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## ECONOMETRIC METHODOLOGY OF MONOPOLIZATION PROCESS EVALUATION

Dmitrijs Skoruks<sup>1</sup>, Maija Šenfelde<sup>2</sup>

*Faculty of Engineering Economics and Management, Riga Technical University,  
Kalku 1, LV-1658 Riga, Latvia*

*E-mails: <sup>1</sup>dmitry.skoruks@gmail.com; <sup>2</sup>maija.senfelde@rtu.lv (corresponding author)*

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**Abstract.** The research “Econometric Methodology of Monopolization Process Evaluation” gives a perspective description of monopolization process’ nature, occurrence source, development procedure and internal conjuncture specifics, as well as providing an example of modern econometrical method application within a unified framework of market competition analysis for the purpose of conducting a quantitative competition evaluation on an industry level for practical use in both private and public sectors.

The main question of the aforementioned research is the definition and quantitative analysis of monopolization effects in modern day globalized markets, while constructing an empirical model of the econometric analysis, based on the use of international historical experience of monopoly formations standings, with the goal of introducing a further development scheme for the use of both econometrical and statistical instruments in line with the forecasting and business research need of enterprises and regulatory functions of the public sector. The current research uses a vast variety of monopolization evaluation ratios and their econometrical updates on companies that are involved in the study procedure in order to detect and scallar measure their market monopolizing potential, based on the implemented acquired market positions, turnover shares and competition policies.

**Keywords:** monopolization process, applicable econometrical modeling, competition level analysis, market conjuncture, industry development trends.

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### 1. Introduction

With the vast development of the modern business and trade, numerous former unquestioned and unchallenged visions of the market functioning paradigms, mechanisms and conformity of natural laws are being transformed, reevaluated and analyzed from different economic perspective.

Based on the classic A. Smith's theory, J. M. Keynes alternative approach and works of P. Samuelson, economic research is developing further among with the entire society, causally following and quickly reacting to newly emerging social trends.

It states in "An Inquiry into the Nature and Causes of the Wealth of Nations" Book IV, Chapter VIII: "Consumption is the sole end and purpose of all production and the interest of the producer ought to be attended to, only so far as it may be necessary for promoting that of the consumer". Thus, the inventor of "invisible hand" concept underlines that no form of competition, regardless of its specifics and market conjuncture composition, is free from or can neglect the maximum level of consumption capacity, made available by the current demand (Chamberlin 2010; Chamberlin 2011).

It is argued in "Foundations of Economic Analysis": "Every good cause is worth some inefficiency". Thus, it may be argued that for the sake of economic stability maintenance and social utility maximization, a shift from perfect or near – perfect competition can and to some extent, should be made (Samuelson, Nordhaus 2012).

It is explained in "The General Theory of Employment, Interest, and Money": "The difficulty lies not so much in developing new ideas as in escaping from old ones". Consequentially, this undoubtedly widely respected author suggest the non – conventional approach to implementing new elements into the modern day economic theory while being able to take a fresh, innovative look those seemingly common aspects of market interactions (Keynes 2011).

Nevertheless, there is one particular existing field of economic evaluation that hadn't seen any changes in the public opinion since the mid XIX century. It is still, as well as more than a hundred years before, being seen as concentration of "capitalism evil" that bring only losses and price increasing to all members of the society.

It is a legal equity, profiting from the position of absolute monopoly, so attractive and wanted by any actively functioning company, influencing all aspect of modern day economic processes, significantly changing the composition of any given market conjecture and reshaping all forms of business conduction possibilities. The above mentioned position is being obtained in the process of monopolization – one of the most topical phenomena of both developed and developing economies of the current century, significantly rising in importance of full understanding within the context of the world financial crisis aftermath. The composing element of any national economy, namely, markedly involved companies are forced to adapt to the process of globalization through finding new, sometimes quite unorthodox ways of securing the conducted business profitability and liquidity, thus, consequentially increasing competition within any given market that frequently leads to market consolidation tendency increase, while excluding a large portion of inefficient companies from the market, leading to natural increasing of the industry monopolization level (Šenfelde 2009).

The goal of the current research, taking into consideration modern day economic challenges and above described tendencies, is to, with the use of analytical, comparatively – economical, coherently – logical and economic index analysis methodologies, conduct a full – scale study on the nature of monopolization process, detect its appearance sources, define the caused effect in modern economic systems, as well as analyze and evaluate the main monopolization influence factors that shape conduction of the process according to various industries market conjecture specifics.

The hypothesis of the current research is as follows: modern day small open economies undergo a natural, consequentially – economic based and supported by internal competition, process of market consolidation, which leads to the acceleration of individual monopoly power concentration in specified niches, especially seen in industries that are restricted from the effects of import due to their functioning specifics.

The current researches scientific study is defined as five structural industries of Latvian national economy, their market conjectures and specifics of competition conduction, as well as revealed monopolization trends and its development algorithm. An additional focus of attention will be given to the mobile communication market as a system, naturally secured from macro – external competition such as import and international equity infiltration due to the regional specifics of providing telecommunication services.

The object of the current research is the Latvian Republic mobile communication market along with involved companies (Bite 2012; Tele2 2012; LMT 2012), their supplied services, pricing systems, management strategies, related additional products, empirical demand, supply and client loyalty in the specified market and the above given factor cluster influence on the process of monopolization within the framework of the evaluated industry.

The main goals of the current research are:

- Defining the existence substantiations, causes and consequences of monopolization process;
- Defining the positive and negative consequences on monopolization process conduction in the modern day economic systems;
- Construct an empirical quantitative model that would allow to evaluate and conduct scientific study of monopolization process combining the main existing methodologies with innovative causally – coherent approach;
- Conduct a study of the process of monopolization, its structured development and composition algorithm with the use of the developed model;
- Conduct a complex quantitatively – qualitative analysis of Latvian national economy's industries with the use of the developed model;
- Conduct a verification test of the current research hypothesis with the use of the developed model, consequentially confirming of neglecting its rationality and applicability.

The following assessment methods shall be used in order to conduct the current study: monographic analysis, secondary statistical data analysis, graphic analysis, econometrical modeling, mathematical criteria analysis, quantitative regression analysis, qualitative resulting interval range analysis and data grouping method.

The following sources were used in order to conduct the current research: printed scientific literature and fundamental researches (Lībermanis 2011; Nešpors 2012; Tarbell 2012; Bartneev 2008; Liwschitz 2011; Soloc 2007; Khayeck 2012), internet portals, electronically accessible market and enterprise data (Bite 2012; LMT 2012; Tele2 2012) data, electronic university databases, officially published statistical data (CSP 2012), published legislative literature (Judīt 2011). In order to establish a scientifically clarified field of analysis, the following assumptions are being taken into account:

- All industry supply participants, who are initiated to an individual market share under five percent of the gross market capacity shall be merged into one cluster of statistical data until its market share value reaches a minimum of the aforementioned five percent;
- Merged data cluster, regardless of the number of included participants are being seen as one unified member of the market with the respected individualized monopolization possibilities.

Additional complementary services that are not primal to the dual core product benefits are being seen as minor influence factors that have a semi-significant effect on the market share fluctuation between competing parties.

## **2. Monopoly essence summary**

Monopoly (from Greek  $\mu\omicron\nu\omicron$  (mono) – one and  $\pi\omega\lambda\acute{\epsilon}\omega$  (poleo) – to sell) is a unique advantage situation in any state, industry, organization or branch that allows to acquire benefits from such position. In terms of economic evaluation, a monopoly is defined as a special market situation, ensuring a higher level of profitability on the behalf of price growth and production cost cutting with the use of the so-called monopoly position advantages. Such position is wanted by any entrepreneur due to, on one hand, neglecting of competition risks, growing marginal costs, sale amount fluctuations and, on the other hand, the ability to influence both pricing and social preferences through the supply amount changes (Tarbell 2012).

The above given characteristic of the absolute monopoly market type from the perspective of modern economic reality is to a certain extent, outdated, not reflecting the true nature of “money–product–money” link internal casual relations, for the monopolist is dependant on a voracity of influence factors, regarding price rising, such as, consumption rates, consumer disposable income, demand flexibility, but mostly – the common economic scene that dictates the rationalization of prices in order to maximize the

actual profit. Nevertheless, the public opinion is still largely depended on stereotypes, the most powerful and persistent of which is the assumption of “monopolies dictating the prices” (Fisher 2012).

The main reason for emerging, adaptation and successful functioning of an absolute monopoly are several strictly economic reasons that are listed below:

- There is only one supplier in the market;
- There are now replacement products (goods or services) available;
- Existence significant, almost unconquerable barriers for new suppliers to enter the monopolizes market;
- Monopoly’s supply amounts are equal to entire industries supplier demand, which can be interpreted as a down-lined linear chart (Robinson 2012).

It would be worthwhile to describe the main barriers, implemented by the modern monopolies in order to better understanding of monopoly advantages:

- Legal – laws and governmental decision;
- Economic – lack of capital, resources, cost cutting abilities, information or any other market influence tool due to their concentration in the hands of the monopoly;
- Technology – experience, specifics efficient methods of business conduction or manufacturing protected as the commercial secret or individualized know – how (Coase 2011).

The above given information allows to asses the phenomena of absolute monopoly with an understanding of such market positions advantages for the benefit – holding legal equity and, as the flip side, the shortcoming from the society’s point of view in terms of competition and trade liberalization, thus, insuring the necessary strictly scientific basis for the further conduction of the current research.

### **3. Concept of econometric methodology of monopolization process evaluation**

In the previous sections of the current study, various classic theoretical monopolization methodologies were analytically described, evaluated and implemented in order to conduct a scientifically – knowledgeable basis for further development of conceptually new econometrical tool of monopolization process multi-perspective analysis.

The developed model will combine existing methods of both specialized monopoly and empirically – econometrical data assessment with author proposed innovation, consequentially designing a combined quantitatively – qualitative tool with cheap installation, easy implementation and demonstrative result outputs, suitable for use in both state sector for regulatory reasons and private equities with the goal of business planning or managerial tasks performance improvement.

The use of already existing methods will allow to prosper from previously gained international experience, while implementation of newly developed correlations and additional influence factors shall provide a topical transformation of the necessary nature, inflicted by globalized merging market clustered composition units, thus, creating a synergetic effect, consequentially improving the existing approaches while preventing innovative tool of assessment from untested and questionable fluctuation, reasoning scientific heritage with rational updates on a scalar scale, reaching far more flexible, fundamental and coherent model composition.

The main foundation of the developed complex model of monopolization process evaluation is the step-by-step assessment of available data from econometrical perspective with the perspective acquired scalar result qualitative evaluation, allowing the conduction of a complex, multi-scale analysis, suitable for all economic field of activity, meaning that the current model shall be suitable for evaluations of any national economy industry. The developed model composition will be further described in the following chapters of the current section to give a complete and sufficient understanding of the internal quantitative correlations between model's structural elements, as well as working out a steady implementation algorithm, while creating a qualitative interpretation methodology for assessing the quantitative scalar outputs of the conducted multi-factor analysis.

In order to testify the hypothesis of the current research, consequentially approve or decline its conceptual formulation, the developed model shall be implemented, tested and statistically leveraged in order to prevent any minor calculation imprecision on the five following industries on the Latvian national economy:

- Industries, unaffected by import flows: Mobile communication market; Banking sector; Multi-purpose retail trade market;
- Industries, affected by import flows: Brewing industry; Pharmacy market.

The reason for selecting the above mentioned industries is the need for various situation testing of the developed model, which can be reached only by implementation testing within the framework of different and partially unrelated sectors of the economy, while defining the effect of import on market consolidation processes and, consequentially, more rapid monopolization trend strengthening.

#### **4. Econometric methodology's of monopolization process evaluation quantitative functioning principles**

Using the information, described in the above given section of the current research, it can be stated that the modern econometrical data assessment methods and the existing monopolization evaluation approaches share the following basic quantitative market data clusters: individual market share dynamics, demand flexibility – price fluctuation correlations, number of competing suppliers in the entire industry. These elements

undergo an individualized evaluation, according to the chosen methodologies and the results of the conducted analysis are re-interpreted separately, forming unrelated scales of decision making.

Taking into account the multi-scale evaluation, conducted within the framework analytical methodology assessment section of the current research, it is necessary to update each studied methodology by creating a more transparent quantitative basis for respectful influence factor group and integrating them into a single confound of a complex econometric multi-function analytical model.

The most relevant case of natural monopolization process conduction can be seen in a situation that uncovers A. Smith's "invisible hand of the market" concept's hidden essence, serving at the same time as the source of critics against both neoliberalism tendencies and orthodox free competition schools.

The above mentioned phenomenon can be defined as follows – regressive competition. Regressive competition is a market situation, achieved by strong internal competition pushing suppliers out from the market, while new competitors are unable to infiltrate the current market due to the lack of resources and high industry, based on constant fluctuation of the market conjuncture, exclaimed by the level of internal competition. Consequentially, the market becomes a closed system with no entrance possibilities, but the existing suppliers are continued to be pushed out by their more efficient rivals, thus, leading to natural market consolidation until the state of oligopoly and enabling the process of monopolization to begin its conduction and development along with the evolution of the market.

Another way of regressive competition to come into place is a wide-scale economic crisis that in a natural way forces part of the suppliers to leave the market, while the remaining competitors engage each other in drastic measures of market share redistribution. Due to the crisis, there is no rational reason for a new player to infiltrate the industry, suffering from a full-time recession, again leading to market consolidation and boosting the monopolization trend to strengthen and evolve.

Therefore, the complex model of monopolization process evaluation must include all factors that influence market share dynamics, individual company monopoly power fluctuation evaluation, competition and its effects analysis, current gross position of all suppliers of the industry in terms of sale amounts, internal and external possibilities for market conjuncture changes and last but by no means least, the attractiveness of the specified market for external infiltration, while assessing the rationale want and practical possibility of new supplier involvement into the market in terms of monopolization process future diagnosis.

The indexes are additionally integrated into the structure of the current model with the use of statistical weights system, allowing the synergetic effect of mass coherence to take place. The conceptual structure of the current model can be seen in the Table 1.

Table 1. Summary of the developed methodologies integrated quantitative index system (source: compiled by authors)

Title of the model – used index	Index use substantiation	Weight of index in acquired result evaluation
Net industry monopolization level index		20%
Relative monopolization growth index	Define the current level of monopolization process development	20%
Monopoly power stratification index		15%
Monopolization effect index		10%
Market natural monopolization potential index	Evaluate monopolization potential and future possibilities	15%
Industry competition capacity index		10%
Competition potential index		10%

From the information, given in Table 1, it can be seen that the currently developed model inflicts a dually – complex method of data analysis, quantitatively assessing both current monopolization status and future monopolization process development potential in an econometrical, coherent way within the framework of integrated index system.

It would be rational to define and analytically describe the calculation and quantitative casual links between the indexes that form the composition of the current model, while giving an overview of qualitative assessment methodology, used for interpretation of the gained quantitative analysis result evaluation.

## 5. Quantitative structure of developed methodology

The main modern paradigm of assessing monopolization process in all aspects of the analysis is to create one-dimensional perspective with a number of related simplifications and evaluate this economic phenomenon in the framework of developed assumptions.

It would be, however, most beneficial to use a multi-dimensional perspective in order to analyze the process of monopolization, while creating an econometrical balances system of integrated and quantitatively measurable influence factors.

The complex model of monopolization process evaluation consists of seven indexes, conceptually and analytically described in the current researches 4. section that are built in a unified econometrical system of multifunction evaluation.

The quantified system itself is based on correlative dynamic equation modeling approach, creating a combined system of mathematical calculation.



Naturally, it would be absolute and inefficient to construct a manual calculation system in the age of advanced technological preferences. Therefore, the need for an electronic instrument, easy to apply, cheap to implement and convenient to use emerged.

On the base of Microsoft Excel program, an electronic template, consisting of primary and secondary data inserting area, analytical input and output field, as well as total summarized result quantification cells.

The developed econometric methodology model of monopolization process evaluation is a fully modern tool of econometrical market evaluation, fit for easy and efficient use to evaluate any market or industry by any competent physical person, legal equity or official institutions.

While the current model provides economically accurate and methodologically verified data analysis on up-to-date, fully digital basis, qualitative interpretation of the acquired scalar results is crucial for making correct decision.

Due to the recognition of the need for quantitative result qualitative interpretation, the current model has an additional explanatory feature, allowing the conduction of a fully transparent scientific market analysis. An illustration of the newly and innovatively developed electronic template can be seen in the form of Table 2.

Table 2. Summary of the developed methodologies integrated quantitative index system (source: compiled by authors)

$\sum_{EUR}$	$\Sigma\%$	Nr	Market suppliers	Absolute net competition effect
SUM(E;Y)	100%	<b>1</b>	<b>A</b>	<b>K1</b>
$\sum_{EUR/n}$	$\Sigma\%/n$	<b>2</b>	<b>B</b>	<b>K2</b>
AVERAGE(E;Y)	K%	<b>3</b>	<b>C</b>	<b>K3</b>
		<b>4</b>	<b>D</b>	<b>K4</b>
		<b>5</b>	<b>E</b>	<b>K5</b>
		...	...	...
		<b>X</b>	<b>Z</b>	<b>K%</b>

### **6. Implementation of econometric methodology of monopolization process evaluation within the context of research hypothesis verification**

It would be most rational to create a single framework of the conducted model implementation result evaluation illustration in order to compare both quantitative and qualitative aspect of the completed research. The unified complex model of monopolization process analysis can be seen in Table 3.

**Table 3.** Evaluation of the econometric methodology of monopolization process implementation quantitative results system (source: compiled by authors)

Title of the model – used index	Industry, used in model implementation				
	Mobile communication market	Banking sector	Multi-purpose retail trade market	Brewing industry	Pharmacy market
Net industry monopolization level index					
Relative monopolization growth index	6678.09	6802.16	7383.85	1253.82	1448.99
Monopoly power stratification index	3005.14	489755.6	170883.38	125382.5	92735.1
Monopolization effect index	36.67%	12.67%	32.21%	22.54%	26.99%
Market natural monopolization potential index	70.28	8003.67	3726.08	474.77	126.19
Industry competition capacity index	16970.23	65441.64	267237.82	4779.84	586.8
Competition potential index	14.62%	24.01%	12.86%	23.57%	41.68%
Combined summary evaluation	33.33%	16.67%	25.00%	20.00%	16.67%

It can be stated, acknowledging the information, given in Table 3 that the developed complex model of monopolization process evaluation is a precise, econometrical tool of market research conduction, able to leverage any statistical out scale data burst with the carefully selected weight system, leading to a multi-functional, economically sustainable and scientifically correct model of market data analysis. To create a comparison between the quantitative experiment result qualitative evaluation of different industries in order to define the current level of monopolization in the five markets, undergone the analysis with the use of the developed model. Qualitative result interpretation can be seen in Table 4.

**Table 4.** Evaluation of the complex monopolization process model implementation qualitative results system (source: compiled by authors)

Industry, used in model implementation	Established monopolization level		
	Current monopolization level	Monopolization process future development perspective	Combined total monopolization level
Mobile communication market	Medium–high	High	Relatively–high
Banking sector	Medium	High	Medium–high
Multi-purpose retail trade market	Medium–high	High	Relatively–high
Brewing industry	Medium–Low	Medium	Medium–Low
Pharmacy market	Medium–Low	Low	Relative–Low

The information, given in Table 4 testifies that the level of monopolization in the mobile communication, multi-purpose retail trade markets and banking sector are medium–high and relatively–high, while the brewing industry and pharmacy market are, respectfully, medium–low and relative–low, indicating that the industries, open to import infiltration, have two times lower combined monopolization evaluative coefficient then those markets that are localized and enclosed from influence of external competition.

## **7. Conclusions**

Summarizing the conducted research layout, acquired quantitative analysis result and their profound qualitative evaluation, the following conclusions can be made:

- The conducted research proves the economic nature of monopolization process origins and sources;
- Analysis of the research object had verified that monopolization is a reaction to consequences of fierce competition;
- The model, developed by the conduction of the current research, had described and confirmed the duality of monopolization process conduction due to the nature of its boosting economic influence factors;
- The developed model had proven that irreparable resources, technologies and know-how can and. Mostly, does stimulate conduction of monopolization process;
- The conducted research testifies and confirms the thesis on national economy structural crisis stimulation of monopolization process within those industries that are undergoing a recession;
- The conducted research had proven the much higher level of analytical precision of methods that operate with market share data, rather the just the number of supplier, functioning in the defined market, evaluating industry monopolization process development;
- Positive consequences of monopolization can be seen in the forms of technological innovation, completely new goods, introduced to the market or low cost producing organisation as the so called “mass production effect”;
- The hypothesis of the current research has been fully confirmed: indeed, modern day small open economies undergo a natural, consequentially – economic based and supported by internal competition, process of market consolidation, which leads to the acceleration of individual monopoly power concentration in specified niches, especially seen in industries that are restricted from the effects of import due to their functioning specifics.
- The conducted research has proven the industries with low demand flexibility are more tended to be monopolized due to non-elastic total natural market capacity and inability of the demand amount to operatively relocate;
- The conducted research had proven that monopolization can and must be assessed by coherently-integrated econometrical modelling, which would lead to a much

higher level of scientific and applied analytical precision that can be achieved by individual case – study evaluation.

Summarizing the conducted research, developed complex model of monopolization process evaluation and its implementation results, the proposals can be made:

- Conduction of the analysis of monopolization process as an economical and rational casual relation system;
- Implementation of quantitatively – econometrical instruments for national economy sector analysis in terms of monopolization with the goal to uncover transparent paradigm that can be used in further studies on various industry functioning;
- Usage of combined quantitatively – qualitative assessments methods in order to conduct market research of any nature;
- Assessment of market monopolization stage development, based not only on the typology of the current industry, but, rather, with the use of individual company monopoly power concentration analysis;
- Define monopolization process within the context of natural market consolidation tendencies and total demand amount fluctuation trends;
- Acknowledge the monopolization tendencies, existing in small open economies, as markedly justified and economically rational;
- Define a certain market as monopolized only with the use of scientifically tested and experimentally verified methods of assessment, with the use of “natural monopolization process dual perspective” presumption;
- Continue to adjust and develop antitrust regulations in order to, on one hand, neglect the negative side effect, caused by monopolies, and, on the other hand, to abstain from regulatory interference in situation when monopolization process has not yet reached the negation stage in order to give the market a chance to leverage its internal functioning;
- Use the author’s developed complex model of monopolization process evaluation in order to assess the current phenomena in both qualitative and quantitative ways for regulatory, scientific and business reasons;
- Create a paradigm of using complex econometrical methods of assessment for monopolization studies, thus, replacing the current trend of case – study approach prevailing.

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**Dmitrijs SKORUKS** is a PhD student and a lecturer at Riga Technical University's Faculty of Engineering Economics, where he had previously (2011–2013) successfully completed a master program in Economics, and after the defense of his thesis was awarded a Masters' degree (*Mg. oec.*) with excellence. He had also studied and successfully fulfilled a course (2012–2013) at the Vrije Universiteit Brussel in Brussels, Belgium. He had previously been employed at the RSA Insurance Group's *BALTA* branch company as an insurance marketing consultant and is currently working at the Latvian Central Finance and Contracting Agency as an senior rapporteur of the Program Management and Supervision Department, responsible for methodological development of the empirical state aid compatibility and proportionality monitoring system in economic activities, co-financed by the European Structure Funds and Cohesion Fund. He is the author of various published scientific articles and research papers.

**Maija ŠENFELDE** holds a Doctor degree in Economics (1993) from Scientific Council of Latvian University. She has been working for Riga Technical University in different positions. Since 2003 Maija Šenfelde is Profesor of Faculty of Engineering Economics and Management, from 1997 to 2007 she was a Deputy Dean for Studies, since 2009 she is Director of Institute of National and Regional Economy. Main fields for research are macroeconomics, international and regional economics. She has published scientific papers in peer-reviewed journals and articles and is the author of study books as well. Maija Šenfelde is an Expert of The Latvian Science Council, a Member of The Promotion Council, Member of Professors Councils of RTU and LU.