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Master's Thesis

Domestic Competition and Export
Performance
– The case of South Korea –

국내 산업내 경쟁 정도와 수출경쟁력의 관계:
한국의 사례를 중심으로

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Domestic Competition and Export Performance

– The case of South Korea –

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Abstract

With the globalization the activities of the Multinational corporations lead to higher concentration of different markets. The link between the domestic market concentration and export performance was studied before, but there is no unilateral approach to how they affect each other. In the case of South Korea there is **the** evidence that high domestic concentration increases its international competitiveness. In this work we are checking this notion with the usage of the five-digit industry panel data for the period 1990–2018. Ordinary least squared with fixed effects are used as the main model and later the obtained results are being checked with the implementation of the two-stage-least-squares, accounting for the possibility of the simultaneity bias between competition on the domestic market and global performance. The final results show that over the years Korean market has matured and now high concentration and absence of competition are hurtful to the industry's exports. Moreover, additional variables of labor productivity and research and development intensity are positively related to the international performance and should be supported by the governmental policies and individual company efforts.

Keywords : market structure, export performance, concentration, panel, competition, domestic rivalry, national champion

Student Number : 2018–26009

국문 초록

세계화와 함께 다국적 기업의 활동은 다양한 시장의 더 높은 집중으로 이어집니다. 국내 시장 집중과 수출 실적 사이의 연관성은 이전에 연구되었지만 서로에게 어떤 영향을 미치는지에 대한 일방적인 접근 방식은 없습니다. 한국의 경우 국내 집중도가 높으면 국제 경쟁력이 높아진다는 과거의 증거가 있다. 이 작업에서 우리는 1990-2018 기간 동안 5 자리 산업 패널 데이터를 사용하여 여이 개념을 확인하고 있습니다. 고정 효과가 있는 일반 최소 제곱을 주 모델로 사용하고 나중에 얻은 결과를 2 단계 최소 제곱의 구현으로 확인하여 국내 시장에서의 경쟁과 글로벌 성과 간의 동시성 편향 가능성을 설명합니다. 최종 결과는 수년에 걸쳐 한국 시장이 성숙해 왔고 이제 높은 집중력과 경쟁 부재가 업계 수출에 해를 끼치고 있음을 보여줍니다. 또한 노동 생산성 및 연구 개발 강도의 추가 변수는 국제 성과와 긍정적인 관계가 있으며 정부 정책 및 개별 기업의 노력에 의해 지원되어야 합니다.

Keywords : 시장 구조, 수출 실적, 집중, 패널, 경쟁, 국내 경쟁, 전국 챔피언
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Introduction

Competitive industrial economy is crucial for economic and social development. Due to the introduction of international cooperation, the nation's economy has no longer been independent. International trade and foreign investment provide both opportunities and threats. Export activities are of great importance for different country's performance characteristics. That explains significant number of works assessing the successful export determinants. One of the directions of the existing research is the link between domestic market structure and international economic activities.

The ultimate goal of all the studies related to this field is to determine ways of improving the international competitiveness of the country or industry, provide a guidance for the economic policies and answer the concerns related to the trade balance imperfections as they are focused on the increase of the domestic exporting. In the terms of the global science, relation between domestic market structure and competitiveness in the international field doesn't have a unilateral approach. There is a big variety of theories as well as estimation models spread over the countries and time. None of the views has yet been recognized as universal.

Generally speaking, there are two mainstream views in the literature about the possible effect of the domestic market structure on the performance of the global markets: national-champion rationale and domestic rivalry. The reasonings and estimation results may vary from an author to other author but the core ideas stay the same.

The first one – national-champion rationale – sees big scales as one of the main factors determining large shares in export markets. On the other hand, domestic rivalry believes that domestic market competition provides a required pressure, that makes companies improve and innovate, which helps them to be successful on the international markets. Most of the empirical studies support the second theory, however, the national-champion rationale has a more solid theoretical foundation.

Currently the interest of the scientists has sparked again due to the increase in the market concentration in many countries all over the world. The increase is more prominent for the advanced economies and within them for more productive and innovative firms (International Monetary Fund, 2019). So far, the economic effect was not sufficient, but if this trend keeps on, the researchers expect a decrease in investment, lesser innovations, lower labor income shares and consequently – higher income disparity, negative economic growth. Even though, most of these factors have been globally observed for the past 30 years and the increase in the corporate power has been taking place around the same time period, the correlation between these two processes is still unclear and some effects are rather ambiguous. While some authors argue that it happens due to the consequences of the increased intensity of MNC's activities, others try to analyze the scale of that phenomenon and predict possible ways of its development.

Korea's growth has been explosive. Its manufacturing sector grew at a real rate of 20% over 1966-77, total 900% increase. Prior to the 1980s, Korea was protectionist, it subsidized firm growth encouraged mergers and interfirm agreements. Its industrial policy was notable for its active intervention, strong export orientation, and bias towards "bigness" in order to create domestic profits to fund investments and export expansion. In 1981 Korea started to reverse its pro-market power policy, passing its first antitrust law. The previous policy may have aided to take-off, but power seems less desirable as the economy has matured. But the legacy of high concentration remained (Jeong and Masson 1990).

However, many scientists are alarmed that this rapid growth has been showing signs of slowing down. In the historical perspective it may be seen that eventually every case of a skyrocketing of the economic growth came to an average for the current development stage rates. Nevertheless, depending on the factors concerned and policies applied it may still be higher than average or lower. Therefore, it is important to know all the possible ways of providing the solution to that problem.

Inspired by the above-mentioned factors, we are aiming on studying the link between the domestic market structure and international competitiveness of Korean manufacturing industries. Our main goal is to find the type of interaction of these two factors on the specific market that can serve as a solid basis for further policies development and economic growth. We will be using the existing theory base, so our main academic contribution is in the provision of one more empirical evidence to the unending dispute on the matter.

Our empirical model is based on the recent works on the subject. In general, all the empirical works are built in a similar way, some measure of export performance (e.g., world market share, net exports, export revenues) is regressed on some measure of domestic rivalry (either four-firm concentration ratio or Herfindahl-Hirschman-Index (HHI)) and controlled with the addition of other different factors that can influence global performance. Some of the scientists are also concerned about reverse causality between domestic market structure and success on the international markets. Export activity increases the average level of industrial output and profits, because it leads to the exit of the inefficient firms and the expansion of the more productive firms (Greenaway and Kneller, 2007).

In the framework of the research we will build a five-digit industry level panel, rather than cross-sectional, dataset. This will help to better capture the relationship in case of heterogeneous goods over 1990-2018.

The structure of the thesis is organized as follows:

There are two major chapters. The first one provides theoretical background for the studied phenomena. The first half of the chapter is mainly focused on the domestic market structure, different types of it, their benefits and drawback, possible effect on the economy and other important characteristics. While the second part of the chapter penetrates deeper in the interaction under consideration and provides a brief overview of the existing theoretical concepts together with some of the empirical results, dwelling further into the details of the most used estimation models providing the comparison of the existing literature on the topic by the key moments of interest.

At the end of the first chapter we provide a brief insight into the history of the Korean economic development.

Through a clear understanding of the available literature and environment on the market under study, the second chapter will present our empirical model, with a thorough description of all the used variables. A logical proceeding to the second half of the chapter are the empirical results with our interpretation of the findings together with some assumptions regarding them. Later we are widening and complimenting the main model in order to check for the robustness of the obtained results. And, finally, based on the findings certain policy implications are provided.

1. Theoretical background

Current research deals with the problem of the interaction model between the domestic market structure and global competitiveness for the case of South Korea. In order to be able to make some assumptions, work with the real-world data and conduct the analysis we need to get a profound understanding of all the components involved. They can be divided into three big groups: the first one covers types and characteristics of existing market structures, the second goes deeper into the possible effect of market structure on the competition and the third one describes the overview of the Korean initial conditions taking into account the retrospective data and its connection to the more recent structure of the overall Korean market.

1.1. Domestic market structure

In the modern economy it is common to distinguish four types of market structure based on the level of competition within the industry. In ascending order, starting from the small market concentration, these types are: pure competition, monopolistic competition, oligopoly and pure monopoly (table 1). Last three types are usually referred to as “imperfect competition”. There also may be some combinations of those structures in special cases or transition periods.

On the purely competitive market companies are price takers, which means that they have no power over the market price. It happens on the markets with low entry barriers.

Monopolistic competition is very similar to pure competition with many companies and low entry barriers. However, the price is manipulated through the product differentiation and various ways of increasing the market share (e.g., advertising, image manipulation, and etc.).

In the most common form, an oligopoly is characterized by the dominance of a few enterprises in a particular branch of industry. Dominance is ensured by the fact that a small number of enterprises are constantly monitoring the supply of certain goods, so they can set their price and organize the market (Baumol 2003). There is a

presence of certain entry barriers preventing the increase in the number of acting companies.

Lastly, in pure monopoly there is only one producer that determines the price of the product, there is little to none competition making high entry barriers.

In the real world, only few markets represent a perfect competition, companies do not see themselves as price takers and are aware of their interdependence with a limited number of their competitors. However, economy as a whole and international trade in particular, mainly in manufacturing goods, are more oligopolistic than competitive. Overall, research related to the international trade will mainly deal with industrial organizations (Krugman 1999). That is why, our study will be related to oligopolistic market as well, being mainly based on classical economic literature along with articles on industrial organization.

Table 1. Types of market structure

	Pure Competition	Monopolistic competition	Oligopoly	Pure Monopoly
Price	Price taker	Price maker (limited)	Price maker (limited)	Price maker
No. of firms	Almost infinite	Many	Few	One
Entry barriers	None	Few	Significant	Significant
Interdependence	Independent	Independent	Interdependent	No competitors

With the high possibility of this study converging to the research on the oligopolistic market, it is important to inspect this market structure in more details. This type of market is of great scientific interest because it is extremely difficult to identify and prove its existence, but at the same time it is almost impossible to prevent the emergence of oligopolies. It is explained by the fact that the oligopolistic interaction between firms is some kind of agreement between top-managing representatives of the companies based on certain patterns of interaction and is not proved by any documents.

Oligopoly can be considered both from the point of view of the buyer and of the seller. Since their interests are opposite, the advantages and disadvantages of such a market structure as an oligopoly will vary for them.

For most enterprises there are the following most common positive aspects:

- technological and other barriers are high, so there is no need for constant development and introduction of technological innovations; there are no incentives to reduce the cost of production;
- barrier protection against competition with new firms.

The negative aspects are:

- a danger of oligopoly's transformation into a monopoly;
- possibility of deception on the part of other members of the oligopoly.

In turn, the following positive aspects can be identified for the buyers:

- the oligopolists are interdependent, therefore, their prices are set carefully;
- power over the price is less than in the case of the monopoly, so the market will not suffer from underproduction;
- efforts to reduce costs and value of production are taken in order to increase competitive advantages, though not so actively as in competition.

Negative aspects for the buyers:

- there is no need for constant development of technology, since there are barriers that protect against unexpected changes;
- protection by the entry barriers makes a complete competition impossible, therefore there are no incentives to winning competitive advantages (cheaper products, increased efficiency of production resources, etc.);
- danger of oligopoly's transformation into a monopoly.

The phenomenon of an oligopoly was first described in economic theory in the mid-1960-s. By this time, the governments of the leading countries of the world had made major efforts to eliminate the possibility of a pure monopoly, so in many sectors of the manufacturing and mining industries, as well as in the field of transport services the situation was such that a small number of large firms, having divided the right to

manufacture certain goods and services between them, received dominance on the national markets.

In the most common form, an oligopoly is characterized by the dominance of a few enterprises in a particular branch of industry. Dominance is ensured by the fact that a small number of enterprises are constantly monitoring the supply of certain goods, so they can set their price and organize the market. However, this definition does not clear the situation: how many companies – exactly – can create an oligopolistic market, and what kind of relationship will emerge between them in the management of the sales of goods and services?

Therefore, in more detailed definitions, which can be found in the works of American researchers K.R. McConnell and S.L. Brue (1999) and the Russian economist V.V. Popov (2016), it is noted that an oligopoly is a market structure, including a few large leaders of the market, and that is characterized by certain barriers to new entrants.

However, in this case, it is unclear how many companies can organize the oligopoly. It should be noted that the debate on this issue has been underway for over a hundred years in the economic theory. The discussion began in 1838, when Augustin Cournot was the first to develop the theory of duopoly, i.e. the industry controlled by only two companies. Thereafter, in various definitions of an oligopoly different number of firms that dominate the market are mentioned: from two to ten. To overcome this unclear statistical measure, more recent studies (Ukav 2017, Naldi 2014) have adopted a different calculation based on the concept of the Concentration Ratio (CR): if four large firms have at their disposal 40 or more percent of the market (in other sources 5 firms – 50% of the market), then we are dealing with the oligopoly.

It should also be noted that the essence of the definition of an oligopoly depends on what approach is used by the researcher: static or dynamic. For example, prior to the publication of Stigler's theory of oligopoly (Stigler 1964), this phenomenon was understood as the activity of the company, aimed at obtaining the maximum profit and carried out without the consent of other market participants, but with the

knowledge of their existence. For the first time a dynamic vision of the essence of oligopoly was offered, which lies in the analyses of the different schemes of companies' coexistence and the evidence of fraud or departing from the agreement in their relations.

K.R. McConnell and S.L. Brue (1999) introduced an important addition to Stigler's definition, offering also to consider the following fact: the oligopolies may be homogeneous or differentiated, i.e. oligopolistic enterprises can produce standardized (for example, industries that produce zinc, steel, etc.) or differentiated goods (in this case we talk about companies that produce consumer goods: cars, oatmeal, detergents, etc.).

Today two definitions given by the American scientists who were the first to pay attention to the study of the phenomenon of oligopoly in the middle of the last century are considered classical. According to E. Mansfield (1964), an oligopoly is a market structure characterized by a small number of firms and a large share of independence. In contrast to this definition, P.C. Dooley (1968) offered to pay attention to the homogeneity of the products manufactured by the oligopolists. He believed that oligopoly was a market with a few sellers who offer one type of goods or services.

In contrast to the above-mentioned definitions, another American economist George Stigler (1964) considered as the main criterion of the oligopolistic company the necessity to take into account the behavior of its main competitors in planning market activities.

Approach of G.J. Stigler (1964, 2003), the founder of the theory of oligopoly, to identify its essence through enumeration of its distinctive features has caused a number of new studies in which these distinctive features of an oligopoly as a market structure have been classified:

- a limited number of sellers and a plurality of consumers, i.e., the entire volume of demand is met only by a few companies that possess a large market share;
- differentiated or standardized products;

- the existence of actual barriers for new companies striving to enter the market: despite of the fact that these barriers are "lower" than in the monopoly market, they have similar properties that distinguish oligopoly of monopolistic competition;
- market participants' awareness of their interconnectedness, which limits their price control. Only companies that occupy a large market share, can affect the price of the goods (Stigler 1964).

Under the interconnectedness we mean that any company's actions affect the interests of its competitors, and they know it. The principle of the interconnectedness of companies operates in practice, if one of the firms in oligopoly changes factors of prices or advertising. As a result, this leads to changes in sales quantity, and, in turn, in response to these changes a competitors' firm will also start varying its prices and advertisement. Accordingly, none of the market players can afford to remain indifferent to any market changes.

There are several models of the behavior of firms in an oligopolistic market, since the choice of a particular model depends on the market reaction and offers. In order to effectively respond to changes in the market due to the behavior of the competitors, it is necessary to plan for the future. But it is difficult to pinpoint the effects of any changes, so one always needs to make different assumptions about possible alternative scenarios.

Many researchers (J. Robinson 1986; A. Dixit and J. Stiglitz 1977; R. Muley) pay attention to the fact that, in practice in many countries there are several forms of oligopolies, depending on how intensively this or that company carries out its activities in a monopolistic market, and what is the efficiency of antimonopoly legislation.

Unlike other market structures, it is impossible to single out the only one standardized form of an oligopoly. This occurs for several reasons.

The first is justified by a variety of existing oligopolies (Fig. 1). For this reason, we distinguish oligopolies using the following parameters:

- 1) The concept of product homogeneity: homogeneous (undifferentiated or classical) oligopoly, i.e. several companies offer homogeneous (undifferentiated, standardized) products to the market, and heterogeneous (differentiated) oligopolies, i.e. the case when several companies produce heterogeneous (differentiated) products.
- 2) The number of dominant firms in the market (diversity of oligopolies). For example, in the conditions of "tight" oligopoly two or three companies dominate by controlling 40-60% of the market. However, a "loose" oligopoly is also possible, when 70-80% of the market belong to six or seven companies.
- 3) The differences in the nature of entry barriers.
- 4) Features of interaction between firms: collusion (secret, implicit, etc.) or independent activities of the firms, etc.

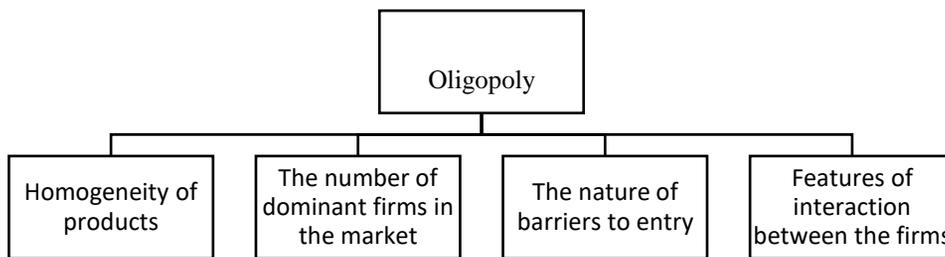


Fig. 1. Indicators of differentiation between oligopolies

The second reason for the diversity of oligopoly is mutual interdependence, i.e. the need to constantly focus on the activities of the competitor / competitors in the planning of the volume of goods and pricing.

All these indicators taken together justify the existence of different models (types) of oligopolies. However, the analysis of the approaches to the identification of the type of oligopoly allows us to say that two indicators are used as the main ones: a weak tendency of oligopolistic prices to a change, or their "rigidity" (in comparison with a pure monopoly) and consistency in price-changes and other economic activities between firms forming an oligopoly.

Nowadays, the following oligopoly models are distinguished in the economic theory (Fig. 2).

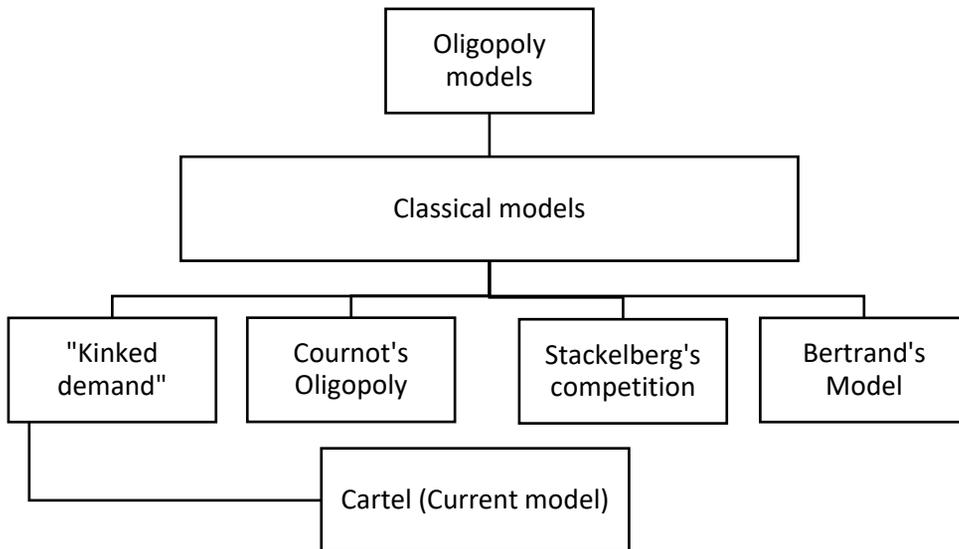


Fig 2. Oligopoly models

The first model was called "Cournot's Oligopoly" in honor of Augustin Cournot, who in 1838 was the first to consider the "duopoly", i.e. a type of economic cooperation between two companies producing the same goods and occupying a dominant position in the market. A special feature of this model is that it presents an oligopoly in a static state, because each of these two firms consider the price of the goods and the volume of production of its competitor as fixed values. As the matter of fact, each of two companies suggests that it is disadvantageous for its competing company to reduce prices or increase sales to capture a greater portion of the market, as it will inevitably lead to a price war. Without entering into a collusion, which is prohibited by the antimonopoly legislation, the firms prefer to maintain a steady position, despite the possible situations related to changes in demand or reduced costs because any actions of price changing can be estimated by the other company as the start of a price war. Thus, Cournot's duopoly is an economic model of market

competition, in which the behavior of firms is constrained by some kind of static game based on possession of full information about the competitors (Tirole 1988). The second model is called "The Kinked Demand Curve". In 1939, this model was independently described by P. Sweezy (1939) and R. Hitch, Robert K. Hall (1939). This model explains the relative stability of prices for the goods of oligopolistic industries in comparison with the goods of competitive industries, as well as the desire of the firms to choose other, non-pricing competitive practices without colluding with their competitors. The model takes its name, as the curves are depicted in a number of graphs showing the dependence of demand on price changes of one of the competing firms. The studies with the help of the kinked demand curve have shown that any change in price will not bring success to any of the companies, moreover, even if one of them wants to reduce the price unilaterally, the total costs for the production of the larger volume of goods will be more significant than the expected profit.

It should be noted that this model has been criticized by many opponents. First of all, the opponents believe that this model does not explain how the oligopolists have set the starting price, which is the initial value in the design of future graphs. Secondly, this model cannot be regarded as the main one in explaining oligopoly phenomenon, as it can only be used in cases where the knowledge of a company on the activities of its competitors is very limited. It is possible in the early stages of development of new industries or production of new groups of goods. And finally, thirdly, the price does not remain permanently rigid, even if the firms wish it. The inflation periods refute some of the indicators of this model.

The third model is a Stackelberg's model, which is a theoretical model of an oligopolistic market, created by means of game theory in the presence of information asymmetry. A special feature of this model is that firms-oligopolists have full and comprehensive information on the activities of their competitors, which, of course, is impossible in real life. The main provisions of the model are as follows:

- there is a fixed number of firms in the market;

- one of the firms is leading, it is the first to determine the volume of the goods production, which should be taken into account by the rest of the firms in their production;
- the oligopolists produce homogeneous goods;
- exit or entry of new firms into the market is not studied by this model;
- the firms have equal market power and market share;
- the firms are interested in maximum profit and do not interact.

The main difference of this model is an examination of the activities of the firms in dynamic and full awareness of each member of the actions of its competitors. The situation defined by this model is possible in the conditions of oligopoly domination when one large firm operates in the market and its share in the total volume of production output reaches 60%. Several small companies are guided by this leader and divide the remaining market. However, the idea of full independence of this firm in the market and its right to make its own decisions, presenting the productivity of other firms with a given parameter (a constant), narrows the practical significance of this model (Stackelberg 2011).

Another model, called Bertrand's model, describes the price competition in an oligopolistic market. At the same time, the behavior of the firms in an oligopolistic market, competing by means of the changes in prices for their goods, is analyzed. The conclusion that follows from the use of this model is rather paradoxical: the firms set the price for their goods, equal to marginal cost, i.e. this is similar to firm's behavior under conditions of perfect competition. This conclusion was called Bertrand's paradox (Bertrand 1883).

All of these listed models can be called classic or game-theoretic, as they were mainly created on the basis of one or two parameters and did not describe the concept of oligopoly in all its diversity.

The biggest breakthrough in the research of the essence of contemporary oligopolies and their impact on the market was made by the outstanding French economist Jean

Tyrol, who was awarded the Nobel Prize in 2014 for his achievements in the field of economics.

In his most famous works devoted to dynamic monopolies and the peculiarities of the modern economic market, Jean Tyrol considered such a situation, when several strong competitive firms operate in the market. The researcher also studied the regulatory role of the state in such a situation, which enabled him to determine the equilibrium conditions for multiparameter systems, as well as to identify productive and destructive tendencies in the existence of the firms (Tirole 1988, 2014).

In the second and third chapters of the book "Markets and market power: theory of industry organization" (Tirole 2014), he provided a detailed study of behavior of the company in the conditions of a monopoly, including the pricing behavior problems; the selection of products, quality of production and advertising, as well as the company's activity in the conditions of oligopoly, namely: analysis of static and dynamic price competition, conditions for successful market entry and exit and other issues. J. Tyrol, using mathematical methods, substantiated the possibility of large companies to manipulate the consumers through the establishment of non-market prices and distortion of information about the quality of the goods. The researcher shows that oligopolies possess a more perfect structure, use advanced technologies and can provide the better quality of goods. The main achievement of J. Tyrol, in our opinion, is that instead of the traditional criticism of the oligopolies he offered actual, mathematically verified methods of regulation of these markets in order to improve the climate for doing business. Taking oligopoly as a real and inevitable phenomenon in today's market, he paid attention to maximizing of its social utility and improvement of market relations with other firms.

A special attention in the works of J. Tyrol is given to the study of specific models of oligopoly, called cartels, i.e. corporations of several firms based on collusion (Tirole 1988, 2014).

Cartel is a form of explicit cooperation of companies with the aim of restricting competition on a permanent basis. In many countries, cartels are prohibited by law because they make competition ineffective and lead to unreasonably high prices.

However, the disadvantages of "Kinked-demand curve" model and ever-present threat of "a price war" promote the emergence of the cartels. Therefore, in spite of the anti-monopoly legislation and active legal activities of the countries in this area, all sorts of agreements may often be concluded between the leading firms in the market. To disguise their direct interest in maintaining and even increasing profits, they explain their activities by the need to take measures that will not allow new firms to enter the market.

The collusion between firms can take a number of forms (Fig. 3).

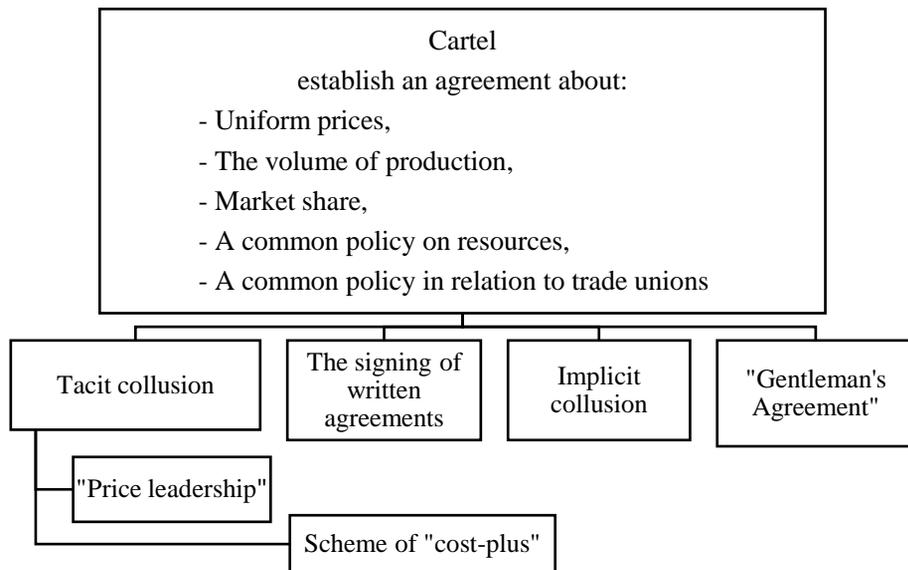


Fig. 3. Forms of cartel structures

Cartels are created on the basis of secret collusion, resulting in a written agreement on the price of the goods and the volume of production. In view of the fact that in an oligopolistic market the number of participants is limited, it is perceived as a favorable condition for the conclusion of an agreement between them. The main goal of this collusion is to set the rules concerning the volume of production and the prices

for the manufactured goods on such a level that could be a guaranteeing factor in maximizing profits for all the parties entering into the agreement, i.e. this agreement aims to obtain monopoly profits (Tirole 2014).

The most obvious form of cartel is OPEC (International Organization of Petroleum Exporting Countries). Throughout its history, OPEC has repeatedly produced the regulation of prices for a barrel of oil, which brought fabulous profits to 13 countries participating in the agreement. And we have seen how a recent break of the agreement resulted in a tremendous fall of the oil prices leading to the losses on both agreement members and other non-involved oil exporters.

Sometimes cartels' activity is directed at alignment of the level of costs of the firms-members of the agreement. For this purpose, they agree on a certain price, which they will put to the suppliers for the purchased resources. Accordingly, the cartel in its classical form is aimed at establishing an agreement between the companies regarding:

- common prices;
- production volumes or market share;
- a common policy on the supply of resources;
- joint action in relation to trade union demands.

In most cases, the cartels have a sharply negative effect on the market economy. The cartels have given the history of economy numerous unworthy examples of overpricing and deliberate understatement of production volumes. In times of severe crises of overproduction, which some states experienced, the cartels only activity exacerbate the economic conditions, contributed to the decline in production and the increase in unemployment.

The agreements between the companies can also take a form of implicit collusion, i.e. to manifest in reaching a verbal agreement between senior representatives of the companies in the business negotiations. Most often, the firms agree on the price level, market share and the amount of advertising costs. The purpose of collusion is to reduce hostility and uncertainty of the external operating environment. In case of

violation of the provisions of collusion, only that company will benefit, which makes it the first and only in the shortest term, after which the total revenue will decrease significantly.

For example, in 1960, in the United States it became known about the "great mystery electric collusion", which meant price-fixing and distribution of all types of production equipment needed to generate electricity and supply it to consumers between such energy giants as General Electric, Westinghouse and Allis-Chalmers (Tirole 2014).

Sometimes the solution about collusion is achieved not at the negotiating table: for this purpose, business tycoons use golf grounds, parties, and even charity actions. This form of agreement is called "gentlemen's agreement", which is especially dangerous, as it is not followed by any written document.

The existence of the cartels is difficult to determine, since collusion does not become the subject of extensive discussion. However, in recent years, firms have found a number of ways to reach an agreement even without breaking the law. The "covert collusion" has become a form of circumvention of anti-monopoly legislation.

By "covert collusion" the certain models of coordination of the companies' behavior in the process of their interaction on the market that exist without accompanying negotiations and agreements is meant (Zhao 1997).

One of the forms of covert collusion is "price leadership", which, in turn, is perceived by such scholars as K.R. McConnell and S.L. Brue (1999) as one of oligopoly models. In their view, price leadership is a gentlemen's agreement by which the oligopolists can coordinate prices, sales and interest in the market without engaging in outright collusion. Price leadership means coordination of the oligopolistic prices between companies in order to obtain high profits.

The price leader, i.e. the dominant company in the market is actually single-handedly sets the prices for the industry, but it takes into account a set of economic indicators to make new prices satisfactory for other participants. In turn, the other firms more or less willingly follow this change. The price leader usually follows such rules as:

- not to respond to minor daily fluctuations of costs and demand,
- to carry out price adjustment rare enough, only when the demand indicators change significantly throughout the industry,
- to inform about the possibility of price revision through the media and top managers,
- to receive support for their actions from the competitors,
- to set the price below the level that can generate maximum profits in order to prevent new firms on the market.

The analysis of cartel market structure shows that companies prefer to "play by the rules" in this case, i.e. to act on the basis of a compromise between the oligopoly, which has not been coordinated, and direct collusion. The participants of the oligopoly do not sign the agreement, but coordinate their behavior in the economic market in accordance with the unwritten rules. Such activity, on the one hand, gives reason to the participants to avoid legal liability related to the anti-cartel legislation adopted in many developed countries, and, on the other hand, to reduce the risk of unpredictable actions of competitors and thus protect themselves from the main threats arising in uncoordinated oligopoly.

An example of a cartel structure built on the price leadership model is the work of the "Big Three" manufacturers of cigarettes in the United States (between 1923 and 1941). The Corporations "Philip Morris", "Reynolds", and "American" were keeping the same prices on comparable varieties of cigarettes during this quite a long time, producing from 68-90% of the total volume of production in the country.

Another fairly common form of a cartel market structure is a "cost-plus" scheme influencing pricing. This model of price behavior of the oligopolies is also called "premium", "bonus", empirical method or pricing on a "cost-plus" principle (Drury 1992).

This model assumes that the oligopolist focuses on approximately the same, "normative" profit percentage in relation to the costs. He uses the technique of calculating the costs per unit of production, and then adds the premium to the final

price. As in the previous case, putting a price on a "cost-plus" scheme is done by the largest firm in the industry, and the rest of the companies follow their leader in pricing.

In this case, if the percentage of the profits of the company participating in collusion is sharply reducing compared to the adopted one in the industry, its competitors refer to it as a "declaration of war", and react to this by response measures. However, if the firm stays within the generally accepted level of profitability, the reaction of competitors and their unpredictability is reduced to a minimum.

This pricing model of oligopoly is not incompatible with the overt collusion or above-mentioned "leadership in prices", moreover, it may be particularly advantageous for companies that produce many kinds of goods.

In general, as our analysis of theoretical sources on the problems of oligopolistic corporations has shown, this type of economic regulation of the market is not free from serious contradictions. Therefore, the task of determining the degree of economic efficiency of this phenomenon is rather complicated and contradictory.

In the studies of a number of scientists (E.G. Kazantseva 2013; K.R. McConnell and S.L. Brue (1999); S.G. Shaginian 2016, etc.), the basic contradictions that arise in the interaction between oligopolistic competition are listed as following:

- it may be advantageous for the firms to unite in the conditions of close interaction, as their coordinated actions will lead to the maximum of their efficiency and increase the profits;
- any firm in the oligopoly, on the other hand, will tend to occupy a leading position in the market in order to get the biggest share of the profits in the industry;
- benefit for the company entails problems for consumers, since this benefit is mostly due to poor quality, high tariffs and artificial constraints of supply volumes.

Both of these aspirations are contradictory. So, the firm, having defined its line of conduct, renounces alternatives in advance. If the company chooses the way of competition to win a leading position in the market, it will eventually reduce the total

amount of future income. For example, within price competition the average market price reduces, while during an advertising "war", the average cost increases.

In modern economic theory, there are several different points of view on the economic consequences of an oligopoly.

If we turn to the traditional approach, it is as follows. In many cases, the firms that form an oligopoly set such modes of interdependence which bring their economic market structure closer to the pure monopoly, since their economic activities resemble the latter. It is believed that the production of goods under the oligopoly market yields optimal market performance, and independently set prices may be greater than those of the manufacturer, operating in an open competition. If oligopoly takes the form of cartels, its activity is extremely inefficient and virtually reproduces the group monopoly. However, in those cases where competition is still exists, other models of oligopoly come into action, but they will possess all the disadvantages of imperfect competition. The situation is complicated by the fact that due to the significant market power which the oligopolists demonstrate, these shortcomings have more vivid expression than under monopolistic competition (Friedman 1982).

In accordance with this view, which is also called "competitive", the oligopolists firms are believed to be not interested in the introduction of advanced technologies as any changes in the production process of goods can lead to obsolescence of the entire process. Therefore, many businesses until recently have retained the traditional means of production and maintained their brands in all possible ways.

According to the other approach, which is called theory of Schumpeter-Galbraith, it is believed that the firms-oligopolists are the most sensitive market participants to scientific and technical progress and implementation of innovations (Audretsch 2015). Being the dominant companies in the industry, large firms-oligopolists which own significant financial, human and production resources, can contribute to scientific and technical progress. It is easier for these large companies to find funds in their budget that can be directed to the research activities and increase the efficiency of the enterprise. Although there are specific examples to illustrate the

ability of small businesses in the commission of technological breakthroughs, it is easier for the giants of the economy to sponsor various research in order to improve their goods.

Thus, as shown by our analysis of the theoretical literature on the researched problem, the today's economy has not yet developed a unified point of view on the effectiveness of such a market structure as oligopoly. The researchers single out both positive and negative consequences of the functioning of this market structure and its impact on the economic situation in the country as a whole. In addition to the significant contribution of large companies in the development of production, many discoveries were made by single talents or employees of small businesses.

As preliminary conclusions we can point out that usually there are three basic possibilities of the company's activity in an oligopolistic market described in scientific literature: uncoordinated oligopoly, cartel and cartel-like market structure. Existing barriers to entry and exit the market for the firms not involved in the oligopoly have a fairly significant impact on the business. The barriers to entry allow firms to protect against a number of competitors (they can also create barriers to entry into a new market). Legal barriers serve as a real barrier, forcing companies not to leave the market, even in unfavorable situations (they can also extend their stay in it).

Barriers to entry are characterized by a number of parameters (Fig. 4.):

1. Economies of scale.

First, one means the costs that are markedly lower if the company possesses a significant share in the market than those of a new company, which wants to enter the industry. Secondly, it is an investment volume that a "newcomer" is eager to invest in his business to gain a foothold in the market. Any new company must be aware that, if it needs to make large investments, then probability to enter the market and gain a foothold on is quite small.

2. The customer base.

Many large companies organize interaction with their customers through accumulated and continuously expanding clients' base. If a new company enters the market, it is likely not to have such a base, or its awareness of the sales market is limited, which naturally complicates business at the start.

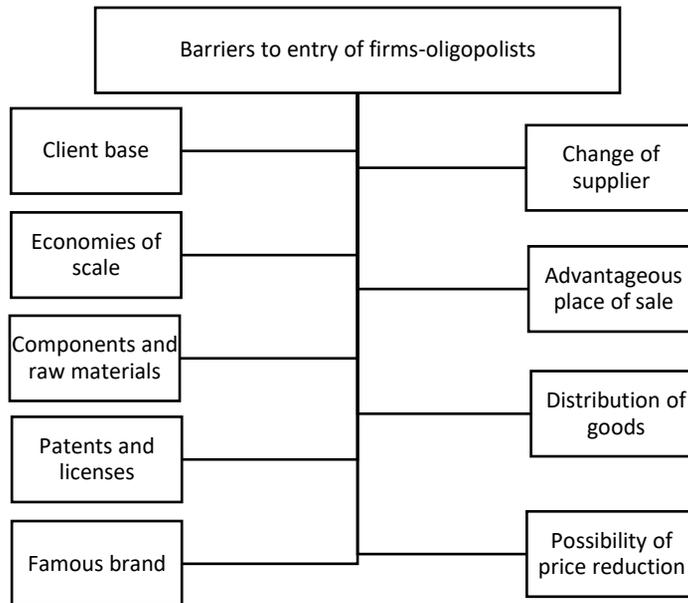


Fig. 4. Parameters occurrence entry barriers

3. A well-known brand.

If a new company is aware that the leadership in the market is occupied by a large firm with a well-known brand, it will have doubts whether to enter the market from the very beginning. The "Beginner" realizes that to compete with well-known companies is very difficult, it requires making big investments in advertising. In addition, the consumers take a long time to get acquainted with products of the new company and make a preference. Therefore, the availability of a sustainable brand (or a situation when the company itself is the brand) can be regarded as a serious competitive advantage.

4. Problems with the change of supplier.

If we look at the situation from the client's point of view, then, having learnt that there is a new supplier in the market, offering services at a lower price, he will not always rush to change the already established business relationships. This is because the process of the supplier's changing involves significant additional costs. Moreover, the client cannot be confident in a long-term availability of the company appeared in the market, its reliability and price stability displayed in the beginning of its existence. This situation can be demonstrated by the example of the popular promotions that are currently used by many airlines: they offer their regular passengers' free miles, which could be used for a free ticket. If a passenger changes the airline, the accumulated miles will either "burn down" after the deadline, or cease to grow.

5. Problems with the distribution of goods.

This situation can occur if the dominant company in the market wants to set a barrier for a new company not to allow the access to distributors. The methods of such business constraints can be different: the oligopolists may conclude an exclusive agreement with the distributors or even absorb them by attaching them to their giant corporations.

6. Components and Raw Materials.

The situation is similar to the above. It is more profitable for the suppliers of the components and raw materials to deal with large, well-established companies, than to expose their business to the risks by establishing relationships with new market participants.

7. Patents and licenses.

For many companies associated with new technologies and modern equipment, there is a regular need for acquisition of the patents and licenses. It is known that this activity is accompanied by significant investments. Therefore, only the dominant firm in the market that has all necessary resources is able to constantly renew its production base and production technology. On the other hand, the absence of

patents and licenses can be regarded as a serious legal barrier that prevents newcomers from appearing in the market. We can trace a striking example of such a situation in the pharmaceutical field.

8. The possibility of reducing the prices.

In some cases, the companies-oligopolists have resorted to reducing of prices to drive out a new firm from the market. Naturally, this step should be carefully considered and the consequences must be clear for the oligopolists as such changes in pricing policies may lead to a breach of the price equilibrium with other members of the oligopoly, as well as to a break of the agreement in the case of implicit collusion. In addition, after the solution of the problem with the company-newcomer, some problems can occur with the return of prices to the previous level.

9. Availability of a profitable region of sale.

In many areas of the business success of sales is determined by the choice of a proper region. If these places have already been distributed among the participants of the oligopoly, the newcomers will be forced to move to other regions, where the sales will not be as high.

In his studies, Jean Tirole draws attention to the fact that the success of an oligopoly activity is provided not only by the maintenance of the barriers to entry that prevent new companies from entering the market and triggering a new round of competition. The researcher on the basis of empirical analysis of a number of actions of the oligopolies and theoretical calculations proves that they practiced barriers to keep their partners from leaving the corporation (Tirole 2014).

Typically, exit barriers are created on the basis of the parameters shown in Fig. 5.

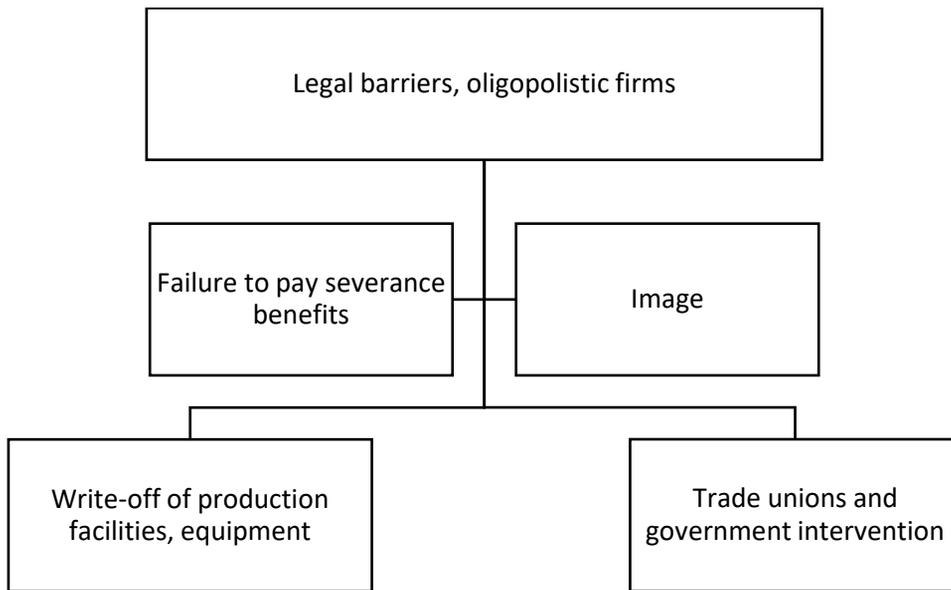


Fig. 5. Features of exit barriers

1. Failure to pay severance benefits.

In some situations, a company in the oligopoly, seeing the commercial disadvantage of one of the units, refuses to eliminate it, since it expects that the payment of severance benefits to the employees that fall under the reduction will be too much for it, and will increase costs. However, as practice shows, the company still has to close the unit in order to intensify the work of the remaining enterprises.

2. Write-off of production facilities, equipment and so forth.

Additional financial losses associated with the write-off of plants, outdated equipment, production lines, may first seem unnecessary and unaffordable for the company. However, over some time, due to the replacement of the obsolete industries with innovative technologies, these actions promise higher profits.

3. Image of the company.

Saving the image at the expense of maintaining the aura of success is a common practice in business. However, if the company is convinced of the legitimacy of its actions and is confident in the possibility of increasing profits, it can take measures, which in a certain period can have a negative impact on its image. But after some

period of time, the lost positions can be recovered and even surpassed. In this case, the company will require such changes as rebranding, new advertising campaign, promotion and so on.

4. Trade unions and government intervention.

The company's administration should coordinate its actions with the trade unions willing to reduce the staff or close the unprofitable enterprises. In some cases, the government can also actively intervene in the oligopolistic management.

In other words, the advantages and disadvantages of each of the economic structure should be considered together, taking into account not only purely economic factors, but especially the political system in the country, the degree of its involvement in the management of national economy, as well as the historical background of the emergence of oligopolistic and monopolistic structures in the national market. Sometimes one has to accept that all of the weaknesses of the oligopoly can be regarded as inalienable merits of large firms. One of the reasons for this situation we believe the fact that in any national economy there are a few sectors, the effectiveness of the development and functioning of which depends on the presence of large-scale production. And as such major companies in the industry may not be much, it creates objective conditions for market oligopolization.

1.2. Global competitiveness

Lately, there has been observed an increase in the research of the competitiveness due to its close linkage with the idea of prosperity of the one's nation economy. As well as the increasing globalization, which means that only strongly competitive countries can overcome possible instabilities and thrive on the new opportunities. There is a number of various definitions of international competitiveness of the country due to the complex nature of the phenomenon and a big number of various factors that contribute to it. In most general terms it can be boiled down to the following definition of national competitiveness, it is an ability of a state to achieve high rates of economic growth, ensure a steady increase in real wages, promotion of

domestic firms on the world market represented by high-performance clusters that improve the quality of products and services that enable the creation of new jobs in the future (Antoniuk, 2004). Usually national competitiveness is a relative measure in terms of the position of each country in the global economy. That is why it is important to talk about international competition, when looking on the concept of competitiveness of a certain country. From the definition given above it becomes clear that this issue is of a big importance, which is explained by its multidimensional nature. Thus, different approaches were undertaken in order to tackle the vast field of the possible study.

There is a great number of works dealing with both firms and country's levels, but the industry level for some reason has been greatly underestimated. However, the industry level precisely is the one that acts as a hub for other levels due to the following reasons:

- public policies aimed at increasing of competitiveness and productivity are frequently designed for the industry level;
- the trade conditions facilitating international trade agreements are often specific to certain industries;
- there is a theory that international competitiveness has a meaning only on the industry level (Momaya 1998).

One of the most prominent scholars in the field of competitive strategy studying the problems of competitiveness and economic development of the countries is believed to be an American economist Michael Eugene Porter. We are going to take a closer look at his works related to a problem under consideration a little bit later. Now we will only mention that his studies have an important limitation – they are focused only on high-tech industries. However, many countries rely on more basic and traditional industries. So, it is important to understand what an industry competitiveness is in the most general way.

Competitiveness is closely related to the value-adding chain and consists of competitive assets (inputs), competitive process and competitive performance (outputs). These three stages can be divided into more details, shown in the fig. 6.

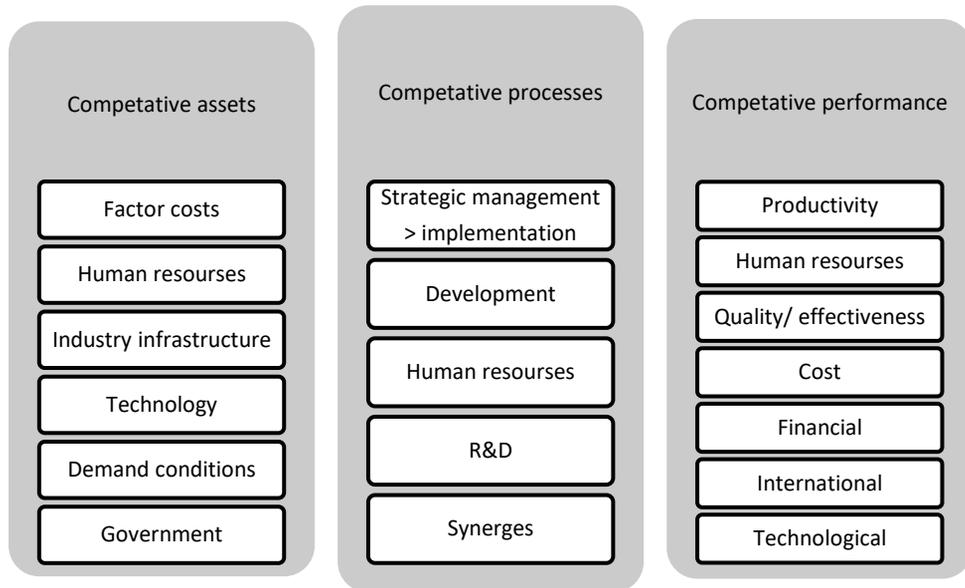


Fig. 6. Structure of competitiveness (the figure is taken from Momaya, 1998)

It goes without saying that export of the industry is believed to be a good indicator of its international performance.

As this model is a more general case of Michael Porter's works, now we will proceed to studying it. Along with the process of globalization more and more industries are becoming global, and Porter argues that a firm in the conditions of a new global market needs to compete internationally in order to become successful.

He notes that there are certain differences between national and international competition:

- comparative advantage of the countries,
- special features of each country's markets,
- the roles of the government on each market,
- difference in the structure and composition of the market itself (Porter 1990).

Nevertheless, the same principle of five competitive forces presented in Porter's model of competitive strategy for a domestic company can be applied to analyze the advantages of an internationally active industry.

The main idea is that global advantage must be supported by one or several of the following factors:

- comparative advantage,
- economies of scale,
- learning curves,
- product differentiation,
- market information,
- technology.

In order to analyze the international competitiveness of different countries it must be empirically measured. There are several widely accepted indicators and approaches that we are going to look at closer.

Organization for Economic co-operation and Development (OCED) has their own methodology that produces relative competitiveness indicators based on the export unit values of manufactures, unit labor costs and consumer price indices.

Another approach is based on the Constant Market Share (CMS) analysis. The main idea is that country's export share in a given market should remain unchanged over time. If the country fails to maintain the 'normal market share' it indicates on the negative competitiveness of this country and the relative price increase compared to its competitors.

Comparative advantage lays in the base of several trade theories. Its economic meaning is expressed in terms of relative prices in the absence of trade. Which makes it unobservable in the real life and in order to be measured indirect methods should be applied. One of such methods is a well-known index of Revealed Comparative Advantage (RCA) that is based on Ricardian trade theory and uses the trade dynamics to highlight sectors in which certain economy has a comparative advantage,

by comparing it with world average (United Nations Conference on Trade and Development). This measure can be used for both current analysis and potential evaluation. The concept was developed by Bela Balassa and sometimes RCA index is also called Balassa index (Balassa 1965). Despite numerous claims that appeared over the years this measure is still widely used in the empirical research.

The mainstream approach when using the RCA is to determine the competitiveness of certain products or industries in the bilateral trade of a chosen country to a certain region that it exports its goods to (Fertő and Hubbard 2001; Fertő 2006; Jámbor 2008). However, there are not that many works that are using RCA in relation to the other indicators and the number is especially small when it comes to the relation between Balassa index and domestic concentration measures.

The level of competition on the market can be measured by different indicators. One of the most robust and widely used is the Herfindahl-Hirschman Index (HHI). It was observed before that for certain Chinese manufacturing industries both RCA and HHI tend to have a positive correlation. Following the US introduction of anti-dumping tariffs on China in 2000 RCA and HHI were steadily decreasing (Kurmai 2017). However, as there are no a lot of real-world data proving this trend, it is hard to say whether this kind of relationship is typical for that pair of indicators or not. Many other scholars have developed these ideas further and we are going to study them in the next paragraph.

1.3. Dual views

With the increasing interdependence and globalization, the importance of the international trade has been expanding and it has attracted more scientific attention to the successful export determinants. One of them is the link between domestic market structure and international economic activities.

In the terms of the global science concerning the relation between domestic market structure and competitiveness in the international field, there was a big number of

research made around 70 - 90s of the 20-th century, conducted mainly in the USA due to the availability of the data.

One of the first attempts to find and model a relationship between domestic market structure and foreign trade flows was made by Lawrence J. White (1974). The traditional relation between these two factors is achieved from the international competition and its influence on the improving of the domestic market performance. But the reversed relationship is also possible. The author proves the presence of the causality that runs from the domestic market structure to the export / import performance by comparing cases under a competition versus the monopoly ones (White 1974).

Based on the purpose of our research we will focus our attention mainly on the part that deals with exports. The important assumption that has to be made is that domestic producer is presenting an insignificant part of the world supply and has no power over the prices. Assuming that the domestic market is wide open to the world economy, the domestic monopolist becomes just another competitor in the international market, hence domestic market structure does not affect global performance. Considering another case, domestic market might be limited with some trade barriers and thus segmented, which will allow the monopolist to set domestic prices higher than international (dumping) and become more competitive by taking advantage of the domestic market. However, dumping in most cases is not permitted, so the monopolist will have to export at the same conditions as everybody else or forego exporting entirely.

L. J. White also touches upon the possibility that the monopolist will have lower cost that will allow him to deal with better performance among other competitors, but the scholar does not explain how these low costs can be achieved. Overall, with dumping being prohibited, the effect of domestic market structure on export is ambiguous. Better performance may come from lower costs or exporting of unique products.

The above-mentioned research just slightly touched the stated issues, becoming a starting point for many more other scientists (Bramati 2015; Clougherty and Zang

2008; Cortes 2006; Das 1982; Hamilton 1997, etc.) to try finding the answer whether market structure is that important, how it effects global performance and which domestic market structure is the most suitable for the increase of the profitability.

Afterwards, there was a number of papers, that could be divided into two mainstream views about the possible effect of the domestic market structure on the performance on the global markets: national-champion rationale and domestic rivalry.

One of the main representatives of the domestic rivalry approach is Michael Porter. In his paper “The Competitive Advantage of Nations” (1990), he argues that national prosperity is created from innovation, rather than classical sources of advantage (endowments, labor pool, interest rates, or currency value). Innovation is an act of change that should never stop, otherwise the competitors will overtake the industry. The author insists that only very competitive domestic market can bring incentives for companies to innovate. He also mentions main problems that accompany the obtaining of the success and maintaining of the competitiveness. When a company has achieved the success, it does not want to lose it and so it tries to avoid or prevent risky changes much needed for the maintenance of the advantage. Additional prerequisites for the sustaining comparative advantage are the global strategy, which includes Foreign Direct Investment (FDI) perspective and obsolete advantage approach, i.e. the assumption that the current technology is already outdated even when it is not. In his work, Porter also introduces the idea of the “National Advantage Diamond”. It includes some other factors that contribute to the nation’s advantage:

1. Factor conditions – factors of production (skilled labor, infrastructure and technology sometimes united in clusters and updated to meet the changing market conditions).
2. Demand conditions – characteristics of the home country demand, the more sophisticated are domestic consumers, the better is the competitive advantage internationally as they provide needed training.

3. Related and supporting industries – the presence or absence of the domestic supplying and related industries can be of big importance for the product internationally.

4. Firm strategy, structure and rivalry – domestic competition leads to more innovation and cost effectiveness. “Domestic competition is arguably the most important determinant of international success” (Porter 1990).

These factors are interlinked and reinforce each other as it can be seen in the fig. 7.

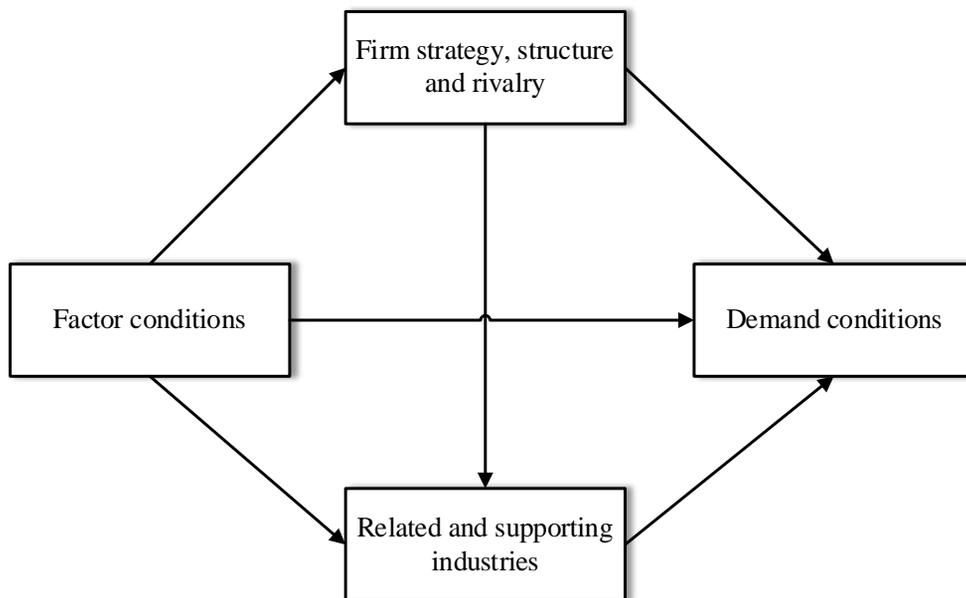


Fig. 7. Structure of “National Advantage Diamond” as per Michael Porter.

On the other hand, “national rational” point has a broader theoretical base. One of the representatives – Satya P. Das in the article “Economies of Scale, Imperfect Competition, and the Pattern of Trade” (1982) studied several hypotheses on comparative advantage on the markets with imperfect competition and increasing returns to scale. In order to single out the effect of the economies of scale, two cases are being considered. The first one is the competitive model (large group) with economies of scale in all the industries. This is “a two country – two industries” model. Pattern of trade unlike the cases with constant returns to scale will be

determined directly from the world equilibrium conditions. Solving the hypothetical model, the author has found that Heckscher-Ohlin theorem of the factor abundance holds in this case (Das 1982).

Further, the author studies the case of the imperfect competition, which she named “small group” as there is almost no entry and limited number of existing companies. Here several assumptions are made in order to better understand the mechanics of trade in this case.

Testing the “*Factor Abundance Theory*”, the first assumption that market structures and technologies are the same across countries proves that Heckscher-Ohlin theorem is valid with these conditions. Introducing the second assumption, if the elasticities are different between the two sectors and the endowment of one factor is the same between two countries, country exports the product that uses its abundant factor more intensively if the returns to scale are higher in that sector. Adding the third assumption about the same factor endowment ratio at both countries, with one of them having more of both capital and labor, author gets that the larger country would export the product of the sector in which the returns to scale are higher.

Further, the *market structure* effect is considered. In order to abstract from the factor abundance, it is assumed that the factor of supplies and production functions are the same between the two countries and the market structure in one sector in both countries is the same and in the other is different. This will result in the conclusion that higher concentration in the sector leads to the industry’s comparative advantage. With another assumption about the same scale elasticities between the sectors in each country, a country will export the product of its more concentrated sector.

Hence, the main conclusion of this article is that in the imperfect competition higher concentration brings comparative advantage.

Soon Paul Krugman (1979) analyzed the trade insensitive under the economy of scale. He assumed that scale economies unlike it was believed before can be internal to firms and this leads to the emergence of the monopolistic competition. In order to prove his point, a simple one-factor (labor) model approach was taken with the

conditions similar to the Ricardian one. All goods are produced at the same cost; all residents share the same utility function. Each firm is small and cannot affect the decision of other firms, so they will be aiming at the profit maximization price.

This model is tested under three assumptions of factor growth, trade opening and factor mobility. All in all, it was concluded that in this model all three assumptions are essentially the same and explain how two countries with the same conditions in terms of technology and factor endowment still can have a beneficial trade. Under the conditions of economy of scale, trade is simply a way for the market extension and factor growth.

On top of that, high level of exporting is generally viewed as a riskier affair compared to the domestic activities and the big scale companies are both stronger and more sustainable to be able to bear the risks. Along with the fact that successful international trade requires some of the non-price inputs, such as that of marketing networks, skilled labor pools, and the ability to provide credits or installment paying, that is more likely to be observed in oligopolies rather than in small separate companies that may not even be able to overcome the entrance barriers on the foreign markets. (Nolle 1991)

National champion rational seems to have a more solid and developed theoretical justification based mainly on the effects of the economies of scale (Kim and Marion 1997; Clougherty and Zhang 2009).

Now we are going to proceed toward the empirical evidence gathered over the years and across different geographical locations, that ensure the diversity of the initial conditions and more robust results.

In the fall 1997 (Kim and Marion 1997) there was one of the first attempts to check the above-mentioned theories on practice in order to provide policy recommendations. The research was based on the USA food manufacturing industry. There are also some additions to the theory of the relations between market structure and global performance. This research supports domestic rivalry rational and

explains that lack of local rivalry will lead to underperformance, wasting of resources and less insensitive for development.

Traditional trade theories are very limited and do not explain a lot of modern trade patterns, especially it characteristic for intra-industry trade. Now country trade bases not on the factor endowments but more on the industry characteristics, trade barriers together with firm strategies and technological progress. Intra-industry trade is believed to be a result of the economies of scale and/or product differentiation. In order to single-out a certain effect, two cases are being analyzed: homogeneous goods and differentiated goods. The first one is determined by prices or costs, while the second is related to product diversity. Homogeneous goods model shows that industry concentration may have a dampening effect on the net exports of the home country.

When products are differentiated, this tends to encourage intra-industry trade that is going to be beneficial for both countries with the increase in the variety and price reduction due to the economies of scale. The market will be filled with lots of slightly different goods that are more likely to fit the tastes of any consumer. As a result, country offering more variety will have a higher share in both domestic and foreign market. That leaves us with the question which market structure promotes the diversity better. Assuming the diversity being a result of innovation activities, more rivalrous market is expected to be the case of international competitiveness. The food manufacturing industry of the USA is a natural oligopoly, so the hypothesized relationship between industry concentration and product diversity is negative.

The authors used four-digit industry level over the 1967-1987 years (Kim and Marion 1997). The dependent variable is *net export share*, explanatory variables are the following: *Four-firm concentration* (CR4) is a proxy for the degree of competition; *Capital-labor ratio* (K/L) checks the influence of the factor endowment; *Competitiveness of raw materials* (RAW) may have a significant effect; *Mean distance of Shipment* (MDS) serves as a geographical variable; *Yearly dummies* (YD) capture the effect of macro-economic changes; *Foreign direct investment* (FDI) is a

very tricky variable, but it is a compliment to the export activity; *Advertising intensity (AS)* is a proxy for the influence of the brand; *R&D intensity (RD)* reflects product diversity; *Minimum efficient size of plant (MES)* shows the influence of the scale economies.

The results of the OLS regression has proved the initial hypothesis that domestic market concentration has a negative relation to the success on the global market. However, it must be noted that this study is one of the first of this kind and is subject to several limitations.

Hamilton (1997) does not add anything to the existing theory on the controversial relationship between industry concentration and trade performance, rather he comes up with his own framework of empirical evaluation of the said relationship. Using the data from New Zealand over 1985-1995 on the 5-digit level, he ran a regression that actually showed that industries with higher concentration seemed to have higher rate of exports compared to imports, so they were doing better, even though this tendency seems to become weaker over time. The dependent variables are either the percentage change in exports or imports, as for the independent, Hamilton is using concentration ratios and their differences over the years. Concentration ratios are employment based, that is the percentage of workers employed by the largest four enterprises. Even though the regression results suggest that New Zealand is a case of the National champion approach, the authors seem reluctant to state that as their work deals with the period prior and through the economy liberalization, the transition period could have affected the reliability of their findings.

As a matter of fact, a very insightful study was conducted on the basis of the Chinese market (Zhao and Zou 2002). There are several reasons for the uniqueness of this market, the most important feature of which is the diversity of each industry's concentrations as well as the government support and / or ownership of the large enterprises. Even though there are all reasons to assume that economies of scale should be of a great help in the exporting activities, this effect can be offset by the

absence of the insensitive to innovate, be efficient or risk-taking and their limited skills in exporting activities.

The authors Zhao and Zou (2002) differentiate the exporting decision (export propensity) and the decision about the amount of the exports (export intensity) as well as what brings the success in the foreign market, noting that two of the most important external-uncontrollable factors are the market concentration and the location of the company. Even though they separate the location from the market concentration, but in some sense, location can dictate a certain type of the market structure. So, their findings in this field can be integrated in the model when studying only market concentration effect on the exports. Location indeed matters because of the spillover from a geographic concentration of exporters. The cluster of exporters in a location manifests access to specialized transportation infrastructure, such as storage facilities, ports, or railroads, and to information on demand in foreign markets. These economic externalities certainly benefit the export activities. This is similar to Porter's views on what gives the comparative advantage. They use a multiple regression model to find out the effect of the industry concentration. Export intensity serves as a dependent variable proxied by the ratio export values to total sales. They include several factors that are frequently named as affecting the export: firm size, capital intensity (the depreciated stock value of fixed assets divided by the total number of employees), concentration ratio (CR8), location (author's developed index), technology innovation (R&D activity as a dummy), and industry in the analysis as covariates (industry dummy) (Zhao and Zou 2002).

The results seem to be a little bit unexpected as the R&D has a negative effect on the export, but the authors link it with a unique direction of Chinese exports on the low-end products, so the innovation intensive products are sold on the domestic market as a part of the import-substitution policy. However, the general results go along with the hypothesis and prove that for the case of China higher concentration has a negative effect on the export intensity. Moreover, size of the company is significant and positive, implying that economies of scale play an important role for the export

activities. This statement seems weird as earlier it was mentioned how economies of scale lead to the higher market concentration, so the controversy is that the reason for market concentration has a positive effect while the market concentration itself is negative. There are several limitations of this work that could have led to this discrepancy. All in all, this research gave not only another empirical evidence on the issue, but also introduced a new approach of seeing it as a complex phenomenon (Zhao and Zou 2002).

The breakthrough in this field was presented in the work of Porter and Sakakibara (2001). They were the first to mention the possible reverse causality between the domestic market structure and global performance, even though they were not able to control this effect properly, but this research became a new stepping stone for the development of the scientific thought in this field. They also tried to go away from the traditional different structure variables that proxy the intensity of competition only indirectly and suggested usage of market share instability of the Japanese market. In order to exclude the possibility of market share fluctuations that were caused by the exogenous disturbances, two models are calculated. First model is concerned with the trade factors connected to share instability, while the second one seems to be the main interest of this research and relates to the determinants of the country's world export share. After regressing, in the first model market share instability for the two, three, four and all major companies in the industry on non-price rivalry (R&D, Advertisement,) market structure (CR4), structural dampening (physical-capital intensity) and exogenous disturbances (industry growth and demand fluctuations), import pressure (Japan's share of world imports in an industry), presence of cartels (several kinds of cartels), market barriers (tariff and nontariff), etc. showed that industry concentration has a positive relation with the market-share fluctuations. It can be explained why the economies of scale give companies the opportunity for non-price competition (R&D) and rivalry can escalate even in the concentrated industry. That finding goes against the results of previously existing literature that was adamant on the competitive lacking of the imperfect

competition market structures. If that is to be the case, then there is a chance of existence of the concentrated market that has only strong points of oligopolistic market structure without their weaknesses and it will be giving a country a certain advantage in terms of international trade. The second model uses a world export share (share of Japanese exports of total world exports) as a dependent variable and regresses it on market share instability, factor endowments (share of unskilled labor, physical capital human capital), trade barriers (tariff and non-tariff) and scale economies (scale index, minimum efficient scale index). As expected, trade performance is positively related to the market share instability. They check the robustness of the results by doing separate OLS regressions and then using 2SLS on them, which does not really change the situation greatly. The conclusion seems to go a little bit against the results of the regressions and can reflect some of the bias of Porter who is known for his support of the domestic rivalry approach because, as they say, it is what brings success in the international trade. But as it was mentioned earlier, despite the conclusion this article actually provides empirical evidence of how imperfect competition can still lead to high rates of export, combining rivalry and economies of scale.

The above-mentioned concerns were reflected in the research that was undertaken five years after by Sakakibara and Porter (2001) in order to check their results and compare two controversial views on the relationship of domestic competition and economic performance of Japan. For the comparative purposes Cortes (2006) uses S&P model framework with two different datasets. As it was proved by Sakakibara and Porter (2001), the market concentration and market shares fluctuations have a positive correlation so they can be each other's substitutes. This fact is used here as the key element is the traditionally applied concentration ratio (CR4). Moreover, following Kim and Marion (1997), they differentiate heterogeneous and homogeneous goods, as well as account for the reversed causality and multicollinearity that were ignored by Sakakibara and Porter (2001). It was found that the concentration ratio of the Japanese market was increasing and also the

concentration had a positive effect on the export performance contrary to the Sakakibara and Porter findings. This relationship seems to be stronger for heterogeneous goods. As for the trade factors, that have an important influence on exports, apart from the market structure, they are: factor endowments, government regulations and advertising intensity. However, the scale economies and imports do not have much significance.

Motivated by the weak theoretical background on the domestic rivalry rational approach, Clougherty and Zhang (2008) decided to look deeper into that problem and provided an enhancement in understanding of this phenomenon together with empirical evidence from the international airline market. The data is composed of firm-level country pairs. Airline market seems to be a perfect object for this type of research as, being naturally segmented into three groups: domestic-international, domestic-national, and foreign firms, it makes things easier in terms of capturing certain effects. Domestic rivalry can come from three different sources: number of competitors, economies of production and enhanced performance of competitors' effect (domestic rivalry requires firms to innovate and improve). The authors concentrate on the last one, abstracting from two other effects by using the lagged-dependent variable as a controlled one in the autoregression. It was found before that this is a good way to control over omitted variables. To account for exogeneity of the elements of the model, they use the two-step GMM estimator (2SLS). Their findings go against the previously observed national champion relationship on the airline markets and state that the airlines that experience rivalry at their domestic market tend to perform better on the international arena. This research is subject to a number of imitations, but it provides an important framework both for the domestic rivalry rational and international bilateral firm-level bases empirical exploration.

Another supporting evidence for the domestic rivalry approach came from the side of Belgium scholars (Bramati et al. 2015). The authors are addressing to endogeneity typical to this type of research that is coming from simultaneity bias as well as from sample selection bias. They apply the export decision differentiation

(Zhao and Zou, 2018) and sort out the not exporting companies by using Heckman Selection Model (HSM) as an additional regression in the logit estimation. Logit estimation is used instead the simple OLS due to the dependent variable for the self-selection being a dummy with only two possible values. As for the simultaneity bias this problem is solved with the usage of the two-stage approach (2SLS), however they are instrumenting several variables separately instead of just one. Besides, one more addition is the choice of HHI indicator instead of CR4 that was used before, that is being instrumented with the average industry growth in percent as higher growth attracts new companies to the industry and decreases the concentration, but the choice of this instrument seems wrong as intuitively there may be a correlation between industry growth and exports. On top of the main finding about the positive relation between the level of competition and export intensity, they were also able to find out that the size of the company matters only as a push for the export, but once the firm becomes an exporter, the importance of this variable is greatly decreasing. Imports in the industry matter as well as they are complimentary to the exports in most cases.

As it was noted before, each country's initial conditions have a great influence on the effect that is going to be observed in its exports. As it goes for all "Newly Industrialized Countries" (NICs) and for Korea in particular, they have been rapidly developing but lacked certain fundamentals so government encouraged large scale companies, mergers and alliances that allowed to overcome imperfect capital markets. Protectionism and subsidies for growth and, in case of Korea – strong export orientation had taken place till the first antitrust law was introduced in 1981. However, even in recent days the heritage oligopolistic market structure is still present in some of the industries. During the 1976-81, despite all the above-mentioned factors, it was noted that the "invisible hand" was working on the Korean market as growth attracted entry. The recursive identification regression was applied to check the relationship of the market concentration and export performance in Korea at that period. It was found that growth is positively related to the market

concentration that is opposite to that of the developed countries and higher concentration led to higher profits. The monopolistic market structure seemed to appear in the spheres where economies of scale, capital requirements and product differentiation were stronger (Jeong and Masson, 1990).

One of the recent studies on Korea looks at the overall industry profit rate, without distinguishing the global performance from domestic and its connection to the market concentration (Lee, 2007). This work not only provided an insightful review of the previous literature but also enriched the empirical evidence on the matter by using the 5-digit level panel data for 1999-2003. There are two important points about this dataset: panel data in comparison with the cross-sectional data allow to control over various industrial specific characteristics and 5-digit level helps to define the markets more accurately and rigorously. Previous 3-digit level studies led to the broad market definition that brought the impression of heterogeneous products and concentration underestimation. The simultaneity bias between the main variables of interest was captured by using the 2SLS method, with fixed effects as they prove to have more reliable results. Market concentration proxied by the Herfindahl-Hershmann Index (HHI) is instrumented by minimum efficiency scale, capital requirement, number of firms in the industry and size of domestic market. The results show a positive relationship between the degree of market concentration and industry profit rate. It was also shown that, in accordance with other studies, simultaneity does not totally disturb the existing relationship but leads to the underestimation of the observed effect. That means that the works, which failed to account for the reversed causality, are still valid in some sense. After the meticulous studying of the previous literature about the relationship between domestic market structure and global performance, it was found that there is no unanimous view on this matter: the comparison of the key points is presented in the Table 2.

Table 2. The comparative analysis of the key elements of the existing research on the problem of domestic market structure and global performance

Author	Year	Country	Approach	Method	Independent variable
Kim and Marion	1967-87	USA	Domestic rivalry	OLS	Net export share
Hamilton	1985-1995	New Zealand	National champion	OLS	Percentage change in exports / imports
Sakakibara and Porter	1973-90	Japan	Domestic rivalry	OLS, 2SLS	World export share
Zhao and Zou	2002	China	Domestic rivalry	Multiple OLS	Export / total sales
Cortes	1970-98	Japan	National champion	OLS, 2SLS	World export share
Clougherty and Zang	1987-92	International	Domestic rivalry	2SLS	International market share
Bramati	2005-08	Belgium	Domestic rivalry	2SLS	Export intensity (export / turnover)
Jeong and Masson	1976-81	S.Korea	National Champion	2SLS	CR3
Lee	1999-2003	S.Korea	National Champion	2SLS	Industry EBITDA / sales

In short, there are two mainstream approaches: domestic rival and national champion. The supporters of the domestic rivalry approach (Porter 1990; Kim and Marion 1997; Sakakibara and Porter 2001; Zhao and Zou 2018; Clougherty & Zang 2008; Bramati 2015, etc.) believe domestic market to be some kind of a training field for the company, where it thrives and fights with other within development and it is a comparative edge. When it becomes the best, it has enough advantage to compete on the international market with other nation's best representatives. On the other hand, the national champion supporters (Das 1982; Krugman 1979; Hamilton 1997; Cortes

2006; Jeong and Masson 1990; Lee 2007, etc.) point out that in the real-life imperfect completion is more common, than not. And the important part, that is not widely accepted, is that such structure does not have only weak points but the good ones as well. They are: economies of scale, financial reserves, stability and advantage brought by domestic unfair practices (if dumping is allowed). All of them allow these companies to penetrate into the foreign markets with less difficulties, quickly adapt to different consumer's preferences and economic environmental changes. Outdatedness and inefficiency are usually mentioned among the drawbacks. Both views seem very legit and have theoretical base as well as empirical evidence. Basing on the Table 1 and our literature review is will not be a mistake to conclude that the efficient choice of the model depends on each country and industry specific characteristics, however the domestic rivalry has more of the empirical evidence. We believe that the National champion approach can be as effective as domestic rivalry if not more, in case of oligopolistic market structure that managed to overcome the weaknesses of imperfect competition. As most of the countries that demonstrated the National Champion approach are East Asian or pacific NICs, it may be connected to the market traditions that are historically rooted in these regions. For example, Japanese *keiretsu* (Aoki 1988).

In terms of methodology, most of the studies use some measure of export performance (e.g., world market share, net exports, export revenue) and regress it on some measure of domestic market concentration (e.g., four-firm concentration ratio, Herfindahl-Hirschman-Index, instability in market shares), while controlling for some other variables that can have a significant effect (Clougherty and Zhang, 2008). The most frequently used variables are presented in the Table 3 Some of the scientists point out the presence of the simultaneity bias between the market concentration and industry performance (Greenaway and Kneller 2007). As we know the global success can bring more profits into the industry that attract new domestic companies to entry this industry, and it can go the other way, the domestic company being either the best or the biggest may get recognition abroad. In order to control over this

reversed causality, a Two Stage Least Squares regression is applied in different combinations of the equation systems and instruments. It was shown that usage of 2SLS instead of OLS is recommended even though it is not necessary but only preferable in order to obtain more robust and significant results.

Table 3. The most frequently used variables in empirical models for the concentration-performance studies

Dependent variable	Proxy
Market structure	CR4, CR8, HHI, Market share instability, Number of companies
Nonprice rivalry	R&D, ADV, competitiveness of raw materials
Scale economies	MES, scale index
Factor endowments	Labor, physical capital, human capital, K / L
Import pressure	Share of world import, industry import/sales
Presence of cartels	Merger (Clougherty), cartel dummy
Protection of the Domestic market	Tariffs
Other	Age, salary, industry growth, mean distance of shipment, FDI

1.4. An overview on Korea

Armed with the strong theoretical understanding of the interaction patterns between internal market structure and external performance as well as knowledge on the research already done in the field, we see it necessary to get a closer look at Korea in order to understand in what sense the main question of our consideration applies there and what are the conditions of the Korean economy, to be able to build a hypothesis as to what the empirical evidence may show us.

From the first years of its establishment Korean economy was characterized but the presence and role of the large business groups called Chaebols. The word literally means a group of wealth: “chae” – wealth, fortune and “bol” – group, party (Sung 2013). Their main distinguishing characteristic is that they are usually controlled by members of one family and this control can be inherited. They are responsible for a great part of the Korean GDP. It must be said that even till present days these

companies are very influential in Korea and society has very dualistic views on them. On the one hand these companies were the reason for Korea's economic growth and international recognition, but on the other, the power they hold is tremendous and thus they are seen as something if not being controlled can turn out to be a disaster. They are characterized by central planning, strong hierarchy and leadership, aggressive expansion, risk taking and orientation on R&D. In order to understand the nature of Chaebols we would like to look back at how such companies came to exist.

After the end of the Japanese war in 1945 the Korean economy was in shambles. Korean Provisional Government did not have enough power to do anything for its country and found American government taking control in order to prevent the spread of the communism. They were putting an emphasis on the privatization of the Japanese property. However, it did not last long as Korean war came (1950-1953). Situation deteriorated a lot as the majority of the key production facilities now belonged to the North Korea. South Korea had to rely on the aid from USA mostly everything was imported.

In order to restore the country and mainly its economy Japanese experience was benchmarked and it laid the foundation of Chaebols in 1950s, that in many cases also relied on the assets left after the Japanese occupation. Korean Government changed its course to the Import Substitution Industrialization (ISI) strategy that involved tariffs and quotas on imports. It was aimed at supporting of the development of national production and served as a very good starting springboard for the growth of the firms. However, this did nothing to the improvement of life of general population as after some time, using the conditions of the market protected from the competition of imports, domestic companies started to charge higher prices, resulting in the surpassed consumption (Cha 2008).

In 1961 the political course of the Korean Government shifted from ISI to Export Promotion. Chaebols became the main agents in pursuing of this strategy and thus were highly supported by various loans and export subsidies. The amount varied

based on the priority of the industry. Firms operated in the most powerful sectors of Korean economy according to their export performance. This brought competitive edge to the country in the worldwide scale. Following these changes Chaebols gained a bigger market share and grew further both domestically and internationally (Cha 2008). It was in that period that all the strongest companies of current Korean economy were established and straightened their position.

Following the growth, companies started being involved with various businesses fields more often than not mostly unrelated to their core competencies.

Sometime later new policy changes happened following the death of the former president Park Chung-hee in 1979, Korean government decided to cease providing bank loans and preferential interest rates, concentrating more on the help to the companies in real need of it. However, at the end these loans still got to the hands of Chaebols as small-scale enterprises were absorbed (Long Le 2016).

These changes corresponded with a very favorable period for big Korean companies as they relied on the so called “three lows”: low exchange rate, low international interest rate and small petroleum prices. Together with the depreciation of the won to dollar, the export demonstrated a tremendous increase.

One of the side effects of growth and development of the major companies was the appearance and straightening of the labor unions. In order to balance their power chaebols focused on the upgrade and development as means of substituting for the manual labor force (Kim 1991; Lim 1992).

The period of 1980-81 can be singled out as one of the turning point for the regulation of chaebols activities, as it was time of introduction and coming into force of the Monopoly Regulation and Fair Trade Act (MRFTA). This meant the enforcement of the competition laws and consumer protection policies.

At the time only ten countries in the world had effective competition laws that were backed by a sufficient legal basis. So, it is interesting that Korea made a decision to implement this on the development stage (Hwang 2015).

With the increase of the globalization and Korea's higher involvement in it the course of the government changed again in 1990. New reforms we aimed at the deregulation and liberalization and break away from government-led economic development of 1960s and 1970s. The anti-monopoly legislation played an important role in that process and allowed Korea to adopt market economy with its fundamental principle of competition (Hwang 2015).

Korean currency was fixed to dollar which decreased the risks of fluctuation of the exchange rate, plus chaebols were able to get loans from international investors as their stability was guaranteed by the government. This led to a steady increase of the international debt and made them vulnerable to the changes in US monetary policies (Wash 2017). And when in 1994 USA Federal reserve made a decision to allow dollar to appreciate, Korean export was no more all that profitable and competitive as won was tied to dollar and appreciated along it. The loans became more expensive and paying them was an increasing burden that lead more than half of the major Korean companies to go bankrupt.

In order to recover from this crisis, Korea reached International Monetary Fund (IMF) in 1997 for financial help. They had to agree to a number of conditions and regulations to get the bailout. One of the most important of this process was the restructuring and higher control of the chaebols. The powerful labor unions didn't allow for large scale dismissal of the workers, so businesses had to resort to cutting the salaries and huge lay-offs of employees. That greatly affected the image of the chaebols in Korean society for many generations to come. They were no longer a symbol of Korean economy but a great failure.

One year later the economic situation started showing signs of recovery due to the financial help from the IMF. And chaebols gained more transparency, that included their operations, financial statements, investments and transactions with affiliated companies. The end goal was that they concentrate more on their core business and support small and medium size enterprises (Sung 2013).

All the mentioned conditions led to the formation of Korean giant companies the way as we know them now. To summarize their main characteristics, we would like to compare their strengths and weaknesses.

Starting with the strong points, the first to be mentioned is the worldwide recognition of brand name, that allows easier diversification. Brand is an intangible asset and requires a lot of spending to be designed and promoted (Caves 1980). These large scale spendings are something easily available for the big companies. A lot of empirical research also indicates to the importance of the brand, being proven through the positive correlation of the advertising costs and export performance.

Large scale economies provide other benefits as well and lead to the appearance of the synergy effect that results in a greater return than that of sum of returns of individual parts (Grant 2015). As we have seen before, this phenomenon is used as one of the major explanations to the national champion rationale.

As chaebols are led by members of a single family, they are not guaranteed to have any suitable background, like top managers do, however it has been changing lately. But as they are simultaneously are the owners of the company, they have more passion when making the decisions and this leads to the presence of a very strong entrepreneurial spirit in all their actions. As well as understanding and unity of the whole managerial body to the decisions of the leader, that have a tendency to be sustainable and predictable, providing a good environment for the investments from the outside (Barney 1986; Robert 1996; Nonaka 1995).

Another important feature is that due to the support of the government this type of companies is more willing to invest in risky affairs and try something new, go into the unknown spheres, merging with new companies, launching new products and expanding both domestically and internationally, and thus have big R&D spending that holds a lot of importance for them (Sung 2013). The R&D was also mentioned before as one of the major contributors of international competitiveness level. The traditional economic theory on oligopolies mentioned low incentives for companies to be involved in these activities, however, we can see that Korean market is a clear

example of the exception. As chaebols, that enjoy a large part of the domestic market still look forward to the development and innovation.

On the other hand, there are few drawbacks to this type of market structures.

The lack of business transparency is seen as the major problem as it leads to the information disparity and appearance of corruption. Regardless of all the efforts that were taken in order to make chaebols more open, they still possess a significant economic and political power and can pretty much use diverse tactics in order to get what they want.

The distinctive growth orientation favors extensive development rather than intensive, putting small importance on the efficiency and profitability. That leads to one other important issue of cross subsidization from core business to the new one. That on the one hand allows these companies to get involved into many different spheres and increase its influence, but on the other hand puts the basis of the whole establishment at risk.

The increase in size brings the rise to the managerial costs as well as slows down the speed of market reaction and company's flexibility. That can be a serious concern in the modern world when conditions change so rapidly (Park 2008).

The nature of chaebols being controlled by families – the nepotism has several points of criticism, starting from the fact that these positions being unavailable to others, no matter of the loyalty, achievements and background; lack of background of the top management; and means that can be used in order to ensure that the control stays with this family (Sung 2013).

Korean domestic market has a number of unique features, explained by its history, political and geographical conditions. The main interest for us in terms of the chosen topic consists in the peculiar firm organization that can be found there – the chaebols. Even though they have changed a lot from the moment of their creation, they are still a power to be reckoned with. If the national champion rationale will be proved true we believe that the main contribution will belong to these companies. However, after the introduction of the antimonopoly law and liberalization of the market, there was

a rise of appearance of the small and medium size companies, many of which are better suited to the current global economy as they have remarkable adaptive abilities and creativity thriving from individual approach and contribution that is possible with their small scale. And thus, the actual situation is still to be seen from the real data, that we are going to look at and analyze in the next chapter.

Now we are well equipped with the theoretical understanding of the economic theory, experience of the previous research on the topic and certain overview on the actual market conditions of the case study object country. We can proceed to the next step – our practical part where we will develop an econometric model with the explanation of the data used and variables as well as key statistics, regression results, their implications and possible policy recommendations.

2. The Case of South Korea

As it was seen before, the national champion theoretical approach has a potential to be a more advantageous market structure than competition when it comes to the performance of the domestic companies on the international market. However, there are not so many evidences of this in the real world, because domestic rivalry tends to bring more profits in lots of studied country-cases. We link this phenomenon to the drawbacks of the highly concentrated markets. In this regard, the countries showing the success of the national champion are even more interesting for our research. It seems that they somehow were able to overcome the difficulties caused by the imperfect competition and use high concentration to their benefit. This possibility may be explained by the presence of the competition along with high concentration, which is possible in case of the oligopolistic markets (Tirole 2014). That is why, it makes sense to study these countries more in different perspectives to be able to gather as much information as possible from their experience.

This chapter deals with the case of South Korea. In the abovementioned literature review we have found two different approaches to this matter and both concluded that success of Korea is mainly related to the highly concentrated domestic market. Some of the Asian and NICs markets still have a historical heritage of huge corporations, some of them even used to be supported by the governments (Jeong and Masson 1990). Korean economic growth model is based on its focus on export. This is a perfect environment for the possibility of development of competitive oligopoly in many of the national industries.

Our work is going to rely on the simple basic model concentrated on the correlation of the main variables of interest from the previous empirical analysis of the scientific literature and use a wider time period in order to check the obtained results and check if the national champion approach can explain the Korean international performance even up to the recent years.

2.1 Model

Benchmarking previous empirical studies, we are going to model the relationship between the domestic market structure and international performance of Korean industries using widely agreed proxies for that purpose.

Following the example of the previous works, a panel structure of the data base is preferred to the cross-sectional one. Market performance is being affected by different economic forces. In order to study the effect of the market concentration on it better, this influence should be single outed. We can achieve it through capturing other effecting forces, such as technology, productivity, efficiency etc. This may be done with the implementation of the panel-set (Gupta 1983).

In our main model (1) we look at the international performance in relation to domestic market structure. The international performance will be evaluated by the RCA index (2) that was proved to be a good way of showing the comparative advantage of the country calculated using the actual trade data, so we can say that it is the real and used comparative advantage rather than the expected one, which can be controversial in some works but it is perfectly suitable for our purpose of looking at the trade pattern and success of the country in the international competition in trade. As for the domestic market structure we are going to use widely agreed upon and used indicator of HHI (3).

The natural logarithm is used for both dependent and independent variables. This is being used for two main reasons. The first one is the normalization of the data distribution. In case if any of the observations are too big or too small, natural logarithm of the number will allow our data not to be skewed by that. The other reason for the usage of the logarithmic values is the ease of interpretation of the results. The understanding of the regression results may be complicated when variables have different units and requires to take into the account the methodology of calculation in order to know the exact effect caused by the variables included. However, that is not the case when the logarithm is used, the interpretation now will be dealing with the percentage of the effect regardless of units. This way it is much

more intuitive and gives a more meaningful data as it is somehow comparable to the total effect of all factors (Rodríguez-Barranco et. all. 2017).

Model 1

$$\ln(RCA_{ci}) = \beta_0 + \beta_1 \ln(HHI_{it}) + \beta_2 \ln(Imp_{int_{it}}) + \beta_3 \ln(lprod_{it}) + \varepsilon_i + \varepsilon_t \quad (1)$$

Variables used:

Revealed Comparative Advantage (RCA) is an index based on the Ricardian concept of comparative advantage and is used in the international economics in order to calculate based on the trade flows the advantage of a certain country in comparison to other countries. The index itself was first introduced by Béla Balassa (1965).

$$RCA_{ci} = \frac{E_{ci} / \sum_{i' \in I} E_{ci'}}{\sum_{c' \in C} E_{c'i} / \sum_{c' \in C, i' \in I} E_{c'i'}} \quad (2)$$

, where:

E – exports;

c, c' – country;

C – set of countries;

i, i' – industry;

I – set of industries.

Simply put it is a proportion of the country's export under consideration to the share of this country in the total world export, that shows of how much importance this certain industry is to the international trade of the country. Country has a comparative advantage if $RCA > 1$.

Similar to all the studies done before, the key independent variable – the extent of domestic competition – will be expressed as a market concentration. It can be expressed either by Concentration ratio (CR) or Herfindahl-Hirschman Index (HHI).

In this study we are going to use the HHI for the reasons of its better statistical accuracy.

This index is used to apprehend the level of competition that exists within a market or industry, as well as to provide an indication of how the distribution of market share occurs throughout the groups covered by the index. The calculation of the HHI differs from the well-known Concentration Ratio in that it squares each market share price which places a higher importance on those pinnacle companies that have a larger market share (weighted average). This helps to achieve more accurate results and deeper, more precise differentiation (Naldi & Flaminy 2014).

$$HHI = \sum MS_n^2 \quad (3)$$

, where:

MS – is each company's market share in present.

The HHI can have a theoretical value ranging from close to zero to 10,000. If there exists only a single market participant which has one hundred percent of the market share the HHI would be 10,000. If there had been a splendid quantity of market participants with each agency having a market share of almost 0% then the HHI ought to be close to zero.

There are four main categories in which the market can be characterized based on the value of HHI:

- Less than 100, the market is pretty competitive.
- Between 100 and 1000, the market is said to be not concentrated.
- Between 1000 and 1800, the market is defined as to be relatively concentrated.
- Above 1800, the market is said to be especially concentrated.

We will also account for some other factors that are said to have a considerable effect on the international performance: labor productivity (4) and import intensity (5).

An important source of the industry disturbances comes from the effectiveness of the company in this industry. One of the most important and widely used measures

of efficiency of the activities of the company is the *labor productivity*. There are different ways of calculation of this variable, but the main idea is to find the ration of the real output per the amount of labor used to produce it. This indicator is deemed to be important from both company's and society's point of view. For the company it is a way of improvement (technology, personal education), with higher labor productivity there will be more output with less input, that eventually leads to bigger profits. As for the society it is directly linked to the better living standards and higher consumption opportunities, as increase in the output leads to the lower prices and makes goods much more affordable (Auzina 2014).

We are going to measure the labor productivity as a ratio of total sales on the number of workers.

$$lprod_{it} = \Sigma_{it} \frac{\overline{Sales}_{pt}}{N_{pt}} \quad (4)$$

, where:

Sales – total sales;

N – number of workers;

p – company.

Previous studies showed that the impact of *import intensity* on different variables is diverse and of different magnitude as well as it varies among different industries (Chou 1986). There can be different mechanisms involved with the effect of the import intensity, but the one that is of the most interest to us is the disturbance of the power of the domestic companies on the domestic market. And we see this power as a possible explanation for the national champion rational if it is to be proven. Our expectations of this variable will depend on the initial relationship between the dependent (RCA) and main independent (HHI) variables. If the relationship between them is positive we expect a negative influence of import intensity and vice versa.

$$Imp_int_{it} = \frac{Imp_{it}}{Sales_{it}}; \quad (5)$$

, where:

Imp – import in the industry.

Definition of all the variables and basic statistics are provided in the table 4.

Table 4. Definition and summary statistics of the key variables

Variable name	Definition	Mean	Standard deviation	Expectations
RCA	Revealed comparative advantage	1721.467	111403.7	Dependent
HHI	Herfindahl-Hirschman Index	1731.381	2332.85	?
lprod	Labor productivity	4.19e+07	2.55e+08	Positive
Imp_int	Import intensity	1911.206	142702.4	+/-

The mean variable for HHI 1731 indicates that Korean market is relatively concentrated, according the HHI methodology.

In the panel-data regressions there is a choice between fixed-effects and random-effects. Both have certain cases where they are to be applied. In general, random-effects should be used when there is zero covariance between the independent variables and unobserved panel-effect, this way they will give a very precise result. As it was seen earlier our model implies some correlation between the explanatory variables. Hence, it would be better to choose fixed-effect approach. This will allow for the much-needed flexibility without specific assumptions about the panel relationship (Wooldridge 2002).

Typically, all the data fall into some categories (industry, country, year, etc.) and in that case it is better to be able to control for unique characteristics of these categories that might cause some disturbances to the final analysis result. It is very important to include fixed effects into the model as they serve for the purpose of accounting for the omitted variable bias. When the dependent variable is multinational and can

be affected by many other unobserved factors. Especially if, as in our case, concentrating only on the main variables of interest.

Fixed effects regression allows to observe the within group variations. One potentially significant limitation of fixed effects models is that you cannot assess the effect of variables that have little within-group variation. However, in our case that should be of no concern (Bollen & Brand 2010).

We are going to use both time and industry fixed effect in order to be able to control over the omitted variables and any other effects that vary within these two categories. The need for the usage of the multiple fixed effects justifies the usage of the “reghdfe”. That is a Stata package that runs linear and instrumental-variable regressions with many levels of fixed effects. The main advantage of this function that has the most interest to us compared to areg/xtreg is that it can estimate not only OLS regressions but also two-stage least squares, instrumental-variable regressions, and linear gmm (via the ivreg2 and ivregress commands) (Correia 2017).

2.2 Data description

In order to achieve the most precise results and accurate market definition we try to get very explicit data. In Korea the statistical agencies are publishing data up to 5-digit level industrial classification. This will allow us to avoid the underestimation of the market concentration (Lee 2007). However, as the HHI is an aggregate estimator so in order to estimate it, we do need the firm-level data, that is to be brought to the 5-digit industry level data after it.

With the aim of enriching of the existing studies we chose a wide time range that includes recent years as well as the periods that were analyzed before. The years from 1992 to 2018 were picked basing on the availability of the data in the referred data bases (with gaps in 2010 and 2015).

Following the example of the previous works, a panel structure of the data base is preferred to the cross-sectional one. Market performance is being affected by different economic forces. In order to study better the effect of the market

concentration on it, this influence should be singled out. We can achieve it through capturing other effecting forces, such as technology, productivity, efficiency etc. This may be done with the implementation of the panel-set. (Gupta 1983)

This research relies on the combined raw data from different sources. Majority of the firm specific variables are obtained from the Mining and Manufacturing Survey (MMS) that is annually conducted by the Korea National Statistical Office (KNSO). It includes all mining and manufacturing establishments with the number of workers more than 5. However, the published on the official KNSO page version of the MMS shows the data maximum up to the 5-digit level industry. But to be able to calculate the HHI for the 5-digit industries, we need to have firm-level data and then aggregate it. The source of MMS reports is the Microdata Integrated Service (MDIS), it is a huge Korean firm-level data bank that covers almost all the possible statistical indicators and is even used for the policy making, which shows the reliability of the provided information (Korean National Statistical Office).

One of the complexities of using this data source is that data is provided in the classification of the survey, so it reflects all the different Korean Standard Industrial Classification (KSIC) versions that changed over the years. Korean Standard Industrial Classification (KSIC) was composed on the base of International Standard Industrial Classification (ISIC) in the 1963, so they can be easily merged together (KOSTAT (n.d.-b)). However, it is important to make sure that both data sets are in the same KSIC revision. We are using the 9th revision and some of the older data needs to be transformed with the usage of correspondence tables available on the official KOSTAT page (KOSTAT (n.d.-a)).

Some confusion with this data source came from the fact that the data provided and variable names vary year by year, so the consistency of the reporter information for some variables in changing over the time. As it is, we had to give up on some of the indicators. Plus, in order to get a 5 digit-level industry codes, all the levels of classification must be downloaded as separate indicators and then merged into one value. We did it by using excel function “CONCATE”.

This data source was able to provide us with following indicators: year of establishment of the company, the amount of total assets, the total number of workers and the value of shipment.

The trade data (import and export of the world and Korea) is taken from the United Nations Commodity Trade Statistics Database (United Nations (n.d.-c)) that contains detailed imports and exports statistics reported by statistical authorities of close to 200 countries or areas. It concerns annual trade data from 1962 to the most recent year. UN Comtrade is considered the most comprehensive trade database available with more than 1 billion records.

This database stores data in different international classification formats. For our purposes the Harmonized System (HS) of industrial classification was picked. It is an international nomenclature system that allows participating countries to classify goods on a common basis in a six-digit code system.

It was introduced in 1988 and has been adopted by most of the countries worldwide. Over the years this classification system has undergone changes and updates that lead to a number of different revisions that entered into force in 1996, 2002, 2007, 2012 and 2017 (United Nations 2017).

In order to add this data to the rest of our data set, certain adjustments had to be made. The data had to be converted, using the official correspondence tables from the (United Nations (n.d.-a)) into the HS version of the 2007th year (the HS-CPC table is based on this version).

Even though there was a number of works that were aimed on the correspondence of the HS and KSIC classifications none of them was recognized officially. In order to convert them, we will have to use the other step through Central Product Classification (CPC (second revision)). That is another internationally agreed system for products (goods and services) classification. And we were able to find the correspondence table between CPC(2) and KSIC(9). Minding the concern of losing a number of observations in a multistep HS(07)-CPC(2)-KSIC(9) correspondence,

this way we ensure the maximum possible in this case reliability of the converted data.

This data is provided in the American Dollars (USD) currency unit, so in order to be able to use it in our calculations, we need to convert it to the Korean won (KRW) currency, by using the official average yearly exchange rate.

We have started with the conversion of all the data to the chosen industry classification versions in the Excel by using macros that allows to look for a certain value on one of the work sheets and change it to the value that corresponds to it from the worksheet with the correspondence table.

In order to calculate the HHI, we use the MDIS firm-level dataset. Using Stata as a number of observations exceeded 7 million rows (limit of the Microsoft excel rows per sheet is 1,048,576), we obtain the Herfindahl-Hirschman Index for each industry that is repeated in the rows with the firms of the same industry. In order to be able to merge this data with all the other required indicators, we collapse it by industry with HHI and age set as mean and everything else as a sum. When collapsing the data by mean the user has two options one is simple average and the other is weighted average. There are several differences between these options, but the one most important to us is that weighted average allows to avoid being influence by extreme values as well as it reflects to a certain extent the importance of observations that affect the variable the most. Thus, weighted average servers as a normalization method the possible disparities in the dataset. Shi and Chavas (2012) insist that classical HHI is meant to be a weighted average, that is why we are going to use “Value of shipment” as a weight for the collapse of firm-level data to industry 5-digit level data.

Then we export the results to the Excel and using the VLOOKUP function (for the look up value we are creating the unique value of “year + industry code”) merge both data sources into the final dataset that we are going to use for the rest of calculations. The resulted number of observations is around 11 700 after the collapsing and

merging some of the observations were lost, but the number still seems to be good enough for running the regression.

2.3 Empirical results

Using the two final formatted and adjusted datasets we start with generating a number of required values and declaring the data set to be panel data grouped by the year-industry. It is not balanced, so for some years there are going to be more observations, than for the other.

The comparative summary of the results of a number of regressions is presented in the table 5. The column (1) shows the estimates for the relationship between just the main dependent and independent variables, while columns (2), (3) and (4) show the results for all the variables of the Model 1 with industry, year and industry-year fixed effects respectively.

The R-squared in all of the columns (except (3) – which due to the low R-sqr we will not consider further) is held on the level of approximately 59%, which is considered to be a good indicator for the relativity of the model in the social science field. The number of observations varies slightly between different regressions, depending on the availability of variables, but not enough to bring significant disturbances.

All the variables for regression are taken in the form of the natural logarithm of the number which allows to avoid any potential problems of currency/unit unmatching. That also implies that the obtained coefficients should be interpreted in percentage rather than in units.

Table 5. Regression results of two main models

	RCA			
	Model 1	Model 2		
	(1)	(2)	(3)	(4)
	$\varepsilon_i + \varepsilon_t$	ε_i	ε_t	$\varepsilon_i + \varepsilon_t$
ln_hhi	-0.122*** (-3.38)	-0.128*** (-3.58)	-0.132*** (-4.51)	-0.142*** (-3.85)
ln_lprod		-0.0435 (-1.34)	0.197*** (3.83)	0.130* (2.31)
ln_Imp_int		-0.0127 (-1.24)	0.0554*** (5.60)	-0.00104 (-0.10)
Constant	-1.749*** (-7.39)	-1.481*** (-5.21)	-2.733*** (-8.90)	-2.364*** (-6.61)
Observations	7270	7270	7270	7270
R-squared	0.615	0.613	0.008	0.615

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

**All the variables are used in their natural logarithm form

From the results above it is evident that HHI has a stable negative relationship with RCA, with only 1% increase in HHI the RCA will decrease somewhere from 12.2-14.2%. That clearly shows that overall high concentration on the Korean domestic market is not beneficial for its exports.

Import intensity though ambiguous is not significant so it doesn't require any additional explanation.

As for the labor productivity, well in line with the intuitive expectations, it is maintaining positive relationship across the regression, however in the column (4) it lost its significance, which may imply that it is either related to the unobserved changes over time and industries that are being captured by the fixed effects or its relationship with RCA is not as linear as we first assumed. Either way, the adjusted R-squared of the regression with both industry and year fixed effects is slightly higher, that is why we will consider it as the main result. In which case the labor productivity loses its significance. And thus, we are left only with the relationship of our main variables of interest, which as it was stated before is constantly negative.

Our findings contradict with the previous research done for South Korea. We believe that there may be several reasons to explain this. On the one hand, the time horizon in our study is much longer, the market maturity level in the developing Korea may have changed over time and react differently to the same conditions and on the other hand as we are looking at all the existing industries the sample is probably not homogeneous, which implies that some different industries may show opposite behavior. We account for these assumptions by dividing our data into several groups and running the Model 1 regression for each of them separately.

In order to see if there were any major changes over the years, we look at the average for all the industries values of the RCA and HHI over the years that are reflected in the figure 8.

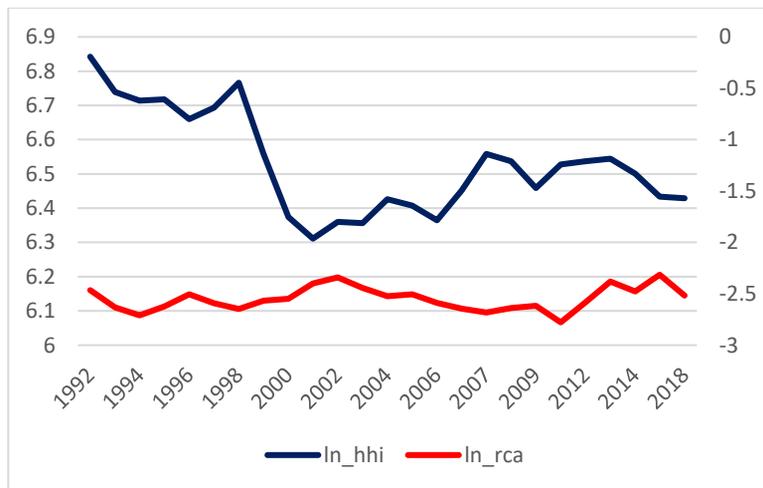


Fig.8. Line chart of the two main variables over the period 1992-2018

It can be seen from the figure 8 that RCA and HHI have an overall negative trend, especially so after the 1997, when the Korean market concentration greatly decreased. This huge drop corresponded to two important events: the first was Asian Financial Crisis; while the second was the establishment of the Korea Fair Trade Commission (KFTC). As that was in charge of controlling the implementation of the MRFTA (Lee 2015). This makes us believe that it was the turning point for Korean domestic market and since then the national-champion rational was becoming less

characteristic to Korea and in the recent years Korean market reached its maturity and competition is now a very important component of it, which makes domestic rivalry more likely to be observed in our empirical study. In order to see if this timely change had any significant effect on the relationship of the main two variables of interest, we are going to divide our sample in to two parts: 1992-1997 and 1998-2018 years, by introducing a dummy variable.

Considering that in our study we use all the existing manufacturing Korean industries they can have very diverse characteristics. For example, when it comes to the export activity certain industries may be more or less export oriented. As our main interest is the domestic market concentration effect on exports, industries that tend to be more outward oriented can greatly affect our results (Navaretti et. all 2008). In order to avoid any possible bias brought by the heterogeneity of the data, we are going to divide all industries into the high-exporting and low exporting. It will be done by finding the average value of RCA across industry for each year and everything above it will be considered a high-export, while the values below will be referred to as the low-export.

We start with visualization of the difference that dividing the dataset into a number of sub-sets makes to the slope of the regression line. With the assumption that market conditions changed after the introduction of the commission there are two different options, thinking about the different industries, there are other two options of them being high exporting and low exporting and lastly, we combine these two assumptions and we want to see the behavior of the high exporting and low exporting companies before and after the introduction of the Commission, in total it gives us 8 different opportunities that may be reflected as presented in the table 6.

Table 6. Heterogeneity assumptions and their combinations

	<i>Before Commission</i>	<i>After Commission</i>	
<i>High-exporting</i>	HB	HA	H
<i>Low-exporting</i>	LB	LA	L
	B	A	

On the next step we plot the regression lines according to these assumptions as it is shown in the figure 9.

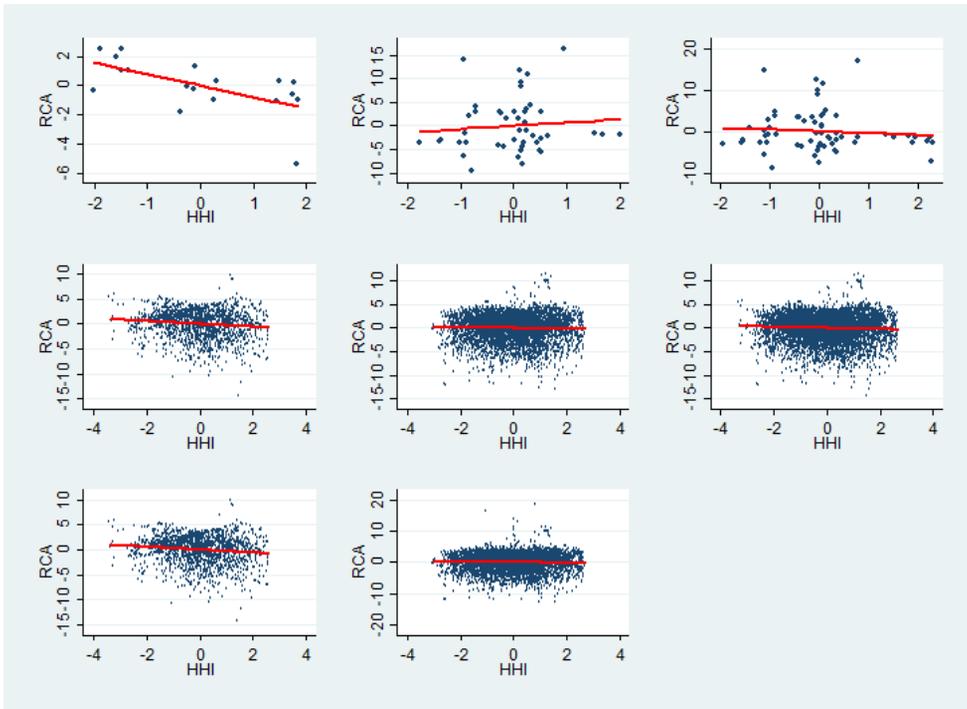


Fig.9. Regression lines for different data sub-sets.

It seems that both policy changes and industry export-orientation are important factors affecting the relationship between the domestic market structure and international competitiveness. In most of the cases the slope is negative, but the steepness of it varies greatly. We can also notice that for high exportin industries after the introduction of commission the relationship was strongly positive. Which may explain some disparities in the previous regression results. All these different

industries over the long time period showed different behavior and confused the ending results.

In order to give more precise results, we are using Model 1 for these different subsets. The findings are presented in the table 7.

Regression results confirm the preliminary findings based on the visual analysis of the figure 9. The relationship between domestic market concentration and international competitiveness is mostly negative, but the degree of the effect varies for different groups of industries. As we are more interested in the current market, we will concentrate on analyzing the data after the introduction of the Antimonopoly Commission. If the industries are not divided then one percent increase of market concentration will result in 8 percent decrease of the competitiveness of the Korean industries globally. However, when we divide the industries based on their inclination to export, the picture looks a bit different. The domestically oriented companies (that are the majority) show that they are not strong enough to compete abroad and demonstrate that high market concentration allows them to enjoy the benefits of the domestic consumers without putting too much effort into improving. However, the industries that are mostly export oriented, behave completely differently under these circumstances, and become the case for the national champion rational. Their small number and big share of export allow us to assume that these industries are the ones, presented by the major Korean companies that are taking advantage of the oligopolistic market structure and gain the competitive edge internationally. This finding is very important as previously for the empirical research on Korea all the industries were analyzed together, getting some kind of an average result for all the industries and ignoring their inborn differences. As it was just demonstrated, this approach may lead to the overseeing of some information that is crucial for the careful policy making.

These additional regressions presented in the table 7 also allow us to see more clearly the effect of the control variable such as labor productivity and import intensity. Even though some disparity is still present, the majority of the regressions show that

both of these indicators contribute positively to the international competitiveness of Korean industries and especially so for the high-exporting ones. The only exception is the column (1), that reflects the high-exporting companies from the period before the Commission, for which both labor productivity and import intensity were negative.

The negative sign for labor productivity in this case may be explained by some policies of the time or labor union riots, as this period is not crucial for the purposes of this work we will not look further into this matter.

As for the negative effect of imports, the reason is quite clear. It was still the time of the Korean market establishment and development, their products had neither the quality nor other characteristics to be chosen over the well-established international goods. So, at that time imports were more of threat rather than a stimulus for development.

Many of the previous studies mention the presence of the simultaneity bias between market structure and export performance. It is explained by the fact that if any market structure brings success on the international market the average industry profits rise, attracting new entering companies into the market and thus changing the domestic market structure. So, the relationship goes both ways. In order to solve this problem, usually the 2SLS model is applied. However, finding the suitable instrumental variable (IV) is very difficult and if the IV is weak it can only worsen the bias observed in the OLS results (Andrews et. al 2006). Thus, we recognize this issue as a limitation of this study.

Table 7. Regression results for the data sub-sets.

	RCA							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	HB	HA	H	LB	LA	L	B	A
ln_hhi	-0.718*	0.956	-0.0570	-0.298***	-0.0768*	-0.123***	-0.306***	-0.0762*
	(-2.48)	(1.00)	(-0.10)	(-4.86)	(-2.36)	(-4.32)	(-5.05)	(-2.30)
ln_lprod	-0.390	7.054***	3.421**	0.136	0.171*	0.126**	0.133	0.171***
	(-0.30)	(4.27)	(3.42)	(1.23)	(3.39)	(3.28)	(1.22)	(3.35)
ln_imp_int	-0.200	0.750*	0.459	0.0154	0.0673***	0.0504***	0.0144	0.0656***
	(-0.62)	(2.44)	(1.80)	(0.78)	(6.12)	(5.43)	(0.74)	(5.89)
Constant	3.121	-43.82***	-17.26*	-1.263*	-2.978***	-2.411***	-1.201*	-2.965***
	(0.51)	(-3.65)	(-2.26)	(-2.10)	(-9.22)	(-9.22)	(-2.02)	(-9.05)
Observations	18	48	66	1673	5531	7204	1691	5579
R-squared	0.554	0.731	0.697	0.753	0.684	0.633	0.751	0.661

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

**All the variables are used in their natural logarithm form

The existing research is using different variables as possible candidate for the IV, however their suitability is arguable, which is reflected in the fact that not a single study used the same instruments and all the authors were coming up with their own ideas such as:

- Minimum efficiency scale (MES) of the companies in the industry. At the MES point, the company can achieve the economies of scale necessary for it to compete effectively in its industry. MES measures the degree of scale economies and is calculated as the average size of the largest factories accounting for 50% of total sales in an industry (Chou1986).
- The entry also can be restricted when large first-step investments are required in order to start the business and be able to compete in a certain industry. For example, certain industries may require capital investments in inventories or production facilities. Capital requirements (KR) form a particularly strong barrier when the capital is required for risky investments like research and development. And the willingness for the risky investments is one of the characteristic features of Korean Chaebol companies, as they are being supported in one way or another by the government (Lee 2007).
- Age is seen as a proxy for the size of the firm, the older it is the bigger it is expected to be. And large firms will have a higher probability to export (Bramati 2015).

But as these variables are very arguable when being used as the IV for the market concentration, we are not going to use them in our study, in order to avoid the possible increase in the skewness of our results, it is well known that a bad IV is worse than no IV at all. Moreover, it was proven before by many scientists that even though the 2SLS can improve the accuracy of the data, it does not change the findings dramatically, so the results that we obtained in our empirical models while not safe from some deviations are still quite robust.

Another issue that causes concern in our approach to the analysis arises from the disparities among industries of one country, that as we have seen in certain cases

may even show completely opposite results. We deem it meaningful for further studies to concentrate on a specific group of industries and to conduct a cross-country analysis rather than withing one country cross-industry one.

2.4. Policy implications

From the very beginning our research was aimed at bringing some practical contribution to the current policies aimed on the development of the Korean economy in general and International competitiveness in particular. All the previous theory analysis and empirical exercises that we carried out were aimed at finding the real state of the affairs and giving practical recommendations based on that.

We will go one-by-one over the empirical findings, interpreting them and providing the possible recommendations for the improvements.

Starting with the main variable of interest the HHI which was used as a proxy for the domestic market concentration. From the summary statistics we can see that the average value of this variable was 1731, which gets into the category of the relatively concentrated markets. That goes along with our assumption of the presence of the oligopolies in a big number of Korean industries. Initial expectations were bases on the possibility that some of the positive characteristics of the oligopolistic market structure may contribute to the international success of Korea, however, we found it not to be the case. We do not reject the possibility that some time ago this phenomenon took place, but the latest data used in this work proved that regardless of this, now highly concentrated industries play against the comparative advantage and export intensity of the Korean manufacturing. Adding the knowledge of the Korean economic development to the theoretical reasoning we can conclude that this situation is a bright evidence of the very sore issue of the Chaebols. They were the engines of the Korean rapid development and success, but the time of their highest have passed and now we can see that this type of structures only weights industries down. Globalization and integration into the world markets call for seatrain adjustments and restructuring.

This is a well-known problem, and a lot of suggestions were made how it should be dealt with, starting from very radical ones, such as total banning and segregation and going to those that totally support these companies and vote for providing them with more power. We do not believe to be able to make a suggestion that was not already thought by one scientist or another. However, we provided the evidence of their negative influence and would like to state our suggestion as to which of the possible ways of dealing with the current problem we find as the most appropriate. It is not possible nor recommended to completely get rid of the chaebols. They are rooted at the very basis of the Republic of Korea since their appearance. Additionally, they are still the biggest contributors to the national GDP. However, chaebols have certain problems that should be solved or at least maintained on the lowest possible level. That task goes to the government policy makers and executors. Another thing, are the entrance barriers. Presence of the conglomerates makes it extremely difficult for SMEs to be born and succeed, but it is this exact companies that push the progress in the modern world, “thinking-out-of-the-box” is not something easily realized in the big, hierarchical companies with the big heritage. This requires a lot channels of support and investment. Lastly, the problem of mergers and acquisitions. What can start as a perspective SME may at the end become a part of a huge company, officially or through the “gentleman agreement”. This increases the hidden concentration and makes it more difficult to control. This problem is the most difficult to solve as it is impossible to prohibit the interaction between the market participants. But there must be some kind of incentives for the big companies to engage into the equal partnership with small companies, and not just the secret dominant-dependant one. For example, properly applied tax exemptions can be a good motivation.

The next important factor is the labor productivity. With the development of the technology, more and more of the production functions previously fulfilled by workers are now done by the automatic machines or robots. In this situation the human capital of the company only appreciates. The demand is now mostly for the

qualified employees that can not only replicate but also bring something new, add a new value to the company. We can see this being reflected in the positive and significant labor productivity. Which essentially shows the ratio of sales to the number of workers, this variable reflects the effectiveness of production as well as value brought by each worker. The resulted coefficients confirm the logical assumptions and the overall picture seems to be quite promising. In this regards we are going to suggest that companies should not relax while enjoying the current level of the labor productivity but work hard on increasing it further making it their advantage. In the modern economy the moment company stops development even being on the highest position on the market it has already lost (Porter 1990).

As it was mentioned earlier the influence of import on the export performance is not very clear. It can deteriorate the national manufacturing by being more competitive than the national product and have a negative effect or it may put a pressure on the domestic companies to improve their product and increase export in a hit-back move. Thus, the actual effect of import depends on each individual case. As we have seen, from the regression, import is an important source of motivation for Korean manufacturing industries to improve their international performance.

As before, in the case of already positive effect of a certain factor on the dependent variable our suggestions are mainly focused on the maintenance of the existing relationship and enhancing of its magnitude. In case with imports, it is very important to make sure that Korean domestic market stays open for any international production, this means lower or no tariffs, quotas and subsidies. These measures are very useful on the initial stages of development of certain industries but later they should gradually be withdrawn. However, as Korea still classifies itself as a developing country, a lot of the protectionist measures are being justified. This tendency must be strictly audited in order to see if the provisions and regulations have a justified base to be applied and in case of the violation of the policies, they must be strictly but gradually stopped. Our position on this matter can be argued by the supporters of the trade balance, however it is important to remember that the

trade balance is good, but in the long run tariffs and other restrictive measures will actually lead to the deterioration of that exact country's economy they were aimed to protect.

Conclusion

Prosperous economy is the foundation of a stable and satisfied nation. In the modern world every issue of the single country needs to be viewed in the international perspective. Interconnection became a global phenomenon. Thus, the economic development is not limited to the geopolitical borders. Great contributor to this process is export of goods and services produced on the territory of one country all around the world. From this position the ability to export a lot of products to many consumers for a good price – which is international competitiveness – plays a very important role. The catalysts and inhibitors of this interactions have been studied for a long time now and from a great variety of points.

In this paper we focus on finding the link between domestic market structure and global performance on the case of South Korea. The importance of the nature of the relationship between these two categories is being explained as the possible source of increase for the global competitiveness of the national economy and thorough it the further economic development. In order to be able to work out any measures the policy makers must be well equipped with the knowledge of both – theory and actual state of affairs. Our work has tried to achieve it by studying all the previously conducted research, then developing a theoretical model based on them, extracting the raw data and inserting it to the developed model and finally analyzing the obtained empirical results on a specific country market and giving customized recommendations for the case of South Korea.

The choice of the country was explained by its peculiar domestic market that maintains the historically inherited structure that involves the huge almighty domestic companies “chaebols” and this country’s search of a new source of the economic development. Previously conducted studies found out that South Korea is a rare evidence of the existence of the national-champion rational, which is one of the possible links of connection between the domestic market structure and international performance. Nevertheless, that study was conducted almost ten years ago on a dataset that is even older and we felt that some upgrade can be useful. The

reason behind that is the very small number of empirical evidences for the national-champion rationale, that has a very solid theoretical basis, but does not seem to be working well in the real world. Thus, we wanted to see if it is still the case for the Korean economy, and if it is, then how it could be possibly effective.

In the process of our research we studied a great number of works on the different aspects and points of view on this problem. That made us single out the possible mechanism through which the imperfect competition could lead to the international competitiveness. The key actor of such phenomena is oligopoly – market structure that is characterized by 3 to 5 big companies occupying around 80% of the market. In this build the competition is still present to a certain degree compared to the pure monopoly, and it also has a significant benefit compared to the pure competition, which is a presence of the economies of scale, that makes innovation much more feasible and unit costs lower, two most important aspects of competitiveness. However, oligopoly is not deprived of the drawbacks, the major of which are the absence of flexibility and secret collusions. Based on that reasoning the international competitiveness of the industry with the high domestic concentration is possible only in case if the market structure is oligopolistic and somehow the negative sides are being diminished or balanced.

Our assumption was that, perhaps, with the heritage of chaebols Korean market was able to achieve this feat through a number of economic reforms and some direct and indirect policy regulations that were essential to its rapid economic growth. In case it was true, some of the current government efforts directed on the further restriction of the big conglomerates could be found counter-effective.

In order to be able to make any conclusions we needed to look at the current situation of the Korean domestic market structure and its international performance. For that purpose, we formed a model based on the example of previous studies and ran a number of regressions. Later we conducted a robustness check with various approaches and variables. In the result we have come to the conclusion that regardless of what the situation used to be before, now the Korean market is the

subject to the domestic rivalry approach which implies that only the best of the domestic companies that have fought and won on the internal market can be successful outside of the country. This conclusion brought the important policy implications that overall are aimed on improving the current situation and diminishing the deteriorating factors.

Above everything else it is very important for Korea to promote the domestic competition. In our opinion, there are two possible directions of action for that purpose: to control over big companies and support small ones, by subsidizing, various incentives and so on. A number of other factors can greatly contribute to the international competitiveness of the Korean industries, for example the increase of labor productivity and investment in the brand image, that will be positively recognized all over the world.

Overall, our work updated the existing research on the link between the domestic market structure and international performance for the case of South Korea. After a thorough analysis, careful comparison and classification of the existing literature, we conducted an empirical study. We introduced a new proxy for the international performance that was not used before in this type of works – Relative Comparative Advantage and checked the results by comparing them with indicators obtained by implementing a widely used variable of export intensity, that improved the reliability of the final findings. Even though our results are not revolutionary, they can be used as a roadmap and justification for certain policies, striving to achieve the continuous economic growth for Republic of Korea.

We would also like to note that despite the fact that economic growth of Korea in the last 60 years was achieved mainly through the export orientation, this can no longer be the main engine and the evidence can be seen in its slowdown. Implications of that notion are that now this country is faced with the need of looking for new ways of supplying the economic growth, which is a natural development process, however, one should not abandon the existing progress source and moreover, it is better to improve it and add a new one, as all the processes and industries in the end

are very interconnected and simultaneity can bring synergy effects. In which case the export promotion is as important as it used to be. That is the reasoning for the actuality of the current research, which we hope can contribute to the sustainable development not only of South Korea but also countries that benchmark this country's experience.

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