

A POSSIBLE INTEGRATION OF INTERNATIONAL INDICATORS FOR COMPETITIVENESS IN PORTER'S DIAMOND MODEL

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Abstract

The Global Competitiveness Index lists the strengths and weaknesses of the countries. Since regional disparities are also crucial in business administration and in macroeconomics for a measure's success or failure, the investigated countries are assigned to an economic category of countries later on in the GCI Parallels of the obstacles may be geographically illustrated or localized. The strong heterogeneity of economic regions or categories is unlikely to allow a consistent strategy for, for example, the European economy as a whole. It is assumed that clusters can be formed in order to develop individual strategic plans for the respective economic sectors.

Keywords

Cluster, Diamond Model, Porter, Competitiveness

JEL Classification

L16, L20, M11, O31

Introduction

This article attempts a possible combination of analysis of the Global Competitive Report (GCI) with the Porter Diamond Model. This model illustrates in a more general way the competitive factors of companies or institutions within a country. It is attempted to achieve applicability of the Diamond Model in combination with the competitive factors measured in the GCI. It is committed to identifying strengths and weaknesses of co-operating countries and their economic sectors. This can serve to develop measures that will benefit all co-operating countries and their economic sectors and bring about an improvement in the situation.

1. Factors of competitive and innovative capacity according to Global Competitive Report

The following factors influencing competitiveness and innovativeness are seen by the European economy across all country categories after evaluation of the Global Competitiveness Index (figure No.1):

- **Financing** is needed in all sectors of European industries to be competitive. Unfortunately, it is more difficult for start-ups and smaller companies to obtain credit than for larger companies with the same profitability (European Commission, 2014, pp. 23-26).
 - **Innovations:** Competitiveness is fueled by innovations in efficiency and science, leading to highly skilled workers (European Commission, 2014 p.28).
 - **Public administration:** Competitiveness requires cost reduction and transparency in public-sector transactions. Greater public-sector performance will lead to more growth in private-sector companies. Cumbersome and costly tax rules, unstable legal systems and corruption are the most damaging to private sector growth (European Commission, 2014 p.52-53).
 - **Access to foreign markets:** Small and medium-sized enterprises must be supported in international markets. They are less likely to be abroad and therefore can participate less in the overall market there. Regulations that support the business environment and support access to capital markets and knowledge while increasing profitability and promoting efficiency help these companies to export (European Commission, 2014 pp. 47-48).
 - **Innovation and energy prices:** Innovation is often accompanied by energy expenditure (Hauschildt, J., Salomon, S., 2011, p.362). Energy prices in the EU are the highest in the world. This has negative effects on competitiveness. The developments in energy efficiency have yet to compensate for rising energy prices. Therefore, efficient energy markets are crucial for a competitive price (European Commission, 2014 p. 37).
- Better consideration of the competitiveness of the entire European (EU and non-EU) industry is possible using the index parameters of the Global Competitiveness Report 2014-2015. This index is divided into three subindices, which include the following factors:

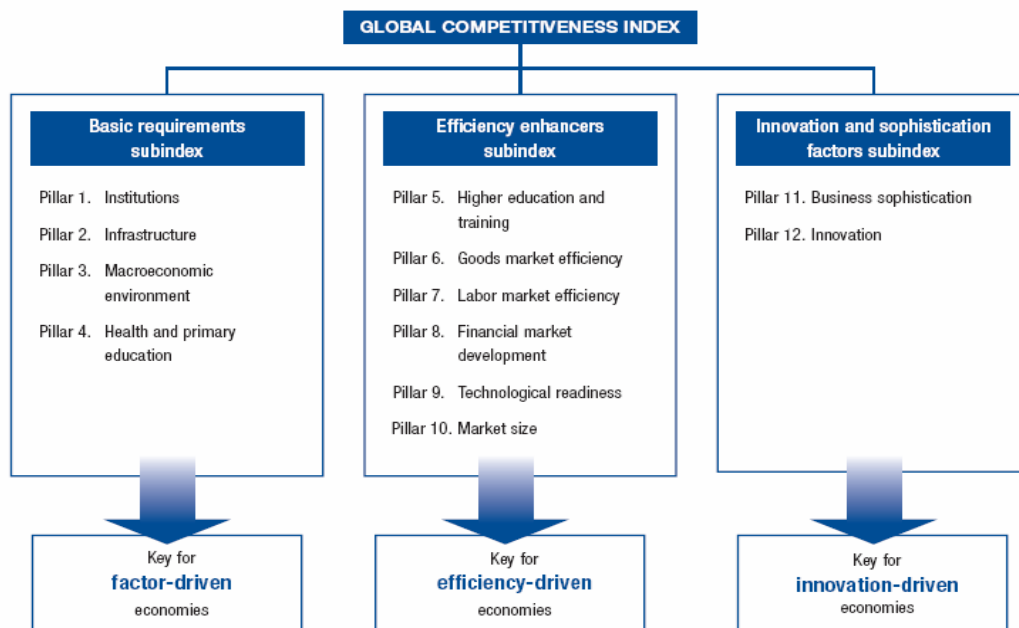


Fig. no.1. Factors of competitive and innovative capacity
 Source: *The Global Competitiveness Index Framework, 2014-2015*

Subindex 1: Basic Requirements and Needs

The prerequisites that form the basis of every functioning economy are considered to be the basis of action. Without the fulfillment of these standards, a country cannot be further

developed. They play a role as a guarantee of stability and serve as the foundation of any further action. The basic requirements include the following measurable factors:

- Institutions
- Infrastructure
- Macroeconomic environment
- Health and primary education.

The term “**institutions**” is summarized as: property rights and protection of intellectual property, distribution of national wealth, trust in politics and legal system, fight against organized crime, business ethics and anti-corruption, investor protection, compliance with standards. “**Infrastructure**” includes the quality of transport and communication routes as well as the supply of electricity. The “**macroeconomic environment**” represents the gross domestic product, the public budget and the inflation rate as well as the country grading. In the “**health and primary education system**”, the rates of malaria, tuberculosis and HIV as well as the mortality rate of newborns and life expectancy are shown. Furthermore, registrations in primary schools and the quality of primary education are assessed.

Subindex 2: Efficiency enhancing factors

Efficiency-increasing factors can be considered to be those which already give to the existing basic structures an improved form and ensure that resources do not remain unused, but that they are managed profitably and in a long-term oriented manner. They serve to update and pass on market-specific knowledge to the actors and to adapt the country-specific conditions to constantly changing market needs. They are to be listed as follows:

- Higher education and training
- Goods market efficiency
- Labor market efficiency
- Financial market development
- Technological maturity
- Market size

Higher education and training includes the assessment of second and third forms of education, as well as the accessibility and quality of mathematical and academic teaching and management education. In addition, Internet access in schools and staff training are assessed. **Goods market efficiency** refers to the local competitiveness of goods, market power, anti-monopoly regulations, taxation on investment incentives and profits (Săvoiu & Siminică, 2016). Furthermore, this factor provides insight into the assessment of the steps and days needed to start a business, costs of agricultural standards, trade barriers, power of foreign ownership, impact of directives on foreign investment, customs clearance, percentage of imports in relation to GDP, Buyer experience and strength of customer orientation. **Labor market efficiency** provides information on the cooperation between employers and employees and whether flexible wage systems exist? Hiring and dismissal behavior as well as dismissal costs, continued salary payments, effects of taxes on work incentives, cost and productivity relationships, trust in management, possibilities to attract and retain talent as well as the gender ratio in the labor market.

Financial market efficiency: Availability and affordability of financial services providers, local financial marketability, access to bonds, availability of debt capital, banks' reputation, regulation of the financial markets, capital investor rights.

Technological maturity: Access to the latest technology, corporate technology levels, foreign investment and technology transfer, Internet consumption, Internet connectivity, mobile network strength. Market strength is the size of the domestic market, accessibility to foreign markets, gross domestic product and exports in relation to the gross domestic product.

Subindex 3: Innovation and Sophistication Factors

The following and last measurable factors represent the extent to which an economy is in a position to develop new ideas in addition to pure added value and to establish itself globally as a development location. Here are the following factors:

- State of development of the economy
- Innovation (World Economic Forum, 2016), (European Commission, 2015)

The **state of development of the economy** is measured by the number and quality of local providers, the use of competitive advantages and the control of international distribution, marketing strength and willingness to share knowledge. The **innovation** sub-index is measured by the access to innovation, quality of scientific teaching, corporate spending on research and development (R&D), collaboration between companies and universities in R&D, transfer of advanced products by the government, availability of engineers and scientists, number of patents.

2. Factors of the Diamond Model by Porter

To investigate how the indicators of the GCI combined with Porters Diamond Model respectively the indicators of the GCI can be assigned to the respective Porter's determinants. The determinants of the Diamond Model are broken down as shown in figure No.2:

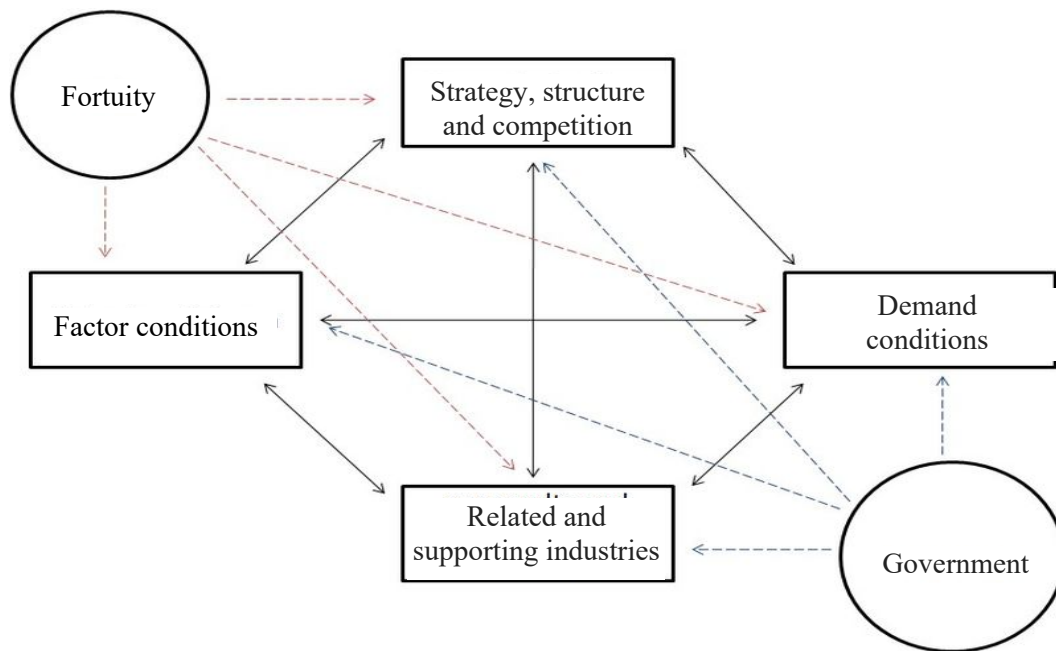


Fig. no. 2. Determinants of competitiveness (Porter 1990)

Source: Endres, 2008

Factor conditions:

- Human resources
- Material resources
- Intangible resources (know-how)
- Capital resources (access to capital)
- Infrastructure.

Porter points out that advanced factors, called human and physical capital, are more important than natural resources because they can paralyze, from less innovative pressure (Porter, 1991, p. 149).

Demand conditions

Porter distinguishes between quantitative and qualitative demand. The quantitative demand provides information about the market size and potential market growth of a region. Qualitative demand determines the level of claim of the committed market. Domestic quality improvements of a product can not be offset by foreign competitors in the long term by price advantage (Porter, 2014, p.284).

Related and supporting industries

Closer upstream and downstream industries promote rapid communication with each other and bring innovation synergies with them. A strong supply industry supports and accelerates the downstream production process. At the same time, synergy effects are achieved when related industries use the same technologies or jointly develop existing technologies and processes, thereby achieving economies of scale and scope (Macharzina, Oesterle, 2002, p. 70).

Strategy, structure and competition

- Corporate and management models
- Leadership styles and organizational structures
- Domestic competition as an incentive to internationalize.

The leadership structure prevalent in a company is decisive for the degree of innovation and the speed of a company. Medium-sized companies can often decide faster than a large corporation which measures will be implemented in the future. In authoritarian or compartmentalized markets, regulatory action is more rapidly decided and implemented than in Western open market democracy (Boettcher et al., 1992, p.226).

3. Classification of the sub-indices into the Diamond Model by Porter

The evaluation criteria of the GCI sub-indices are assigned to the respective determinants according to Porter as shown in figure no.3.

If one leads the determinants and the evaluation criteria to each other one shows that they are less possible to delineate in the sub-indices, but the evaluation criteria within the determinants. It can be seen that all listed ranges of sub-indices can be integrated into Porter's diamond model. Thus, above all, the non-state factors can certainly be measured and strategies derived to overcome existing obstacles and expand strengths. A combined analysis of the two analyzes allows for a macro-strategic view of competitiveness and its fields of action in different countries and categories.

Factor conditions

From GCI Subindex 1:

- Institutions
- Infrastructure

From GCI Subindex 2:

- Higher education and training opportunities
- Macroeconomic environment
- Financial market efficiency
- Health and primary education

Demand conditions

From GCI Subindex 2:

- Product market efficiency
- Technological maturity
- Size of your own market

From GCI Subindex 3:

- Degree of innovation

Related and supporting industries

From GCI Subindex 2:

- Labor market efficiency

From GCI Subindex 3:

- Degree of innovation

Strategy, structure and competition

From GCI Subindex 2:

- Higher education and training
- Product market efficiency in the sense of customer orientation
- Labor market efficiency

State

From GCI Subindex 1:

- Institutions
- Infrastructure
- Macroeconomic environment

From GCI Subindex 2:

- Product market efficiency
- Labor market efficiency

From GCI Subindex 3:

- Degree of innovation

Fig. no. 3. Classification of the sub-indices into the Diamond Model by Porter

Conclusions

It is assumed that the respective strengths and obstacles in cross-border economic clusters are similar and therefore a catalog of measures for this cluster can be developed to remedy the situation. If no uniform picture emerges in a cluster, measures must be developed which can bring about the respective changes in the individual countries within this cluster. In his work, Benner clearly states: "Cluster policy is characterized by the targeted use of measures of various sub-policies that explicitly or implicitly, directly or indirectly consciously pursue the goal of long-term influence on sectoral and spatial economic structural change." Benner (2012, p. 85). However, the determined change approaches should be broken down to standard corporate measures and the required political influence should be kept as low as possible in order not to become too politically dependent on action.

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