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## Complex econometric model of monopolization process evaluation

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### Abstract

The research “Complex Econometric Model of Monopolization Process” gives wide description of monopolization process’s nature, foundation source, development procedure and actuality in the field of modern entrepreneurship, as well as evaluates its stimulated social losses and retrievable benefits. The main question of the aforementioned research is definition and quantitative analysis of monopolization process’s effects in the context of the Latvian mobile communication market, while constructing an empirical model of the researched dilemma with the use of international historical experience of monopoly formations standings. 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 numerically measure their market monopolizing potential, based on the implemented price policies.

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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 a 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”

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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. (Smith, 2002)

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, 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 suggests the non – conventional approach to implementing new elements into the modern day economic theory while being able to take a fresh, innovative look at those seemingly common aspects of market interactions (Keynes, 2008).

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 brings 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 aspects of modern day economic processes, significantly changing the composition of any given market conjuncture 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.

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 conjuncture 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 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. A special 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, Tele2 and LMT), 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:

- Deepening the understanding of monopolization process essence.
- 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 use 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 shall be used in order to conduct the current research: printed scientific literature, internet portals, electronically accessible market data, electronic university data bases, officially published statistical data. In order to establish a scientifically clarified field of analysis, the following assumptions are being taken into account:

- All industry supply participants, who ate initialed 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 afore mentioned 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. Theoretical Justification Background

### 2.1. Monopoly essence summary

Monopoly (from Greek *μονο* (mono) — one and *πωλέω* (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, insuring 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 (Fisher, 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 economical 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, specific efficient methods of business conduction or manufacturing protected as commercial secret or individualized know – how.

The above given information allows to assess the phenomena of absolute monopoly with an understanding of such market positions advantages for the benefit – holding legal equity and, as a 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.

## *2.2. Monopolization assessment methods and basis identifications: Herfindahl–Hirschman index*

Monopolization process is testified its fluctuate, dual nature, constant tendency of flexible reaction to even the most minor changes in the market conjuncture on every commercial activity level, finding new ways for capital accumulation with the use of any available economic influence tool from local industry separate sectors to supranational global markets. According to E. Chamberlain, the “natural selection” of liberalized market, functioning within the framework of free trade and lack of centralized support for overcoming crisis times forces companies to adopt by developing differentiation, pricing and managerial strategies that are aimed on competitor elimination in order to prevent the ever growing risk of being “out bided in the eyes of the customer”, thus, creating a prosperous context for monopolization process to emerge and develop rapidly (Chamberlin, 2010).

The major advantage of the current methodology is its acknowledgment of the fact that the process of monopolization, regardless of the regional, legal and economic market specifics, begins and ends with shifting between market share deviation, surprisingly, caused by various competition side effects. Another strong point of the Herfindull – Hirschman index is its simplicity in terms of implementation, namely, there is no need for additional statistical analysis while using the above mentioned method for monopolization evaluation reasons.

A disadvantage of the current method could be defined as focusing on primary markets and neglecting the effect of complimentary substitute products, which often form a parallel industry, shifting the main strategic influence and amounts of profit to related field of activity, leaving the primary market in a stage of “chameleon distribution”, meaning that true individual monopolization power is being hidden by the appearing weakness of the main business branch (Judit, 2012). The U.S. Department of Antitrust Monitoring has defined the following HHI value intervals in the context of analytical quantitative result interpretation:

- $HHI < 100$  – high competition concentration market.
- $100 < HHI < 1000$  – undefined(fluctuant) competition concentration market.
- $1000 < HHI < 2500$  – medium competition concentration market.
- $2500 < HHI < 5000$  – low competition concentration market.
- $HHI > 5000$  – monopolized market (Judit, 2012).

From the above given information, deductively can be established the fact of Herfindull – Hirschman index is suitable for monopolization process analysis with respectful level of empirical evaluation precision, however, the current methodology contains a simplification of market functioning process, which, under certain circumstances may lead to analytical inaccuracy.

## *2.3. Monopolization assessment methods and basis identifications: Lerner index*

In 1934 American economist A. Lerner proposed to reflect the current value in a coefficient that would reflect the gap between price and production marginal costs. The coefficient was given the name of Lerner monopoly power index and the abbreviation L. Its value diapason takes place between zero and one, meaning that  $L = 0$  indicates company's absolute lack on market influence and  $L = 1$  reveals the market conjecture changing power of an absolute monopoly.

Both of these excessive situations are practically impossible to establish in modern real – time markets due to methods of differentiation and marketing in terms of imperfect competition while an absolute monopoly sooner or later encounters the increasing demand flexibility stage, forcing it to trade part of market influencing power for a steady profit level.

The Lerner index is a superb tool for revealing each individual companies monopoly power and profit maximizing price in relation to marginal cost fluctuation, allowing the making of forecast, regarding possible price

increasing within the specified industry of an individual or a summary – average basis. On the other hand, the Lerner index cannot provide the answer to the question of total studied market gross monopolization process development as well as foreseeing its natural consolidation tendencies.

However, the Lerner index provides a solid overview of the market situation, stratified by segments of individual company influence while taking into account both production marginal costs and demand flexibility, confirming that marginal cost can be equal to marginal revenue (monopoly profit maximization condition) only in the elastic part of the total demand, which would force the monopolist to seek price measuring possibilities within the context of decreasing sale amount, neglecting the thesis of unlimited possibilities for price dictation of absolute monopolies.

#### *2.4. Demand flexibility influence on market monopolization possibilities*

It is important to establish the casually – logical link between influence factors of any given econometrical mode, which is why the significant importance of evaluating monopolization processes lies within understanding of divergence between price and demand fluctuation. In case of absolute monopoly, the demand quickly shifts to the non – elastic interval, where the profit is quite high relating to production costs, but is lower than the optimal possible position, found in the flexible demand range (Robinson, 2012).

On the other hand, lower demand flexibility means higher level of individual monopoly power, leading to the recognition of an important fact. Products with demand flexibility, tending to the minimum value, shape the markets of most relevant and high potential of natural monopolization, based of either high demand rates or replacement ability lack, resulting in economical substantiation for rationality and certain industries logical cost – benefit motivation to develop a strong monopolization process conduction trend.

The above conducted analysis proves the lack of scientific and economic evidence for the wide – spread public opinion on “unlimited monopoly price increasing possibilities”. As any econometrical indication, price is a mathematically ranged evaluation of an economical paradox, given through the prism of scalar assessment. Consequentially, the basic principals of price making are the same in all existing markets, allowing the creation of a unified monopoly price optimization.

Low demand flexibility allows receiving a higher level of profit while being entitled to a critical competition advantage of excluding new suppliers from infiltrating the market.

Respectively, the only way for an absolute monopolist to become a true “price dictator” in the terms classical meaning, is to establish a dominant position in a closed market with absolutely non – flexible demand while the disposable income of the consumers is growing at least proportionally equal to price increase rate, which is unlikely to happen due to the complex nature of modern day spending and the effect of society deadweight loss, implemented by the monopoly situation, thus, neglecting the ability of total price dictation by the monopolist functioning itself.

Certainly, absolute monopolies tend to increase prices whenever it is economically rational and possible on a cost – benefit logic basis, however, the conducted analysis completely denies and scientifically disproves the dominating public opinion on “pure evil of monopolies” that “are only prospering on rising prices”, establishing an argued theory of rational monopolization price making and consumer ability to influence the internal market processes even in the case of absolute monopoly.

### **3. Analytical Methodology Assessment**

#### *3.1. Substantiation of industry choice for model development*

The Latvian mobile communication market had undergone substantial changes in the period from 2003 to 2010, regarding supply and demand structure as well as the entire market endogen conjuncture, leading to reconfiguration of both pricing and competition strategies. One of the most significant re – compositions, affecting the entire industry, was incensement in number of involved companies, while the preservation of market typological individualities lead to a situation of normalized and objective monopolization process analysis possibility without the need for applying research leveraging simplifications due to the specified markets natural seclusion from import flows and other external infraction, based on the current commercial service spheres functioning specifics. The clarity of the market system, its secured oligopoly status and, most importantly, naturally developed situation of one

additional supplier successful infiltration to a duopoly industry allows relevant and econometrically precise conduction of experimental modeling, which is the main statement of reason for the current industry choice as the quantified analytical basis for development of the current researches goal model.

According to the Latvian Central Statistics Board, the number of mobile communication user in Latvia had increased by 20.70%, thus, ending the former domination of stationary phone service and forcing the at the time monopolist, Lattelecom, to start developing alternative communication service installations (LCSB Portal, 2013).

Having eliminated the former market giant compatibility, LMT and Tele2 had engaged into mutual competition without, however, the use of price influencing tool involvement in order to avoid the so called “price war”, understanding that the consequences of such action could lead to the same result as it had been reached in the case of Lattelecom. The two suppliers had soon formed a duopoly and simultaneously conducted a 7% price incensement. Nevertheless, the regulatory institution could not prove the existence of a cartel – type market agreement.

The duopoly situation was preserved for 3.5 year, before a new competitor had arrived and efficiently infiltrated the market. The Danish – Lithuanian company Bite GSM had relocated its headquarters and main activity direction from Lithuania to Latvia and started of their marketing campaign by offering the lowest possible price in the industry, gaining a recognizable 5.3% of the market within a year’s time. After successful introduction to the market and having secured their small, but steady position, Bite had raised prices to 2% above the market average and the situation again stabilizes.

From 2008, the Latvian Mobile Communication industry can be seen as a classic oligopoly with three suppliers, two of which were going toe – to – toe in the scene of market shares and profit level, while the third one, the newly arrived Bite, had a small market share, but it’s cost cutting strategy a suitable rate of investment profitability.

Bite had implemented a new mobile communication tariff plan with the prices three times lower then the industry’s average, furthermore, if the involved parties, using a mobile phone, both became Bite’s clients, the next two year tariffs were even lover, up to 8 times less then the competitors could offer. Combined with a very high class client service system and 24 hour “helping hotline” problem service implementation, the results were soon to be seen.

Consequentially, significant changes in the market structure had taken place, allowing to establish a base for further analysis and modeling correlation revelations. The required information is gathered and summarized in the below given Table1:

Table 1. Latvian mobile communication market’s client stratification and competition effect

Operator	Client (mobile connection) number in 2010	Client (mobile connection) number in 2011
LMT	1040927	1 026 682
Tele2	1039156	1 067 707
Bite	199893	323111
Total	2279976	2 417 500

As it can be defined from the 2.1 table’s data, the total market capacity had grown in the period from 2010 to 2011 while LMT client number had decreased by 1.37%, Tele2 client number had risen by 2.75% on the account of natural market growth of 6.03%, while Bite client number had grown by 61.64%, proving the effectiveness of its newly implemented market strategy.

All of the above given information states that Latvian mobile communication market is a oligopoly with a conducting “price war” that allow to determine, econometrically measure and quantitatively analyze the mechanisms of monopolization process procedure specifics in an economically naturally external factor infiltration secured market environment, making the current industry ideal for experimentation and model development in the context of the conducted research.

### 3.2. Monopolization effects in the Latvian mobile communication market

Taking in account the oligopoly market composition of the analyzed industry, it would be rational to define the possible monopolization process future development with a prognosis, made by the methodological approaches

instrumentalist, described in the current researches theoretical justification background section. The results of the monopolization effect analysis, conducted according to classical methodologies, can be seen in the below given Table 2.

Table 2. Monopolization process caused effects

Mobile operator	Client number at the beginning of 2011	Market share without natural capacity growth	Competition effect(lost or gained clients)	Client drift potential in 2011	Period number (quarters)
LMT	1 026 682	45.03	-58257	32376	5
Bite	323111	14.17	86472	0	
Mobile operator	Mutual competition effect	Tele2 participation in competition effect	Total competition effect	Prognosis of monopolization effect's causes by the end of 2012	
LMT	-291285	-72821	-364106	662576	Tele2
Bite	291285	72821	396482	719593	1067707

It can be defines from Table 2. that already by the end of 2011 Bite company's main target of market share redistribution was LMT, thus, proving the strategy of launching a campaign against the current market leader in order to both weaken the main competitors positions and gain extra client cluster recognition, thus, significantly improving own market outset.

The above mentioned analysis is based on methodological approaches, aimed on momentum analysis of the current monopolization process development evaluation within the framework of individualized market clusters by using demand flexibility and market conjuncture historical data standardized statistical quantifications.

Lerner index is used for describing both "prices – sale amounts" correlative links casual relations, while giving solid and trustworthily individual monopolization potential's current realization stage situation, lacks the full – industry perspective, concentrating on individual specified legal equity monopoly power distribution evaluation.

Analysis of demand flexibility completes the Lerner index, upholding it's defined paradigm and allowing to determine market capacity for price fluctuation, but, as well as the above mentioned index, lacks the ability to conclude the effects specifically for development of monopolization process, depending on its current and perspective evolvement stages.

The Herfindull – Hirschman index does provide a industry level perspective of monopolization development, but is a more qualitative tool of assessing current market conjuncture deviation from absolute monopoly position, while neglecting the need for natural monopolization potential analysis and evaluation of the mentioned potentials realization possibilities in the nearest future.

Summing un the above given information, analysis and discovered results, it can be stated that, with all the do respect to efficiency and high level of separate scientific value, the classic monopolization level evaluation methodologies lack interactive coherency, mutual transferability, are tended to strictly individualized supplier clustered unit analysis, neglect the industry – level analytical perspective and largely concentrate on evaluation monopolization as a synthetic process, ignoring specified markets natural consolidation trends.

In the current researches econometrical modeling and experimentation section a complex model of monopolization process evaluation shall be developed in order to create a multi – perspective tool of combined econometrical quantitatively – qualitative tool for evaluation monopolization as a transparent, strictly economical paradox on an industry level with the recognition of natural market consolidation trends, allowing the analysis of both current monopolization development stage and its future potential realization possibilities.

#### 4. Econometrical Modeling and Experimentation

##### 4.1. Complex model's of monopolization process evaluation conceptual methodology

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 – acknowledgeable basis for

further development of an 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 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 a 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 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:
  1. Mobile communication market (modern high – tech sector).
  2. Banking sector (financial sector).
  3. Multi – purpose retail trade market (trading sector).
- Industries, affected by import flows:
  1. Brewing industry (real production sector).
  2. Pharmacy market (high added value production sector).

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.

#### *4.2. Complex model’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, in 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 new player to infiltrate an 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 it's 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 rational want and practical possibility of new supplier involvement into the market in terms of monopolization process future diagnosis.

Table 3. Summary of the developed models integrated quantitative index system

Title of the model – used index	Conceptual substantiation for the use of index	Basic elements, used in the calculation of index	Index use substantiation	Weight of index in acquired result evaluation	
1	2	3	4	5	6
Net industry monopolization level index	Need to define the deviation between market share stratification current situation and the case of perfect competition	Current existing market share stratification and its deviation from the situation of perfect competition	Define the current level of monopolization process development	20%	
Relative monopolization growth index	Need to define the pace of individual monopoly power growth	Current existing market share stratification and its ratio to the situation of perfect competition market conjuncture	Define the current level of monopolization process development	20%	
Monopoly power stratification index	Need to define the typological specifics of the current market and existing monopolization process development stage	Modified Herfindull – Hirschman index	Define the current level of monopolization process development	15%	
Monopolization effect index	Need to define the competition conduction specifics and their effect on net market share redistribution	Individual market share inversely – proportional ration to changes of individual monopoly power	Define the current level of monopolization process development	10%	
Market natural monopolization potential index	Need to define the extent of natural market monopolization possibilities	Changes of market total natural capacity changes	Evaluate monopolization potential and future possibilities	15%	
Industry competition capacity index	Need to define the existing monopolization tendencies and their strength in order to asses the required level of internal competition	Ability for external competition development and new supplier infiltration from the competition perspective	Evaluate monopolization potential and future possibilities	10%	35%
Competition potential index	Need to define the economic attractiveness of the market for new supplier infiltration purposes	Ability for external competition development and new supplier infiltration from the perspective of total market capacity	Evaluate monopolization potential and future possibilities	10%	

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 3.

From the information, given in Table 3, 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.

#### 4.3. Complex model's of monopolization process evaluation index system

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

Table 4. Complex model of monopolization process evaluation qualitative result interpretation

Title of the model – used index	Index conceptual indices	Index value interval	Monopolization level evaluation
Net industry monopolization level index	Scalar (numeric) value	[0–100]	Very low
		[101–1000]	Low
		[1001–3000]	Medium - low
		[30001–5000]	Medium
		[5001–7000]	Medium- high
		[7001–9000]	High
		[9000–∞]	Very high
Relative monopolization growth index	Scalar (numeric) value	[0–91000]	Low
		[91001–150000]	Medium
		[150001–∞]	High
Monopoly power stratification index	Percents, %	[0–10%)	Low
		[10%–30%)	Medium - low
		[30%–50%)	Medium
		[50%–80%)	High
		[80%–∞])	Very high
Monopolization effect index	Scalar (numeric) value	[0–100)	High
		[100–3125)	Low
		[3126–∞)	Medium
Market natural monopolization potential index	Scalar (numeric) value	[0–5075]	Low
		[5076–∞]	High
Industry competition capacity index	Percents, %	[0–10%)	High
		[10%–25%)	Medium
		[25%–50%)	Low
		[50%–∞]	Very low
		[0–9.09%]	Low
Competition potential index	Percents, %	[9.10%–14.29%]	Medium - low
		[14.30%–24.99%]	Medium
		[25.00%–50.99%]	High
		[51.00%–100.00%]	Very high

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. By incorporating the relevant influence factors in a quantitatively transcript way, each one them can be measures, quantified and rationally analyzed with the use of econometric evaluation methods. Due to the recognition of need for quantitative result qualitative interpretation, the current model has an additional explanatory feature, allowing the conduction of a fully transparent scientific market analysis. The quantitative evaluation of the modeling results are being stratified by the two main index clusters and the respectful methodology is described in Tables 4.

In order to conduct applied testing of the current model in the context of research hypothesis verification, the model shall undergo an implementation of the aforementioned five industries of the Latvian national economy.

4.4. Implementation of complex model of monopolization process evaluation within the context of research hypothesis verification

In 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 5:

Table 5. Evaluation of the complex monopolization process model implementation quantitative results

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 5 Table 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 6:

Table 6. Evaluation of the complex monopolization process model implementation qualitative results

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 6 Table 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.

## 5. Conclusion

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 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.
- 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 would be most scientifically and business beneficial.
- Definition of monopolization process within the context of natural market consolidation tendencies and total demand amount fluctuation trends tends to be more rational and economically secure in terms of analysis conduction.
- Acknowledgement of the monopolization tendencies, existing in small open economies, as markedly justified and economically rational has been made.
- Modern day economical realities require the paradigm creation of using complex econometrical methods of assessment for monopolization studies, consequentially replacing the current trend of case – study approach prevailing.

## References

- Chamberlin, E. H. (2010). On the Origin of Oligopoly: Reediting. *Cambridge University Press*, 329, 113–149.
- Coase, R. (2012). Durability and Monopoly. *Journal of Law and Economics*, 249, 47–111.
- Fisher, I. (2012). The Nature of Capital and Income. *Macmillan*, 335, 173–198.
- Judit, K. (2012) *Competition law and consumer protection*. *Kluwer Law International*, 409, 307–312.
- Keynes, J. (2011). The General Theory of Money, *Interest and Employment*. *Macmillan*, 407, 289–315.
- Latvijas Centrālās statistikas pārvaldes datubāze. (2012). *Latvian Central Statistics Bureau's Portal*.
- Libermanis, G. (2011) Tirgus, cenas, konkurence. *Kamene*, 214, 17–26.
- Nešpors, V. (2012) Mikroekonomikas teorijas pamati. *RTU izdevniecība*, 253, 71–75.
- Pointcarre. (2013). EU member state statistics/Baltic region/Markets. *Vrije Universiteit Brussel's Internal Portal*.
- Pointcarre. (2013). Methods of quantitative data analysis. *Vrije Universiteit Brussel's Internal Portal*.
- Pointcarre. (2013). Public and Competition Policies in the EU. *Vrije Universiteit Brussel's Internal Portal*.
- Pointcarre. (2013). Review on free trade and monopolization in the EU. *Vrije Universiteit Brussel's Internal Portal*.
- Robinson, J. (2012). The Economics of Imperfect Competition: 1969–2012 Anthology Edition. *Macmillan*, 439, 189–211.
- Šenfelde, M. (2009). Makroekonomika: 3. izdevums. *RTU Izdevniecība*, 243, 51–53.
- Tarbell, I. (2012). The History of Standard Oil Company. *Macmillan*, 416, 119–131.