COMPETITIVENESS I.

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Abstract

The term competitiveness is used in connection to firms, industrial branches, regions, states etc. However, perhaps only on the level of a firm it is sufficiently defined. There are even opinions which regard competitiveness as an economic attribute which has sense solely on the firm/enterprise level. If however, competitiveness of a country were defined using the same concepts and procedures of measurement as regarding an enterprise, it might not be meaningful enough and there would be a considerable simplification. It issues from the different goals of firms and states as well as the features of competitiveness in both cases. For a firm/enterprise, the main goal is to survive and to reach a strong positron in the field of international economic competition, i.e. to reach profit and a certain share in the market. For a country, which does not consider the question of existence or non-existence (at lest regarding the economic side of the matter), the main goal is to sustain and improve the living level of its inhabitants and to increase it as well as their welfare.

Key words: competitiveness, difinitions, measuring based on outputs/results.

THE TERM AND APPROACHES

The first approach, which is labelled as the ”engineering approach“, understands competitiveness of the country as depending on the ability of firms in its economy to accept or to adept to the optimum technological and organisational procedures (practices) in their activities. Competitiveness s of the country is then the sum of the competitive powers of its firms/enterprises. At that, the enterprise competitiveness is not usually defined or measured directly, but it is understood as their ability to maximize productivity and yields from factors (wages and profits) on a certain level. For monitoring of the trends in maximization of the firms yields, there are sometimes used the indicators of foreign trade.

In the second approach (environmental/systematic), competitiveness is seen as optimisation of the economic environment and system. Also in this approach, the actor of national competitiveness is the competitive ability of firms (in the sense of maximisation of yields from factors – wages and profits). However, competitiveness on the firm/enterprise level is not perceived as derived from the subjective internal efficiency, but it is the environment in which the firms exist (impulses of the competitive market, resources granted by the capital market or labour market, the duality of inputs, infrastructure etc.), which is regarded as the basic one. As a consequence of this, competitiveness depends on the fact whether the home labour is able to maximize its incomes by becoming interconnected with the mobile capital resources to ensure its maximum profitability. This approach includes to a higher level the characteristics of globalisation, namely the mobility of capital, and the flexibility of firms in choosing and changing allocation of their activities, so that the individual locations then compete in attracting and keeping the mobile investment resources.

The third approach (capital development) perceives competitiveness as depending on the ability of economy to accumulate human and physical capital. The ability of the national industry to accumulate the technological, human and physical capital is understood here as the key ability for forming of its long-term competitiveness. Competitiveness is seen here rather implicit – as an ability of firms to earn yields from production factors in international markets. This approach is the combination of the above-mentioned approach in the area of the basic capital formation and its development.

The fourth approach sees competitiveness as an area in which further research is necessary using different analytical tools. The studies presenting this approach search the different aspects of competitiveness by a considerably selective and eclectic way. They describe the complexity of the subject and the difficulties to reach clear analytical conclusions, namely if their conclusion is to be supplying certain recommendations.

According to Hatzichronoglou, these approaches are not adopted ether by the accessible literature, or theories or mutually by the ideological schools. Each approach aims at different aspects of competitiveness and issues into different types of recommendations regarding economic policies. Most of these studies do not supply a precise definition of competitiveness, neither do they offer a global overview with clear differentiation between the main and secondary goals and the factors explaining and explained. Furthermore, they even do not stress the questions on measuring and the relevance of the used indicators.

DEFINITIONS

The OECD uses a working definition of competitiveness as “the ability of the society, branches, regions, nations and supra-national entities to generate relatively high levels both of yield from production factors and their utilisation on sustainable level at their simultaneous submitting to international competition“.

Another from the most often accepted definitions

of competitiveness, which was first expressed by the Presidential Committee for Competitiveness (U.S.) in 1985, is that "National competitiveness is the level of the ability of the nation to produce, under the conditions of a free and fair marker, products and services which would survive the test of international markets, at the simultaneous improvement (increasing) of the real incomes of its citizens".

Another used definition also is as follows: "International competitiveness is understood as the ability of a country to ester with its tradable goods and services into the foreign and international markets and to get from such international exchange comparative advantages".

From the mentioned definitions, there issue three basic areas of competitiveness. Chat regards international competition, therefore the conditions at the export markets, it regards in the given moment the given variable and there are only very few countries which are powerful enough to influence directly the national policy. Mostly they have to be accepted (in the short to medium term) as they are. At the same time, these conditions influence the evaluation of competitiveness and even, we can say, the competitiveness as such. To the extent in which the country closes its markets for protection from the foreign competition, it is able to sustain for a certain time competitiveness artificially, or at lest to sustain it seemingly. At the same time, as a consequence, the really competitive firms or countries (which would best fulfil the criteria of competitiveness with the absence of discrimination) would appear as less competitive.

Another area is the ability to generate relatively high level of both yields from production actors and their utilisation on sustainable level or increase of the real incomes; what in fact is one of the priority goals of the state. Furthermore, an economy which is able to generate not only high profits, but also high yields from production factors is more competitive than that which is able to generate profits only at the cost of low yields from production factors. Similarly, it would be competitive if its productivity improves as a consequence of the growth of yields rather than owing to the decrease of the employed labour.

What regards the ability to sell goods and services at the international markets, it regards the area, which is influenced by a series of powers. It is then rather a considerably complex entity, which can be followed by two basic ways, which, however, might not reach the same results.

The first way is the endeavour to define competitiveness on the base of measuring the outputs/results, such as the trade balance, the share in the world trade with final goods or goods demanding for the research and development etc. The second way is to devote competitiveness on the base of its resources, i.e. the growth of labour productivity, level of savings and investments, research and development, development in the human resources area and the like. In this approach, there is obvious the enormous scope of factors which influence this area and which might thus be followed.

As an example, there might serve a considerable complexity of the International Institute for Management Development (IMD) in the Weiss Lausanne, the results of which are Publisher in "The World Competitiveness Yearbook". In this, competitiveness of the selected countries is evaluated based on 223 criteria divide into 8 groups. This evaluation is regarded in the sphere of direct investments as having a similar influence as rating in the sphere of portfolio investments.

Considerably wide is also the approach of M.E.Porter in his book "The Competitive Advantage of Nations", which starts with 4 national attributes forming competitiveness:

1) production factors, 2) demand, 3) the relation between 1) and 2), 4) supporting sectors, enterprise strategy, structure and rivalry. Then for example production factors are further dividend into factor equipment, hierarchy among factors, production factors formation and production factors disadvantages, and these are further described by a series of indicators.

Besides the mentioned structure (according to results and resources), it is possible to divide the measurement further on the level on the whole economy and on the level of the individual sectors, and that at different levels of aggregation and desegregation. However, this regards rather measuring based on economic results, i.e. outputs. Further, we can speak of the factors explaining and explained when the result indicators can be rather described as explained and the resources of competitiveness, as the name indicates, as the explaining ones.

Speaking on following the individual sectors and commodities, it is suitable to mention their certain division, which is based on the level of the individual production factors utilisation and which expresses specialisation in harmony with comparative advantages, by which an obvious interconnection between following competitiveness of the mentioned two groups emerges. Commodities are then dividend into three groups:

The first group is so-called **Ricardo goods**, which are produced namely based on the natural equipment of the country that means the climatic or geological conditions or natural resources. There belong namely all agricultural products and products of mining.

The second group might be called **Heckscher-Ohlin goods**, which demand, compared with the previous group, a higher share of labour or capital. If we presuppose that production function is identical in the whole world, then comparative advantage (in other words, production allocation) usually depends only on the momental differences in the production factors relative prices given by the differences in their equipment. Into this group, we can place the products from leather, wooden and paper products, clothes, footwear, optical appliances etc.

The third group – **Schumpeter goods** – includes products, which need a relatively high share of the third

factor – human capital. These products are the result of the activities in the area of research and development (R&D). This group can be further divided into two groups, i.e. mobile and immobile Schumpeter goods.

In the case of **immobile Schumpeter goods**, it is useful or necessary to perform research and development and production at the same place for the reason of local saving from assortment (economies of scope). There belong for example machinery and equipment, products of aircraft and cosmetics industry.

In case of **mobile Schumpeter goods**, research and development can be spatially divided from production. As an example, we can use a production in five basic steps, when four of them demand high technological knowledge while the fifth (assembling) is labour demanding. Thus, the latter is usually performed in countries with sufficient labour force and comparatively lower labour costs. There belong certain chemistry, electrotechnics, office equipment etc.

From that, it follows that it is rather developed countries, which should reach better results in the area of Schumpeter goods, compared to the Ricardo and Heckscher-Ohlin goods. It should be added, that in the area of mobile Schumpeter goods, developed countries are under the pressure of developing countries. Of course, comparative advantages could and do change in time. It is connected also with the production cycle of the product. With the top technology becoming common –standard, its need of human capital is decreasing to the point when it becomes that low that the production moves to the area where there is better equipment of labour or capital. Thus, Schumpeter goods may shift to the group of Heckser-Ohlin goods.

MEASURING BASED ON OUTPUTS/RESULTS

This approach issues from the reached results of the given country foreign trade, namely what regards the total volumes of export, be it for the economy as a whole or the individual branches, eventually even smaller segments. However, there belong also the reached prices and other indicators. For example, even the trade balance structure itself has a testimonial ability regarding competitiveness of the country, respectively its comparative advantages, in the area of certain branches or products. The importance, i.e. the share of such individual groups, then speaks on the level of this comparative advantage. The rate of growth of the individual groups compared to other results and the whole can then give testimony on the change of the investment.

The following list describes only some of the selected indicators. Into the group of the competitiveness indicators acquired on the base of results could be further included also other indicators, such as competitiveness of import, profitability of export related to profitability of import etc.

TRANSFORMATION EFFECT OF ECONOMY

It expresses the ability and level of the imported raw materials valuation (i.e. value added by processing) through realised export of the processing industry products. It is computed as the difference between the value of final goods and the raw material import per one inhabitant realised as the difference of the groups 5,6,7,8 and the groups 2 and 3 of the SITC classification per one inhabitant (for international comparison usually in USD).

The higher is this value, the better, of course, considering the fact that it is empirically proved that higher values are usually reached on one hand by smaller and on the other by economically more developed countries, where trade plays a more important role with regard to the share in GDP and for which there is characteristic the orientation on the products with higher level of finalisation and also products demanding research and development.

AVERAGE KILOGRAM PRICES

Average kilogram prices reached in export or import present a synthetic indicator, which is computed as the rate of the value of export or import in certain currency to the value of the corresponding product in kilograms. It can be computed for the given products, branches or sectors. Thus constructed indicator includes (i.e. describes) material demands of production, qualitative factors like technological level of products, reliability, aesthetic value, goodwill, payment condition, terms of delivery etc., further, the quality of marketing and commercial work of the exporter, eventually the quality of the representative net as well as the conditions of realisation in the given market. An obvious disadvantage is then the impossibility to quantify the impact of the individual elements.

The value of such an indicator is then of importance, as well as other indicators, if it is compared in time and internationally, i.e. by following development and comparing the position of export with foreign competition. Higher value of the indicator usually shows the ability of products/sectors/producers to export at higher prices owing to the above-mentioned factors. It considers only the goods, which are really exported; therefore it does not include that which is not, for whatever reasons, not competitive.

RCA

It is obvious that the data on export could not at the same time include also the level and changes of competitiveness in the domestic, internal market, what can be estimated on the base of the import development. It is also necessary consider, besides the competitiveness itself, also export, i.e. also foreign demand which depends on the development rate of foreign trade, and also factors influencing import, which in turn depend

on the growth rates of domestic economy.
These trends are usually incorporated in the development of the total import and export. All these factors are then included in the following indicator – RCA. It compares the sectoral exports and imports and these are corrected by the situation in the total exports and imports, which represent the above-mentioned relationships.
The RCA (Revealed Comparative Advantage) indicator issues from the classical theory of foreign trade and the theory of comparative advantages. It is computed as the rate of the sector export and import to the total export and import, i.e..

$$RCA \quad \ln \left(\frac{\frac{EXi}{IMi}}{\frac{\sum_i EXi}{\sum_i IMi}} \right)$$

This indicator enables to analyse the international competitiveness level of the given sectors either compared to other sectors or in time. The standardisation enables to compare different sectors. Positive RCA value reflects the comparative advantages of sectors /the rate of sector Ex and Im exceeds the value of the rate of the total EX and IM).
At this indicator, there is mentioned a series of conditions which are valid also for other indicators of the similar type, i.e. which are based on similar data. RCA reflects all distortions in trade flows. The implicit prerequisite of the analysis is that the exports of the country are the object of the same level and structure of protection in every aimed country, what is not always self-evident and the results as well as competitiveness are to a certain extent influenced by it. To be able to derive the correct conclusions, it would be necessary to have sufficient information on trade policy applied at every sector.
Further, it is important to differ exports from profits. If an enterprise sells at a low price with the aim to reach a high level of the capacity utilisation or with the aim to sustain the market position etc., the profits might be stable or even none. In such case, international competitiveness of a firm shows to be rather lower than higher.
An important note also is that the international competitiveness is not reflected only in exports. Domestic sales are also important (and the indicator takes them into consideration) and limitation only to the external part of the phenomenon might underestimate the sector competitiveness, even if the changes of competitiveness in the domestic market will be reflected in the RCA.
It is also necessary to take care of the aggregation level and the followed year. A too big aggregation cover different development inside the sector, and a too small one might supply a too great scope of little relevant information. What regards time, it is necessary to take into consideration the impact of economic cycles.

The above-mentioned division of economic production and its explanation is supported by concrete results based on the RCA indicator (Table 3).

As is obvious from Table 3, the selected countries had generally comparative advantage in the area of the Schumpeter goods production with the exception of Spain, which had comparative advantage in some of the Ricardo goods, Heckscher-Ohlin goods and road vehicles. This might seem surprising, nevertheless it regarded, compared to the remaining countries, an economically less developed country. In other groups, comparative advantage was weaker and the RCA values often even negative, in certain goods, exports were even not registered at all.

These results support the prerequisites of the classical foreign trade theory. It is then almost impossible for a country to reach positive sectoral balances in all sectors. In the logic of foreign trade, it is to export certain goods as well as o import others. For example, it is obvious that the modern industrial countries without the sufficient natural resources import a considerable amounts of oil and are, on the other hand, usually competitive in the area of developed products with high value added, demanding in research and development.

Tab. 1. : RCA for Germany, Spain, the USA, South Korea and Japan

SITC		USA	Japan	S. Korea	Spain	Germany
	Ricardo goods					
1	Meat and meat products	0,58	-	-	0,46	-0,965
3	Fish, crabs and molluscs	-0,326	-	1,12	-1,004	-
5	Vegetables and fruit	0,14	-	-0,353	-1,759	-2,011
11	Drinks	-	-	-	0,61	-0,739
12	Tobacco and tobacco products	-	-	-	-	0,11
32	Coal, coke and brickquettes	-	-	-	-	-
33	Oil, oil products	-1,939	-3,606	-1,865	-1,08	-1,894
	Heckscher-Ohlin goods					
61	Leather, leather products	-	-	0,35	0,56	-

65	Textile fibres, textile	-0,117	0,07	1,18	0,01	0,06
67	Iron and steel	-0,693	0,88	0,41	0,55	0,08
84	Clothing products and supplements	-1,85	-	3,3	-1,07	-1,142
88	Photographic equipment, optical products	-0,453	1,04	-0,345	-1,43	-0,085
	Non-mobile Schumpeter goods					
71	Electric energy production equipment	0,34	1,38	-1,2	-0,21	0,4
72	Special machinery	0,56	1,46	1,47	-0,46	0,95
73	Metal-operating machinery	0,15	1,44	-	-0,24	0,76
74	Machinery and equipment of general use	0,43	1,35	-0,9	-0,27	0,67
78	Road vehicles	-0,495	2,1	1,54	0,632	0,51
87	Special scientific and management equipment	0,85	0,37	-1,48	-0,786	0,43
	Mobile Schumpeter goods					
51	Organic chemicals	0,35	0,03	-0,667	-0,403	0,26
52	Inorganic chemicals	0,41	-1,19	-	-0,125	0,22
58	Plastic matter in non-primary state	1,1	0,8	0,53	-0,157	0,32
59	Chemical means and products	1,12	-0,42	-	-0,811	0,53
75	Office machinery and equipment	0,03	1,23	0,64	-0,649	-0,693
76	Phone and answering equipment	-0,054	1,84	1,47	-0,588	-0,343
77	Electrical equipment	0,12	1,15	0,3	-0,127	0,27

Source: U.N., 1993

MARKET SHARE

Another possible evaluation of the international competitiveness of a country are market shares of their sectors in the world trade, what corresponds to one of the priority goals of enterprise – expansion, growth. Growing market shares are then generally regarded as a proof of the growing competitiveness. The simplest method is listing of the world market shares, when national exports are divided by the total exports of the sector in the world (or in frame of the given group of countries, as elaborated for example by the OECD), i.e. the market share of both the country and the sector:

$$MSij \quad \frac{EXij}{\sum_{i}^{n} EXij}$$

At that, there are not considered the sales of enterprises in the home markets, what in case, when the sector in the frame of the economy satisfies by its production the domestic demand, underestimates its market share. Again, the indicator does not speak of the important factor, i.e. of profitability. A high market share need not always mean high profits, what might make the sufficient competitiveness of the sector doubtful. Nevertheless, if such a share develops for a sufficiently long time, this doubt might be suppressed.

Beside the above-mentioned simple way, there exist also other methods using market shares. One of them is the constant market share method (CMS), which tries to divide the changes in market shares into the structural part (be it in relation to regions or commodities) and the competitive part. Then it tries to "freeze" the structural part and with the aid of this, to ascertain the development of competitiveness. On the other hand, another method puts stress to the quickly growing markets and, in difference to the previous method; it follows the ability of sectors to adapt to the structural changes. Then the country which reaches high and growing market shares in the quickly growing markets is regarded as a very competitive.

RELATIVE STRENGTH OF SPECIALISATION

It regards an indicator of a similar character as the above-mentioned ones and it is therefore aimed mainly at the evaluation of the individual sectors etc. It expresses the rate of the share of the country in the total export of the given product/branch and the share of the country in the world export. If the share of certain segment of domestic export in the total world export of the same is higher than the share of the domestic export in the world export, it means a higher market shares in the specific area than the total, therefore, there can be presupposed a certain specialisation of the given economy in this area.

The formula then is:

$$K \quad \frac{\frac{Xij}{\sum_{i} Xij}}{\frac{Xi}{\sum_{i}\sum_{j} Xij}}$$

where Xij = export of the product j from country i

$\sum_{i} Xij$ = total world export of the product j

Xi = export of all sectors of the country i

$\sum_{i}\sum_{j} Xij$ = total world export

It testifies, as follows also from the name, on the relative specialisation of economy in a certain branch or sector, owing to which a certain competitive advantage in the frame of the followed area could be estimated. Usually it is utilised in evaluation of the area of technologically demanding branches.

PROFITABILITY

An indicator omitted in the previous indicators, which, however, issues from the aims of economic subjects and is also often used for defining its successibility, is profitability. There, we can include the indicators of the Processing Industry Profitability. The first of them presupposes the availability of the data on the sector GDP, since it is defined as:

$$PR \quad \frac{YM}{ULC}$$

where YM = value added deflator for processing industry
ULC = index of the unit labour costs in processing industry.

Its principle lays in the fact that good competitiveness enables producers to reach higher profits. However, the problem is that the deflator contains, besides labour costs and profit, also other items. For example, if the utilisation pf capital, and therefore also its weight in the indictor, increases to the detriment of labour, profitability increases. Further limitation of the indicator is its usual sensibility to the economic cycle, when a considerable fluctuation of profits occurs.
The related indicator - Processing Industry Export Profitability - uses instead of deflator the unit value of export

$$PRX \quad \frac{PX}{ULC}$$

Compared to the former indicator, this one furthermore suffers from two disadvantages. On the one hand, unit values of export are based on gross value, i.e. they reflect both the changes in the non-labour input costs as well as the changes in the value added deflator. This is especially important in case when the commodity prices change considerably or when there occur changes in the exchange rate, which influences prices of the foreign inputs. This could be nursed for example by combining of the unit labour costs index with the raw materials price indices etc., if the suitable index could be found. However, the main and much bigger problem connected with it is that the important input of the processing production are non-tradable services, and only few countries have got indices usable for these purposes.
Another problem might be the different structure of export and domestic processing production, to which there might be connected differences in the labour costs development according to the fact whether the given enterprise/sector exports or not.

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