particular for the engineering, metalworking and automotive industries. Their production is exported for more than 60%. The engineering industry focuses on car assembly, metal processing, machinery and equipment production and the assembly of means of transport along with component manufacturing. Key products include components for motor vehicles and automotive parts, foundry moulds for the automotive industry, metalworking presses, water turbines and pumps.

While the textile and clothing industry as a whole does not achieve high RCA values, for certain items (e.g. silk) the comparative advantage is revealed. The industry was one of the first to establish itself in foreign markets. The production capacities of these sectors exceed the demand of the domestic market and therefore more than 90% of production is exported mainly to the EU and the countries of the former Yugoslavia. Labour costs and strong competition from third countries are among the biggest challenges in terms of the further development of these sectors. The main export commodities include clothing, fabrics, leather, footwear and fibres.

9.1.2.9 Slovak Republic

The Slovak Republic is a small country with a very open economy that is dependent on foreign trade. The degree of country's involvement in international trade and cooperation is often the result of the country's impossibility of covering its needs with raw materials and energy resources and there are not enough resources or capacity to meet the domestic demand. Due to the relatively small internal market and the lack of its own energy and raw materials, the Slovak economy has been highly open for a long time. At present, the structure of Slovak exports is concentrated on several sectors, namely the production of transport equipment (passenger cars, their parts and accessories, like rubber tires), electrical and telecommunication equipment (shafts,

bearings, pumps, fans, compressors, boilers, TVs and telephone equipment) and base metals and articles thereof (iron, steel, wires). Developments in these sectors are the main driver of the Slovak economy, but there is a high risk for the economy depending on the development of foreign demand for production of these sectors.

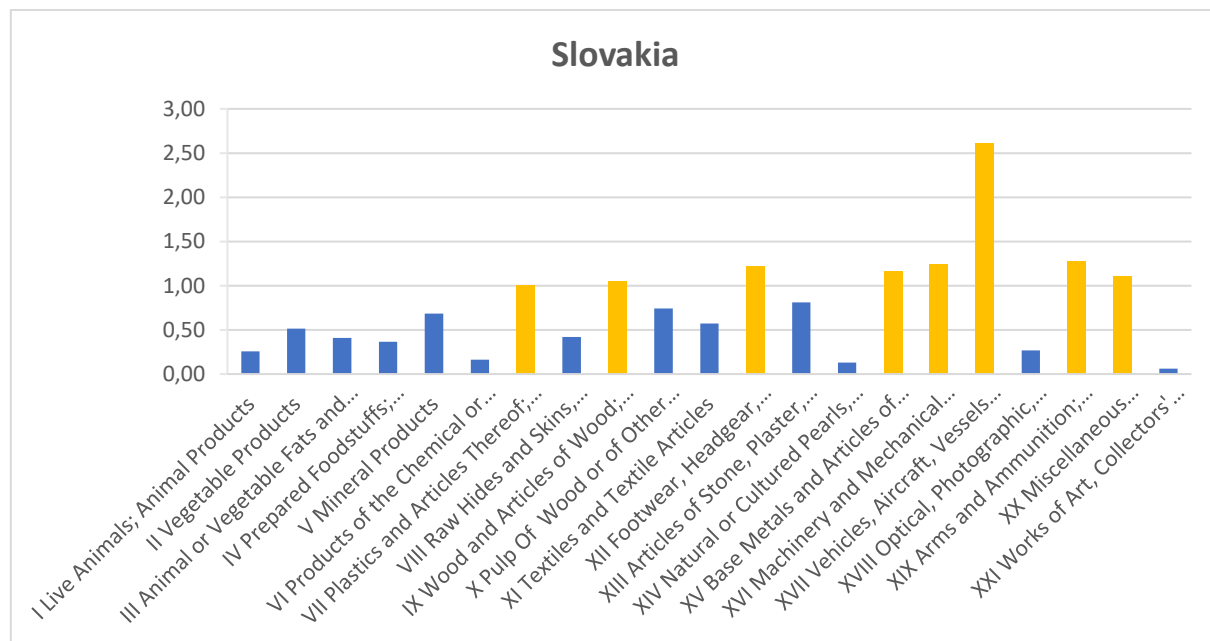


Figure 10. RCA indexes for Slovakia (HS Sections, 2020)

The Slovak Republic achieves the most significant competitiveness on the basis of the RCA index in Section XVII - Vehicles, Aircraft, Vessels and Associated Transport Equipment. The competitiveness of this sector, the main component of which is the production of the automotive industry, has grown for the last decades and this growth has been strengthened by joining the EU. If we look at a closer specification, we can see that the RCA index acquires long-term high values in exports of automotive and related products, electrical machinery and equipment and iron and steel. In these sectors Slovakia has shown comparative advantages vis-à-vis the EU27. On the other side, RCA index values decreased under the textiles and clothing, which means a loss of global competitive advantage. It was observed that the ongoing competition advantage started to decrease in the analysed period. These traditionally strong sectors of the Slovak economy lost their relevance after the transformation and were downturned. We can see this trend in many developed countries, from where these productions move to areas with an abundance of cheap labour, such as India,

Bangladesh or China. Nevertheless, there is still a comparative advantage in the production of footwear (Section XII).

The automotive industry is the basic pillar of the Slovak economy and its foreign trade, as confirmed by the highest and increasing values of the RCA index and the strong revealed comparative advantage. In 2021, more than 1 million vehicles were produced in Slovakia and Slovakia is the world leader in the production of cars per capita. The automotive industry's share of the total industry reached 47,7% in 2021, 13% on the GDP and the share of exports was 42%. The automotive industry directly employs more than 164 000 people and directly and indirectly generates up to 245 000 jobs. One of the impulses for the creation of the strong automotive industry in the Slovak Republic and the growth of its competitiveness were the factor conditions in the form of the tradition of Slovak engineering and arms production and the amount of unemployed skilled labour during the period of transformation, which had experience with engineering. The advantageous geographical position of the Slovak Republic in the middle of Europe positively influenced investors from other countries to invest in Slovakia, because thanks to this localization, the distribution of cars to other countries is easier. Foreign investors have brought in new technologies and built more modern plants than in their home countries, which, together with low labour costs, has formed the basis for competitive production.

As we can see, the automotive industry and related components have a long tradition in Slovak history. The growing share of the automotive industry and downstream industries in Slovakia's foreign trade reflects the competitiveness of these sectors. In addition to historical background, comparative advantages over other countries are based on both internal and external economies of scale. Geographical proximity allows companies to communicate and spread knowledge more easily, leads to higher employee specialisation, cost savings and overall productivity gains. It is beneficial for competing companies if they are located close to each other, which helps them build and use a network of suppliers and customers. This is also applicable to car producers in Slovakia whose production is concentrated in western part of Slovakia. The governments of the Slovak Republic tried to support the development of the

automotive industry and supported the inflow of foreign investments in this sector. Through state interventions, financial support, support for upskilling of the workforce, the automotive industry has thus become the most important and competitive sector of the Slovak economy. At the same time, the growth of this sector has supported the development of other downstream sectors. A good example is the production of tyres and other rubber components, in which Slovakia reached the RCA value 2,25 and moderate comparative advantage.

The high values of the RCA index can be seen in production of electrical machinery and equipment (part of the Section XVI). The strongest sector of Slovak electrical engineering is the production of televisions. The production of televisions, screens, printed circuit boards and other electrotechnical components for TV accounts for almost half of the entire electrical industry in Slovakia. This sector employs more than ten thousand people in Slovakia. After cars, it is the strongest export item. Almost one in five imported TVs in the European Union countries is made by one of the three large companies based in Slovakia. One of the reasons why these multinational concerns opted for production in Slovakia is that there was experience in the production of their own televisions, modern equipment, technology and experienced staff. The production of televisions has been a tradition in Slovakia since 1958. In particular, manufacturers' easier access to European markets following the enlargement of the Union, cheap labour and quality suppliers of plastics and packaging materials contribute to the growth of production of this industry.

The revealed comparative advantage, albeit a smaller and ever decreasing (a weak comparative advantage), is also achieved by Slovakia in the production of iron and steel (Section XV). Historically, steel production has been, is and will remain one of the main pillars of the development of Slovak industry. In Slovakia, the sector has a share of GDP of more than 6%. The steel industry in Slovakia has a significant share of exports, employment, creating conditions for support of other industries, mainly construction, automotive, engineering or energy. It also has a significant contribution to the application of R&D results in practice, in the field of new materials and new types of steel. However, as we can see from the development of the RCA index, the

Slovak comparative advantage in steel production has declined in recent decades. There are several reasons for this. Iron and steel exports from outside the EU have been steadily growing since 2012. In particular, the world is overflowed with record amounts of cheap steel from China, which also causes a reduction in its production in Slovakia. The unit price of imported steel and iron decreased until 2016, when duties were mainly imposed on cheaper Chinese steel. Slovakia's problems with metal exports are also related to weaker economic activity and lower demand from its important trading partners.

Slovakia is competitive in the production of relatively higher capital, material, and labour intensity. On the other side, technology- and R&D-driven goods have a comparative disadvantage as a consequence of several factors, such as lack of innovation and creativity in the business sphere. According to the classic theory of international trade, the reasons for comparative advantages can be mainly differences in labour productivity, endowment of production factors, existence of economies of scale or accumulated knowledge due to the tradition of production in the sector (so called learning by doing). Slovakia's competitive advantages, which have an impact on the scope and specialization of its foreign trade, are based especially on experience in manufacturing, cheap and skilled labour and investment incentives provided, for example in the form of tax reliefs, that have attracted foreign investments to these sectors and brought new technologies and thus strengthened their competitiveness. The role of foreign capital is irreplaceable in terms of transformation, streamlining and transition to more sophisticated and competitive production. Foreign investment brings modernization of production and assortment, and also has an impact on growth in performance, skills of the workforce and wages. The subsequent concentration of firms in relatively small territory made it possible to benefit from external economies of scale in the form of a shared labour market, a network of suppliers or knowledge transfer. All the above factors caused Slovakia's production to concentrate on several sectors producing mainly for exports. The high share of foreign trade in the economy and its concentration in several industries also has its negatives. Due to the high level of openness and extensive trade flows the Slovak economy is very exposed to external

conditions and strongly depends on the economic development of its foreign trade partners. Their economic situation influences Slovakia's performance and export because of its high orientation on luxury goods' production with high elasticity of demand, as automobiles and electronics. The demand for these products is highly elastic and depends on foreign traders' incomes, which decreased during the crisis. The Slovak Republic has got especially in a case of a favourable world development huge growth potential; however, the negative development in the external environment causing the decrease of the foreign demand negatively influences the economy's performance. However, the long-term development of economic performance cannot depend solely on the development of the revenues of the main trading partners in selected sectors, but must be based primarily on an increase in the added value of export production. Which is also a problem in the automotive industry, as research and development is carried out in the home countries and only assembly operations are carried out in Slovakia. This is also reflected in the high import intensity of production. Another problem that arises from focusing the economy on manufacturing is that it requires a lot of labour force. In recent years, the automotive and electronics sector in particular has been facing labour shortages and rising labour costs. This is a challenge that almost all industries of the Slovak economy meet. Thus, the growth of labour costs, which were one of the sources of comparative advantages of Slovakia, may threaten its competitive advantages. The insufficient skilled work force and high labour cost is considered to be one of the challenges for Slovakia also according the IMD World Competitiveness Center (2021). Others include stabilising the expenses and return to the balanced budget, strengthening of the digitalisation processes across the sectors, reform of education sector to suit the needs of employers and the need to strengthen the business environment. Other threats for Slovakia's comparative advantages are chip crisis, lack of semiconductors, rubber, plastic granules, several times higher price of steel, aluminum and precious metals, extreme fuel prices and the so-called green transformation and changes in European legislation. Slovakia thus faces the key task of supporting investment and innovation and promoting the diversification of its

production into sectors less sensitive to developments in world trade and with higher added value.

9.1.3 Conclusion

Maintaining and increasing competitiveness is one of the fundamental tasks of the functioning of the European Union. By integrating into the common market, countries compete not only with other countries of the world, but also with other EU member states. Recognising their competitive advantages and their source is thus a necessary condition for further economic development for both individual countries and the EU as a whole. Applying export data of the EU and selected countries to the RCA index has enabled us to identify in which product areas individual countries achieve a comparative advantage and are competitive with the rest of the European Union. The sources of these comparative advantages vary from country to country.

According to the classic theory of international trade, the reasons for comparative advantages can be mainly differences in labour productivity, endowment of production factors, existence of economies of scale or accumulated knowledge due to the tradition of production in the sector. The competitiveness of many sectors is based on raw material reserves and appropriate climatic conditions. Forest abundance in Austria, Estonia, Finland, Poland and Slovenia is the source of their competitive wood and furniture production. Mineral reserves are a source of comparative advantage for Estonia in the production of petroleum and coal tar oil or for Finland and Austria in the extraction and processing of base metals. Poland and Hungary benefit from vast agricultural land and suitable climatic conditions in the production and export of agrarian products.

Investments, new technologies and an educated workforce are a source of competitiveness for several sectors, especially in the more developed countries analysed. This applies, for example, to the chemical industry in Finland, Denmark and Slovenia, to the electrical industry, but also to intensive agriculture in Denmark and Austria.

Another important source of competitiveness is the tradition of production, for example the arms industry in the Czech Republic, Slovakia and Austria. In particular,

historical production experience, cheap and skilled labour and the investment incentives provided in Central European countries have attracted foreign investment into the engineering, automotive and electrotechnical sectors, which have brought new technologies and thus strengthened their competitiveness. The subsequent concentration of companies in a relatively small area made it possible to benefit from external economies of scale in the form of a shared labour market, a network of suppliers or knowledge transfer. All these factors caused the production of these countries to concentrate on a small number of export-producing industries. Central European countries are competitive especially in the labour-intensive industries with lower added value and have disadvantage in marketing- and technology-driven industries, although electronic equipment plays the important role in high-technology industries in these countries. The Central European region has long been of interest to large autoproducers. This is due to its good geographical location, compared to the company's parent country, a cheaper, reliable and experienced workforce in a stable social environment. For the benefit of these countries, the long-term relatively favourable experience of automotive concern with the operation of plants in these countries, supported by investment incentives, speaks. An equally important factor is the network of subcontractors created for automotive manufacturers over the years. The disadvantage of this export focus is that the Central European economies are open and highly dependent on foreign demand. If key partners experience shrinking demand, export development is decreasing sharply. In terms of external trade, Poland – with its rather large internal market – is different from the other countries, which are deeply involved in external markets.

Recognising the sources of competitiveness of countries allows us to identify factors that may threaten them in the future. The main risks can now be seen as the high energy and raw material dependence of European industry, rising inflation and the associated rising labour and material costs, a lack of skilled labour, increasing global competition and the challenges of the transition to a green economy. All of this requires investment and the development of new technologies. This is to be helped by the adopted NextGenerationEU mechanism, as a temporary recovery instrument to

help build a greener, more digital, resilient Europe, better prepared for current and upcoming challenges.

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