VILNIUS UNIVERSITY

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LOGISTICAL ANALYSIS OF ECONOMIC CYCLES

Summary of Doctoral dissertation
Social Sciences, Economics (04 S)

Vilnius, 2012

Doctoral dissertation was prepared in 2007 – 2012 at Vilnius University

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The official defence of the dissertation will be held at 11 am on 28th September, 2012, in public session of the Council of Economics Science trend in the auditorium No 10 at Kaunas Faculty of Humanities of Vilnius University.
Adress: Muitines str. 8, LT – 44280, Kaunas, Lithuania.

The summary of doctoral dissertation was sent-out on 28th August, 2012.
The doctoral dissertation is available at the library of Vilnius University.

VILNIAUS UNIVERSITETAS

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EKONOMINIŲ CIKLŲ LOGISTINĖ ANALIZĖ

Daktaro disertacijos santrauka
Socialiniai mokslai, Ekonomika (04 S)

Vilnius, 2012

Disertacija rengta 2007 – 2012 metais Vilniaus Universitete

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Disertacija bus ginama viešame Ekonomikos mokslo krypties tarybos posėdyje 2012 m. rugsėjo mėn. 28 d. 11 val. VU Kauno humanitariniame fakultete 10 auditorijoje.
Adresas: Muitinės g. 8, LT – 44280, Kaunas, Lietuva.

Disertacijos santrauka išsiuntinėta 2012 m. rugpjūčio mėn. 28 d.
Disertaciją galima peržiūrėti Vilniaus universiteto bibliotekoje.

RESUME OF DOCTOR'S DISSERTATION

INTRODUCTION

Relevance of the topic. The modern world economy is a growth based economy. However, the growth of world economy is not perfectly balanced, stable and sustained as the various fluctuations and instabilities are significant in economic systems since the establishment of the market economy. As the extent of the globalization of world economy increases the degree of economic fluctuations are also grow – both economic systems' growth and development and the extent and intensity of their fall and shrinkage. So, recently in the scientific and publicist literature occurred an opinion that due to the increasing negative consequences of economic fluctuations these kinds of researches assume a very big significance. Consequently, the identification of fluctuations' causes, especially cyclical fluctuations and a search for management possibilities is defined as a very significant economic concern.

Thus explanation and management of the economic fluctuations are important not only theoretically but also practically. Both economy factor as the composition of the economic systems and entirely economic systems come up consistently with the changes of economic system working. Therefore, we may maintain that these kinds of researches have not only the significant theoretic aspect but also the importance of practical application required for all the participants of the economic systems.

Economic logistic theory, performing the researches of cyclical economic fluctuations, suggests an evaluation of market capacity limitation problem which is not previously analyzed in scientific literature. The regulations of this theory, analyzing the factors of the logistical capital increase and market saturation, can be applied for researching the processes of cyclical economic fluctuations. Therefore, it is purposive to study the influence of market capacity limitation, innovative, market heating, saturation and hidden overproduction processes for economic cycles formation and working principles as for the management possibilities of cyclical fluctuations.

Exploration level of the problem. Researches of cyclical economic fluctuations are one of the most popular spheres of economic science, involving the most various

aspects of research. Various aspects of economic cycles' research can be found in scientific literature. The most popular research trend is the analysis and evaluation of cycles' formation causes. Also, the researches of economic cycles influence in various contexts of economic systems are performed as well as the studies of cycles' management possibilities and evaluation. The economic cycles are analyzed evaluating their aspects and layers of duration, strength and origin.

The authors, who wrote significant scientific works that are analysing the issues of cyclical economic fluctuations, are the following - R.M.Solow (1956), D.Cass (1965), W.A.Brock and L.J.Mirman (1972), B.Greenwald and J.Stiglitz (1993), R.Fiorito and T.Kollintzas (1994), F.Kydland and E.Prescott (1988, 1990, 1991), A.Korotayev, S.Tsirel (2010), N.Shiode and others (2004), A.Korotayev, S.Tsirel (2010), S.Solomou (1989), N.Kondratieff (1984, 2002), P.Senge (1982), A.Van der Zwan (1980), J.Van Duijn (1983), B.Berry (1991, 2005), T.Devezas and J.Corredine (2001), J.Schumpeter (1939, 1954), G.Mensch (1979), A.Graham and P.Senge (1980), C.Freeman (1983, 1987), G.Modelski and W.Thompson (1987), A.Kleinknecht (2002), G.Modelski (2006), C.Papenhausen (2008) and many others. Lithuanian authors that should be mentioned: M.Valentinaitė and V.Snieška (2005), B.Galinienė, A.Marčinskas and S.Malevskienė (2006), M.Dapkus and B.Romikaitytė (2006), L.Sinevičienė and A.Vasiliauskaitė (2010), Z.Norkus (2010a, 2010b, 2012), A.Lakštutienė, R.Krušinskas and J.Platenkovienė (2011), T.Ramanauskas (2011).

However, the variety of mentioned economic cycles' researches, cycle formation models and introduced causes of economic cycles lacks the comprehensive analysis and emphasis of processes of market capacity limitation, saturation and overproduction. It is suggested to supplement this formed niche of researches with economic logistical theory in dissertation.

Adaptation of logistic principles in economic research is not a new issue. It was analyzed by C.F.Alvim (1998), O.C.Fereira (1998, 2002), J.D.Sterman (2000), A.Tsoularis (2001), A.Tsoularis and J.Wallace (2002), D.Sornette (2003), S.Hohler (2005), M.Florio and S.Colautti (2005), E.Accineli and J.G.Brida (2007), L.Guerrini (2006, 2010) and other authors. This research direction in Lithuania is represented by works of S.Girdzijauskas (2002a, 2002b, 2004, 2005, 2006, 2008, 2010, 2011a, 2011b), as well as works of S.Girdzijauskas together with co-authors (Girdzijauskas,

Štreimikienė, 2010; Girdzijauskas, Štreimikienė, Čepinskis and others, 2009; Gronskas, Štreimikienė, Girdzijauskas, 2008; and others), also works of V.Moskaliova (2009), E.Jurkonytė (2011). These studies analyse subjects of logistic capital growth and capital saturation, issues of market capacity limitation. They also submit economic logistic theory‘s application solutions in analysis of economic system‘s development, studies of economic cyclical fluctuations, analysis of economic bubble and financial pyramids, insurance sector and other areas.

Evaluating the successful applications of economic logistical theory in mentioned researches it is assumed that the economic logistical analysis can be used as a very important instrument of economic cycles' researches evaluating the market capacity limitation and overproduction processes as a result of it. Due to that it would be easier to reveal the deep formation causes of economic cycles and to present the management decisions of cyclical fluctuations. Such assumption is based on researches, publications and reports in conferences presenting their results fulfilled by the author and co-authors of dissertation. The aim of this dissertation is to explicate the economic logistical theory and on its basis to analyze the business cycles comprehensively by naming the deep causes of cyclical economic fluctuations forming the instruments of economic cycles' research and presenting the management decisions of cyclical fluctuations.

The scientific problem, analyzed in this study is formulated in accordance with these questions**:**

- What are the deep causes of the formation and working of economic cycles in economic systems (markets)? How economic cycles are affected by economic paradoxes?
- What solutions of cyclical fluctuations management could be adapted, in order to manage economic cycles or to mitigate the negative consequences of cyclical economic fluctuations, assuming aspects of market capacity limitation and overproduction?

The object of the research - cyclical economic fluctuations.

The thing of the research is analysis of economic cycles and economic growth, based on economic logistic theory.

The aim of the research - to reveal and to determine causes of cyclical economic fluctuations, to ascertain influence of the economic paradoxes, to explore dependence of economic system‘s cyclical fluctuations on the innovation, market saturation and overproduction, according to the theoretical analysis of economic cycles and economic logistic theory.

Tasks of the research:

1. to systemize and to summarize business cycle conceptions, classification of economic cycles, factors causing the cyclical fluctuations, analyzed in scientific literature;
2. to reveal influence of the economic paradoxes on economic cycles. To create a logistic economic cycle model, assessing innovative process of market creation, issue of market capacity limitation, processes of market heating, market saturation and overproduction, and to reveal the role of securities markets in the capital saturation processes;
3. to clarify the definition of the economic cycle;
4. to create a logistic economic system‘s cyclical fluctuation and development research model, allowing to investigate reasons causing formation and working of economic cycles in finite capacity economic systems (markets);
5. applying created model to perform empirical research of cyclical fluctuation and development of finite capacity economic systems, by identifying dependence of cyclical fluctuations and development on the innovative process of market creation, processes of market heating, market saturation and overproduction;
6. to formulate cyclical fluctuations management solutions, which assess aspects of market capacity limitation and processes, determined by market capacity limitation.

Defending claims of the research:

- Cyclical economic fluctuations are formed by innovative processes of limited capacity market formation. Cycle is formed when innovations create or significantly modify closed or half-closed markets with defined finite or slowly growing capacity which is gradually filled with products of that market. Processes of bubble formation and burst occur under the influence of market saturation, market heating and hidden overproduction. As the result profitability decreases, hidden overproduction transforms into the open overproduction and market capacity shrinks.
- Saturation of finite capacity economic system can be managed by innovative processes, expanding market capacity. Thus processes of market heating and overproduction are managed, postponing or mitigating negative results of profitability slump and market capacity shrinkage, occurring during economic cycle‘s peak and decline stages.
- Market heating can be managed by restricting capital access to economic systems through the securities markets.

Methods of the research. The methods, employed in the research of theoretical aspects of economic cycle formation and application possibilities of economic logistic theory in the context of cyclical economic fluctuations, are the following: logistic analysis, systematic and theoretical analysis, synthesis and generalization of scientific literature and theoretical modelling.

Performing the testing of the created logistic economic system‘s cyclical fluctuation and development research model, empirical research was carried out, using the statistical data of the explored economic systems. Implementation of the model and research of chosen markets development and cyclical fluctuations processes was performed using Loglet software package.

Structure of the research. In the first part of the research it is presented analysis of cyclical economic fluctuations, systematizing and summarizing economic

cycle theories. Basic theoretical aspects concerning reasons of cyclical economic fluctuations are identified.

The second part of the research is devoted to the analysis of the economic cycle. Conception of economic cycle is specified. Evaluating provisions of economic logistic theory, two models are prepared – theoretical logistic economic cycle model, which reveals deep causes of cyclical fluctuations, and logistic economic system‘s cyclical fluctuation and development research model, which enables to reveal causes of economic cycles formation and development.

In the third part of the research empirical research is carried out, adapting logistic economic system‘s cyclical fluctuation and development research model. In order to examine developed model, two-part research is carried out, analysing two different size, unconnected economic systems. Model is verified, justifying the working principle of the economic cycle, formulated in dissertation.

Scientific novelty of the research. Scientific novelty of the research is described by the following aspects:

- economic logistic theory is extended; possibilities of its application in the economic cycle researches are presented, introducing and describing interaction of economic paradoxes, market capacity limitation, innovative process of market creation, processes of market heating, market saturation and overproduction with the economic fluctuations;
- deep causes influencing the formation of economic cycles were revealed determining the influence of innovative processes to the market formation, the limitation of market capacity, hidden overproduction and the main role of securities markets in the processes of market saturation with capital;
- new theoretical logistic economic cycle model is created, which reveals principles of economic cycle formation;
- original logistic economic system‘s cyclical fluctuation and development research model is developed, which justifies new principle of the performance of economic cycle;

- possibilities of economic fluctuations management are revealed in the dissertation. They include 1) innovative processes of market expansion which could occur in the growth or peak phases of economic cycle, thus prolonging the duration of the market capacity saturation and managing possible formation of hidden overproduction; 2) management processes of securities influence over the particular markets.

Theoretical and practical meaning of the research:

The scientific significance of the dissertation thesis at theoretical level is described by obtained results:

- assessment and generalization of theories exploring formation of different duration economic cycles, using principles of economic logistical analysis, is performed;
- deep causes of cyclical fluctuations are revealed, based on existence of economic paradoxes: market capacity limitation, due to these processes formed hidden overproduction, as well as innovative processes of market formation and modification;
- new theoretical logistical economic cycle model is created, naming processes of innovations, market formation, market saturation, market heating and overproduction, happening in economic cycles. This model justifies new principle of economic cycle working;
- the logistic economic system‘s cyclical fluctuation and development research model is created, allowing comprehensive analysis of cyclical economic fluctuations in particular markets.

The practical significance of the dissertation research is described by the following aspects:

- with the help of logistical economic cycle model and logistic economic system‘s cyclical fluctuation and development research model possibilities of practical economic cycle research are revealed, allowing comprehensively evaluate working of the market capacity limitation, overproduction and other processes;

- with the help of logistical economic cycle model possibilities of economic cycle's management or mitigation of cyclical fluctuations negative results are revealed.

1. THEORETICAL ASPECTS OF CYCLICAL ECONOMIC FLUCTUATIONS

The research of the economic systems' instability is one of the main tasks of the economic science, emerged in parallel with economic fluctuations. The analysis and management of the cyclical economic fluctuations are significant not only theoretically but also practically, since both economy factor as the composition of the economic systems and entirely economic systems come up consistently with the development changes of economic systems.

The performed analysis of economic cycle conception determines that the majority of authors name cyclical fluctuation as the periodic fluctuations concerning the average, trend line or potential values. In the conception of cycle the spread of fluctuations is highlighted, phases of cycle are named; the causes of such processes are represented. However, in most cases the limitation of economic system capacity, the process of market saturation and the factor of overproduction are not emphasized.

Economic cycles are distinguished with considerable variety. The researches evaluating the main characteristics of cycles, the principle of working and other aspects exclude variety kinds of cycles. The most popular distribution of economic cycles listed in scientific literature is the one distinguishing various cycles according to their duration. J. Schumpeter (1954), A. Tylecote (1993) and other authors distinguish these main cycle types:

- short cycles (duration – 3-4 years), known as Kitchin cycles;
- average duration cycles (duration 7-11 years) or Juglar cycles;
- complex average duration cycles (duration 25-35 years), or Kuzneco cycles;
- long economic cycles or long Kondratieff economic waves (duration 45 – 60 years).

The researches of economic logistical theory focus on the problem of economic systems capacity limitation. In accordance with that cycles are distributed (Girdzijauskas, 2011b) into:

- cycles working in infinite capacity systems,
- cycles working in finite or variable capacity economic systems.

The generalization of economic cycles' classification is presented in Table 1.

Table 1. Classification of economic cycles

Nature of classification	Types of cycles
Duration	Short-term (Kitchin cycles), middle-term (Juglar and Kuznets cycles), long-term (Kondratieff waves)
Magnitude of severity	Extra severe, severe, moderate
Nature of underlying techno-economic processes	Caused by technological revolutions, driven by major basic inventions, driven by basic inventions, caused involuntary by inadequate institutional, entrepreneur and customers behaviour, occurring due to force major
Rate of manageability and preventability	Preventable, unpreventable
Activity area	Acting in industry, agriculture, etc.
Activity specification	Acting in currency markets, separate industries, etc.
Form	Occurring in branches of economics, structural
Territorial arrangement	National, international
Market capacity limitation	Acting in finite capacity markets, endless capacity markets, variable capacity markets

Source: composed by author according to Tylecote, 1993; Skominas, 2000; Paliulytė, 2005; Bormotov, 2009; Girdzijauskas, 2011b.

Identification and analysis of economic cycles' propulsion and the phenomena determining cyclical fluctuations are one of the main tasks of cyclical fluctuation researches. Therefore, the interpretation of economic cycle propulsion is given by each economic thought school or economic theory. Although the first part of thesis reviewed the models and theories presented in a variety of economic cycles' causes except the logistic trend researches there is a lack of comprehensive analysis and emphasis of processes of market capacity limitation, saturation and overproduction. Therefore in the research of dissertation it is suggested to supplement this formed niche of researches by emphasizing the market capacity limitation, market heating and the problem of hidden overproduction processes in researches of economic cycles according to the principled regulations of economic logistic theory.

2. THE ASPECT OF LOGISTICAL MODELLING OF ECONOMIC CYCLES

The second part of thesis focus on the modelling of cyclical economic fluctuations following the guidelines of economic logistical theory. The logistical aspects of economic cycles' formation mechanisms operating in infinite and finite capacity markets

are analyzed. As the result theoretical logistic economic cycle model and logistic economic system‘s cyclical fluctuation and development research model are prepared.

Firstly, analyzing the problem of market capacity limitation and evaluating its adaptation possibilities in the researches of economic cycles the analysis of economic logistic theory’s regulations is performed. It presents the conception of economic logistic theory, the capital significance in the regularity of development and growth of economic systems, the importance and coherence of market capacity, extent, niche and filling level, the paradox of increasing profitability, the debt trap effect, market saturation and the processes of bubble formation. In accordance with mentioned aspects of market capacity limitation the main types of economic systems (markets) are excluded and their fundamental peculiarities are named.

Economic logistic theory is an area of logistic researches, developed on the basis of the researches in the field of logistic capital management analysis. S.Girdzijauskas, initiator of these researches in Lithuania, adapted classical logistic laws in the economic growth analysis (Girdzijauskas 2002b, 2004, 2005, 2006, 2008, 2010). The main focus of economic logistic theory is the identification of growth limitations. According to the theory economic growth, similar to existing processes in nature, is not infinite. On the contrary - growth is defined by concrete and clearly identified rules and laws. Product in real conditions is not able to increase at the same pace for a long time, because it‘s being limited by internal and external factors.

The researches of economic logistic theory (S.Girdzijauskas, 2010, 2011b) define three main types of markets (economic systems): infinite capacity (open) markets, finite capacity (closed) markets and mediate type – variable capacity (half closed) markets. These types are distinguished by the main market size – market capacity:

- *infinite capacity (open) markets* – markets of infinite capacity;
- *finite capacity (closed) markets* – markets of finite, fixed capacity, in other words – closed;
- *variable capacity (half closed) markets* – the mediate type of market; their capacity is not fully closed, but also is not fully open.

The generalization of fundamental peculiarities of various market types is presented in Table 2.

Table 2. Main market types and their peculiarities

	Infinite capacity (open) market	Variable capacity (half closed) market	Finite capacity (closed) market
Market capacity	Infinite	Variable – consistently expanding	Finite
Distribution	Rare, occurs in initial phases of market economy	Most common	Rare, e.g. markets of rare goods
Capital quantity, effectively invested into the market	Unlimited	Increasing	Finite
Capital profitability	Decreasing	Increasing or decreasing	Increasing
Overproduction	Classical open overproduction	Possible hidden overproduction	Hidden overproduction
Conditions of market saturation	Market can not be saturated	Amount of capital invested into the market must be bigger than extents of market expansion	Market can be saturated

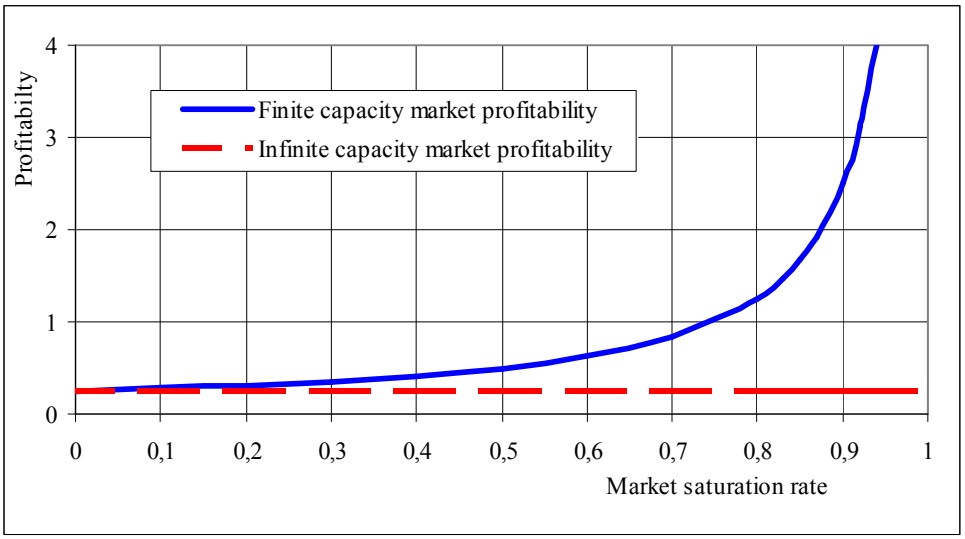
Source: created by author

The distinct processes of overproduction form in a various types of markets. The open (classical) overproduction forms in the infinite capacity markets, and the hidden overproduction processes operate in the finite capacity markets:

- Classical overproduction – situation, when there is an excess of production over demand of products being offered to the solvent client, i.e. individuals having the corresponding purchasing power.
- The overproduction principle in finite capacity markets is different. The paradox of increasing profitability is functioning in finite capacity markets, i.e. conditioning the price growth. Consequently, with the increase of market filling and profitability the production of goods is not reduced, conversely – it is enhanced. Thus, the overproduction of manufactures is forming. However, it is invisible due to the aspect of speculative capital working and active participation of stock which is maintained by increase of prices, i.e. increasing capital profitability, the production is net reduced and the excess of products increases.

Performing the researches of economic logistic theory it is revealed (Girdzijauskas, 2006; 2008), that profitability of finite capacity market (internal return of

investment) is not decreasing (which would be logical and happens in infinite capacity market), but grows when saturation increases (Fig. 1). Furthermore, increase of internal return intensifies when saturation approximates to the limit, i.e. the saturation point. Such paradoxical growth of profitability bulges price bubbles and poses assumptions for crisis to occur. Such phenomenon is named as *paradox of increasing profitability*.

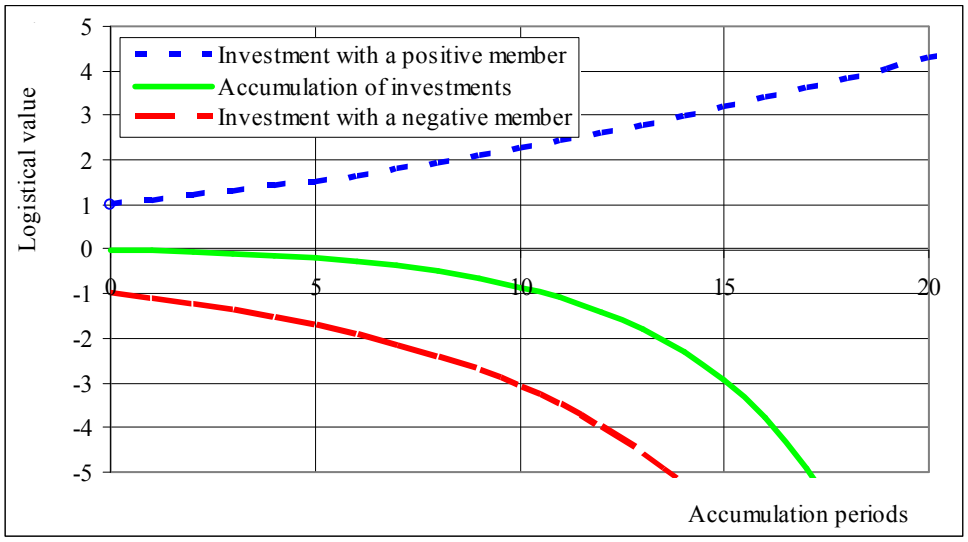


Source: modified by author according to Girdzijauskas, 2006, 2008.

Fig. 1. Dynamics of increasing profitability (market heating)

Alongside with the paradox of increasing profitability another similar phenomenon emerges due to the market saturation. It is *the paradox of debt or credit trap*. It could be defined in the following: if investment is made in the finite capacity market, the rate of borrowed capital (debt) growth exceeds the rate of private capital growth. Moreover, the difference of growth rates, that was rather insignificant at the beginning, increases fundamentally after a certain number of periods (Girdzijauskas 2008; Girdzijauskas, Štreimikienė, 2010). Figure 2 presents an example of the dynamics of logistic growth of investments with positive member, negative member and sum of both investments.

Evaluating these and other significant regulations of economic logistic theory it is stated that logistic research sphere offers mass of solutions, involving the capacity limitation of economic systems and development dynamics problem. Therefore, using the regulations of economic logistic theory, oriented in the problem of economic growth analysis and authors' researches the logistic economic cycle model is prepared.



Source: modified by author according to Girdzijauskas, 2008.

Fig. 2. Logistical dynamics of investment with negative member

Forming the logistic economic cycle model the detailed analysis and evaluation of individual processes of economic cycle phase is performed. During the analysis of the cycle bottom (crisis) phase the innovative aspect of new market development is highlighted. Its graphical description is presented in scheme 3.

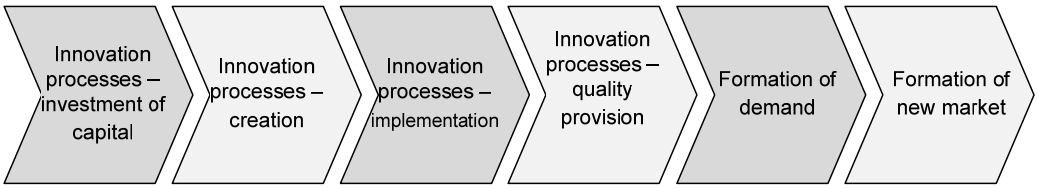


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Fig. 3. Processes happening in economic system during bottom phase of economic cycle

Analyzing the processes of cycle growth phase the importance of the paradox of increasing profitability is amplified; the processes of market saturation and heating, the forming processes of hidden overproduction are termed, the securities markets role in the processes of market capital saturation is pointed up (Fig 4).

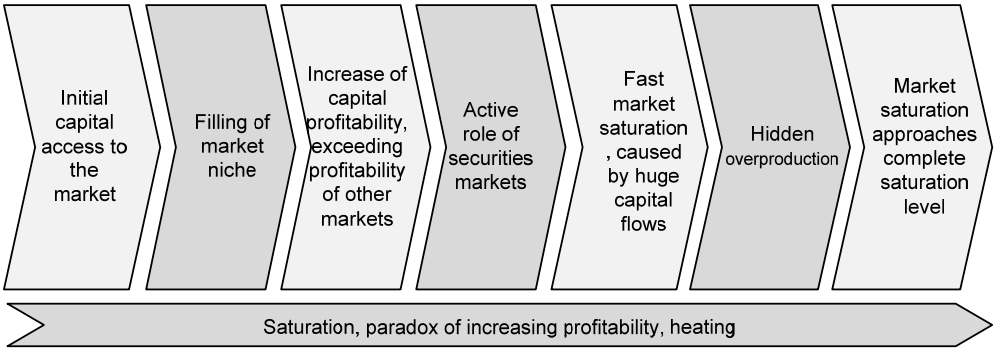

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Fig. 4. Processes happening in economic system during growth phase of economic cycle

During the analysis of the cycle peak phase the bubble formation process, hidden overproduction principle are modelling, the assumptions influencing the potential bubble burst are defined (Fig 5).

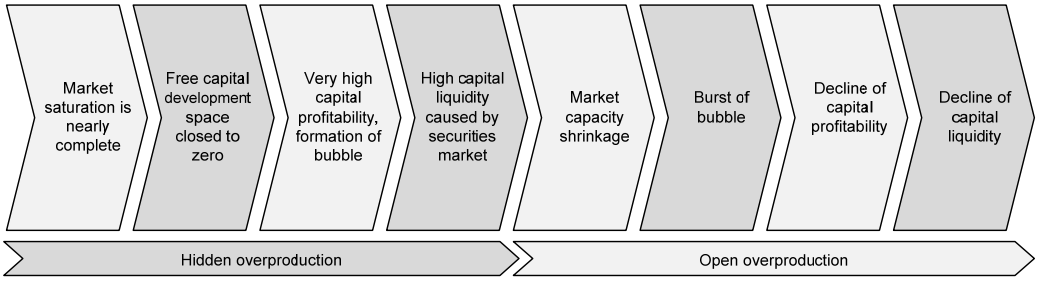

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Fig. 5. Processes happening in economic system during peak phase of economic cycle

Modelling the phase of cycle decline phase the hidden overproduction transformation into the open overproduction is proposed, the influence of debt trap paradox to the shrinkage of market capacity and capital recession from the market are explained (Fig 6).

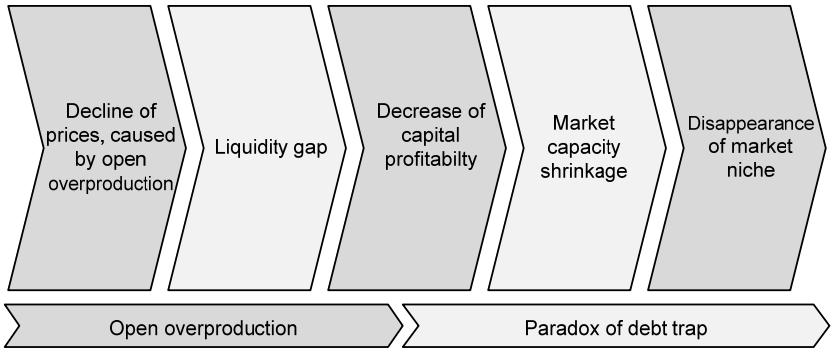

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Fig. 6. Processes happening in economic system during decline phase of economic cycle

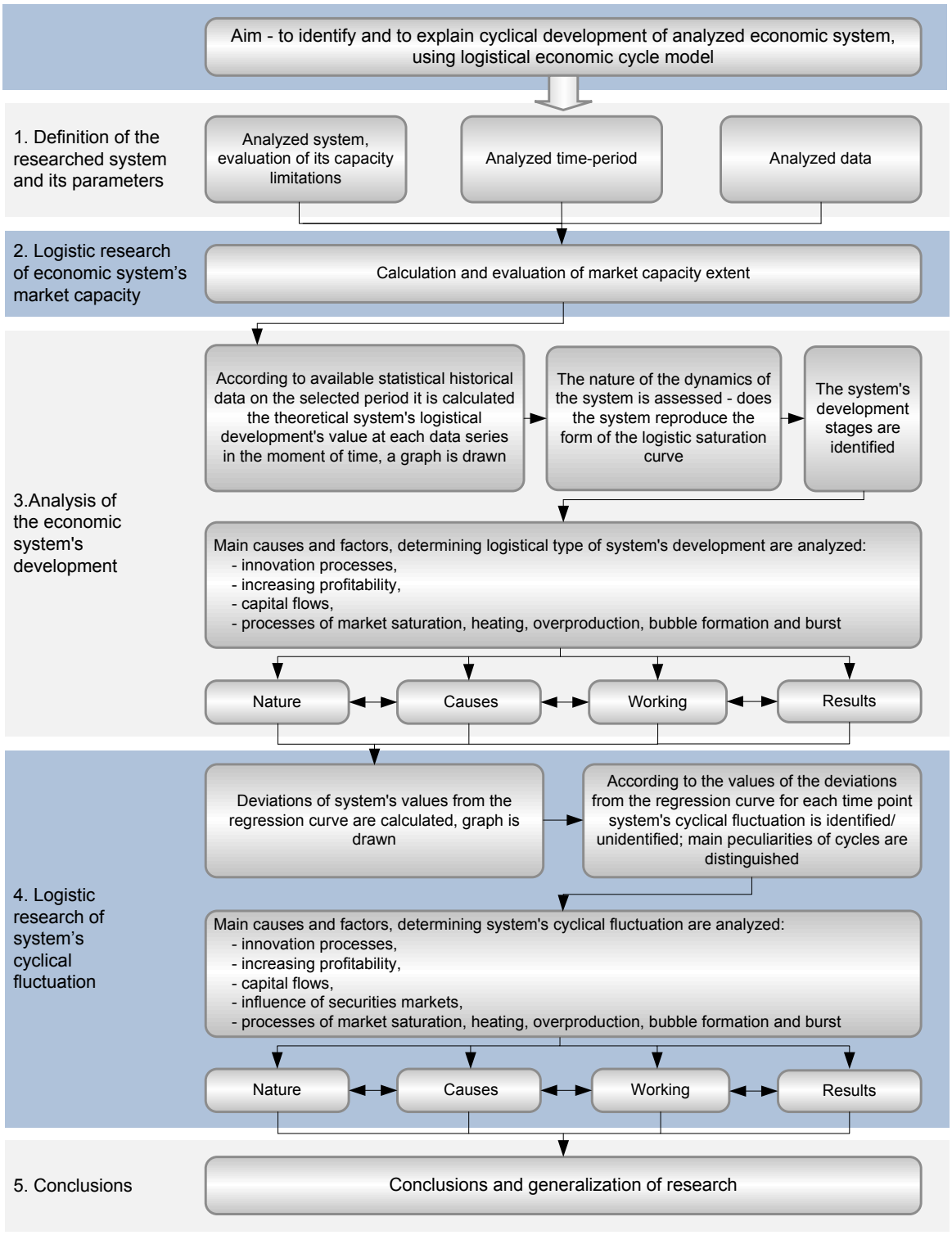
Evaluating the economic cycles' duration dependence on market capacity limitation in which the economic cycle is formed, the logistical economic cycle model's application to the various types of periods and markets is estimated in thesis. The logistical economic cycle model transformation evaluating the distinct durations of economic cycles, the structure of economic cycle and market nature is performed. The generalization of diverse duration of economic cycles forming processes' providences naming the main economic cycle peculiarities is presented in Table 3.

Table 3. Economic cycles and their main peculiarities

Name	**Short**	**Middle term**	**Middle term composite**	**Long**
	Inventory	**Investments in fixed assets**	**Construction - demographic**	**Long wave**
	Kitchin	**Juglar**	**Kuznets**	**Kondratieff**
Duration (y.)	3-4	7-11	15-25	40-55
Market type	Infinite capacity (open) market	Variable capacity (half closed) market	Variable capacity (half closed) stretch market	Variable capacity (half closed) stretch recurrent market
Cause of cycle	Open overproduction	Open and hidden overproduction	Hidden (extended) and open overproduction	Innovation processes, changing dominant type of manufacturing and type of capitalism
Influence of securities markets	Trivial	Strong	Strong	By the second wave – trivial, from the third wave - strong
Cyclicality	Irregular	Irregular	Irregular	Irregular
Description of the causes	Forms open overproduction. Overstock is accumulated. Production slows or comes to a full stop. New cycle starts when inventory is sold.	Market has variable capacity (is half closed). Profitability slightly increases, therefore overproduction is hidden. Securities are attracted, market capacity extends. Market heats, bubble bursts or collapses. Hidden overproduction transforms into open overproduction.	Extended middle term cycle. It consists of two or three simple middle term cycles (they in turn consist of short cycles)	Five long Kondratieff waves correspond to five main evolutionary types of capitalism. Their transformation is determined by change of capitalistic manufacturing type: 1) local capitalism of individual and family enterprise owners; 2) local capitalism of small and middle closed joint stock companies (corporations); 3) national capitalism of big private corporations; 4) state regulated national capitalism of public corporations; 5) globalized transnational capitalism of investment funds.

Source: composed by author according to Norkus, 2010b; Girdzijauskas, 2011b

In order to evaluate practical working of the created logistic economic cycle model, logistic economic system's cyclical fluctuation and development research model is created. Model includes five research stages (Fig. 7) during which the statistical,



Source: created by author

Fig. 7. Logistic economic system's cyclical fluctuation and development research model

mathematical, comparative and other methods are used: 1) in the first part the research object is defined and the evaluation of market capacity limitation is performed; 2) in the second phase analysis of market capacity is fulfilled; 3) in the third stage development analysis of analyzed economic system is performed; 4) in the fourth stage cyclical fluctuation analysis of explored system is accomplished; 5) in the last phase the research is generalized and the conclusions are made.

3. THE EMPIRICAL ANALYSIS OF LOGISTICAL ECONOMIC CYCLE MODEL

In the third part the working of created logistic economic cycle model and the usage possibilities of logistic economic system's cyclical fluctuation and development research model are justified and empirically verified. Analyzing the mentioned models' working, universality and usage possibilities the logistical analysis of various sizes and durations of economic systems is performed. The analysis is accomplished by analyzing the influence of innovative and overproduction processes and market capacity limitation to the cyclical fluctuation of economic systems.

Table 4. Logistic assessment of the cyclic fluctuation of world atomic energy consumption

Cycles and phases of economic system's		Processes that took place at the time of cycle's bottom and peak phases
First partial cycle	***1965 – 1970***	
Peak	1965	Insignificant and unimportant fluctuation
Second cycle	***1970 – 1983***	
Bottom	1970	Innovative processes, caused significant increase of new and operating reactors' average power
Peak	1978	Significant decrease of market niche, market heating and overproduction, caused by very fast market saturation at the end of cycle growth phase. Processes of market heating and hidden overproduction
Third cycle	***1983 – 1994***	
Bottom	1983	Innovative processes, caused significant increase of new and operating reactors' average power
Peak	1988	Significant decrease of market niche, market heating and hidden overproduction, caused by very fast market saturation (which was faster than expansion of market capacity) at the end of cycle growth phase. Modifying processes of market capacity shrinkage, occurred after incident in Chernobyl power plant
Fourth cycle	***1994 – 1998***	
Bottom	1994	Insignificant and unimportant fluctuation
Peak	1996	Insignificant and unimportant fluctuation
Fifth cycle	***1998 – 2009***	
Bottom	1998	Innovative processes, caused significant increase of new and operating reactors' average power
Peak	2006	Market saturation and market heating at the end of growth phase, hidden overproduction, bubble burst and capital recession

Source: created by author

Pursuing to evaluate the model universality and usage possibilities the researches of two independent economic systems varying in types and sizes were performed. The first research part analyzes the conditionally small economic system reflective the development of one significant technology (sector of economy at the same time), whereas in the second part the greater economic system is analyzed, i.e. the logistical analysis of separate nation presenting the peculiarities of economic development is accomplished.

The sector of atomic energetic is analyzed in the first part of research. According to the annual changes of energy consumption and their variation tendency the capacity of system market is estimated, the analyzed development of economic system is divided into the development stages in order to give an evaluation. The analysis of economic cycles is also performed. The generalization of the research of cyclical system's fluctuation is presented in Table 4.

Table 5. Logistic assessment of the cyclic fluctuation of Japan GDP

Cycles and phases of economic system's		**Processes that took place at the time of cycle's bottom and peak phases**
First cycle	***1945 – 1950***	
Bottom	1945	Markets' innovation with the help of foreign capital
Peak	1948	Insignificant and unimportant fluctuation
Second cycle	***1950 – 1959***	
Bottom	1950	Insignificant and unimportant fluctuation
Peak	1952	Insignificant and unimportant fluctuation
Third cycle	***1959 – 1965***	
Bottom	1959	Since 1955 the Japanese Government's prosecuted economic stimulus program
Peak	1961	Insignificant and unimportant fluctuation
Fourth cycle	***1965 – 1978***	
Bottom	1965	Innovation processes of foreign markets directed to modification of external buyers market structure - the system market capacity expansion, expanding export markets
Peak	1973	Fall – because of the 1973-1974 first global oil crisis (due to the global economy pause stopped Japan's export growth. This caused stoppage of market capacity growth, which led to market saturation and overproduction processes.
Fifth cycle	***1978 – 1983***	
Bottom	1978	Insignificant and unimportant fluctuation
Peak	1979	Fall – because of the 1978-1979 second world oil crisis. Due to the global economy pause Japan's export growth stopped. This caused market capacity contraction, which led to market saturation and the following overproduction process and the burst of the bubble
Sixth cycle	***1983 – 1994***	
Bottom	1983	Japanese government's actions that expanded the size of the market, promoted growth of domestic consumption, changed export structure and prosecuted country's economy's structural reform, changing the

		essential economical sectors and promoted their development
Peak	1991	Stock market‘s bubble – NIKKEI-225 market index peak reached in 1989, Japan‘s realty bubble peak, reached in 1990 – cycle fall phase was inspired by the overproduction and burst of these bubbles
Seventh cycle	***1994 – 2002***	
Bottom	1994	Insignificant and unimportant fluctuation
Peak	1997	During the second long-term process of Japan‘s economy market capacity saturation, level of complete market capacity saturation was achieved; formation of overproduction processes.
Eighth cycle	***2002 - 2009***	
Bottom	2002	End of Japan‘s realty bubble, global economy recovery after Dotcom bubble burst, market modification expanding export markets
Peak	2007	2008 global finance crisis and market capacity shrinkage

Source: created by author

The Japan’s economic analysis is performed in the second part of the research. Similarly to the first part, in accordance with Japan’s GDP data (gross domestic product) changes and their variation tendencies the capacity of system market is estimated, the Japan’s economic development is divided into the development stages and the evaluation is made. The analysis of economic cycles is also performed. The review of Japan’s cyclical economic fluctuation research is presented in Table 5.

Performing the development research of world atomic energy consumption and Japan’s GDP economic systems the followings are revealed:

- the logistical development attribution is typical for analyzed systems;
- the stages of slow development, intensive growth and saturation can be distinguished during the long period;
- markets (economic systems) influencing by both internal and external forces were extended not only in long but also in average period. The market capacities of analyzed systems were shrinking during the recession.

Performing the cyclical development research of economic systems and using logistical economic cycle model the following arguments are revealed:

- the increase of internal consumption, processes of globalization and development of innovations influenced the market capacity formation during the bottom phases of economic cycles. Innovative processes have a critical influence on atomic energetic and formation of Japan’s economic market during the analyzed periods;

- the main reason for stagnation and recession of analyzed economic systems is considerate to be an overproduction emerging due to the market saturation;

- the paradox of increasing profitability appearing in a process of hidden overproduction during the growth and peak (bubble process) phases is vastly influencing the economic cycles

CONCLUSIONS

Concerning the analysis of adaptation possibilities of market capacity limitation factor as well as the processes analysis of market formation, market saturation, heating and overproduction evaluating the processes of economic cycles' formation and operating processes the following conclusions are made:

1. The analysis of economic cycle's conception and characteristics as well as economic cycles' varying in different durations models and theories revealed that in most cases the market capacity limitation factor is not emphasized, the innovative process of market formation, processes of market saturation, heating and overproduction are not analyzed in the theoretical models of economic cycle.

It is determined that the problem of market capacity limitation and economic systems' development is analyzed in the logistic trend researches, especially in the works by researches of economic logistical analysis. Therefore, it is required to apply the economic logistical theory in the researches of economic cycles in order to reveal the insufficiently comprehensively evaluated deep causes of cyclical economic fluctuations.

2. The economic cycle model presenting the new theoretical clarification of economic cycle formation is formed during the research. This theoretical model newly and particularly explains the processes happening in each cycle phase, reveals the deep causes of cyclical economic fluctuations and enables the presentation of their management decisions.

According to the logistical model of economic cycle the finite capacity (variable capacity) economic system's cyclical development nature is formed by the followings:

- innovative processes during the cycle's bottom phase creating (or significantly modifying) the market and thus giving the beginning to the system's growth;
- processes of market saturation and heating during the growth and peak phases due to the market capacity limitation in a economic system;
- stock market participation in a process of market saturation with capital;

- formed hidden overproduction, due to these processes and influencing the paradox of increasing profitability, conditioning the bubble formation during peak phase;
- bubble burst when the demand decreases and the profitability drops intensely creating the panic in the market and rapid capital departure from it. As the result, the hidden overproduction transforms into the open overproduction and debt trap emerges.

Forming the logistical economic cycle model it is defined that the essential market saturation with capital happens through the securities markets therefore the one of the main role in the model is attributed to these markets. Such role is assumed because of their characteristics giving the possibilities to the capital fairly easy to and quickly to gain access to desirable economic systems (markets). Thus the presence of securities markets in the process of market saturation with capital can be attributed to the assumptions and instruments of bubble and economical cycles' formation.

During the formation of logistical economic cycle model the deep causes of economic cycles influencing the formation were revealed determining the influence of innovative processes to the market formation, the impact of market capacity limitation to the market heating, saturation, hidden overproduction and to the formation of bubble process as well as the influence of all the mentioned processes to the formation and working of economic cycle.

3. Summarizing the analysis and literature sources fulfilled during the formation of logistical economic cycle model the definition of business cycle is defined to which *economic cycles are the fluctuations in economic activity, occurring under the influence of economic paradoxes. They are caused by the saturation of the main markets, evoking overproduction and the debt trap. Economic cycles form under the pressure of the investment funds (i.e. financial instruments) on the markets and they take place simultaneously in the majority of economic activities. A cycle embraces the development and the following general decline, deceleration and recovery, the latter turning to be the phase of development of another cycle. Such sequence of changes is continuously repeated, yet irregular.*

4. With reference to theoretical logistical economic cycle model, the logistic economic system's cyclical fluctuation and development research model is created. It

can become new reliable research instrument of economic cycles allowing the evaluation and analysis of causes influencing the formation of economic cycles and their working in finite capacity economic systems (markets).

The logistic economic system‘s cyclical fluctuation and development research model includes five research stages during which the statistical, mathematical, comparative and other methods are used: 1) the research object is defined and the evaluation of market capacity limitation is performed; 2) analysis of market capacity is fulfilled; 3) development analysis of analyzed economic system is performed; 4) cyclical fluctuation analysis of explored system is accomplished; 5) the research is generalized and the conclusions are made.

5. Applying the prepared instrument the empirical analysis proved that the format and development of cyclical fluctuation of various (though satisfied with the finite capacity or variable capacity types of market) economic systems can be analyzed on a basis of logistical analysis methods. The research demonstrated that both small and narrow economic systems reflecting the markets of one or several related technologies or economic sectors and great and extensive economic systems defining the separate nations’ economics can be well analyzed.

Performing the development research of economic systems and using theoretical logistical cycle model the followings are revealed:

- the logistical development attribution is typical for analyzed systems;
- the stages of slow development, intensive growth and saturation can be distinguished during the long period;
- markets (economic systems) influencing by both internal and external forces were extended not only in long but also in average period. The market capacities of analyzed systems were shrinking during the recession.

Performing the cyclical development research of economic systems and using logistical economic cycle model the following arguments are revealed:

- the increase of internal consumption, processes of globalization and development of innovations influenced the market capacity formation during the bottom phases of economic cycles. Innovative processes have a critical influence on atomic energetic and formation of Japan’s economic market during the analyzed periods;

- the main reason for stagnation and recession of analyzed economic systems is considerate to be an overproduction emerging due to the market saturation;

- the paradox of increasing profitability appearing in a process of hidden overproduction during the growth and peak (bubble process) phases is vastly influencing the economic cycles.

6. Assuming provisions of logistic economic cycle model, created by author, it can be concluded, that in order to achieve long-term economic growth it is purposive:

1) to ensure creation of new markets and

2) to control their heating using fiscal and other measures (i.e. restricting securities markets).

Considering theoretical and practical aspects of the research performed, it can be concluded that an expansion of innovations is the most perspective form of new markets creation.

DAKTARO DISERTACIJOS SANTRAUKA

ĮVADAS

Temos aktualumas. Šiuolaikinė pasaulio ekonomika yra augimu pagrįsta ekonomika. Tačiau pasaulinio ūkio augimas nėra tobulai subalansuotas, stabilus ir nepertraukiamas – nuo pat rinkos ekonomikos įsigalėjimo pastebimi įvairiausi ekonominių sistemų svyravimai ir nestabilumai. Didėjant pasaulio ekonomikos globalizacijos laipsniui, didėja ir ekonominių svyravimų mastai – tiek ekonominių sistemų augimo ir plėtros, tiek ir jų kritimo ir susitraukimo apimtys bei stiprumas. Todėl tiek mokslinėje, tiek publicistinėje literatūroje pastaruoju metu vis dažniau pasigirsta nuomonių, jog dėl didėjančių neigiamų ekonominių svyravimų padarinių šios srities tyrimai įgauna labai didelį reikšmingumą. Taigi, ekonominių sistemų svyravimų, ypatingai ciklinių svyravimų priežasčių identifikavimas ir valdymo galimybių paieška yra įvardijama kaip labai svarbi ekonominė problema.

Tokiu būdu ekonominių svyravimų aiškinimas ir valdymas yra labai svarbus ne tik teoriniu, bet ir praktiniu aspektu. Su ekonominių sistemų veikimo pokyčiais tiek ūkio subjektai, kaip ekonominių sistemų sudėtinės dalys, tiek pačios ekonominės sistemos susiduria nuolatos. Todėl galima teigti, jog šios srities tyrimai turi ne tik reikšmingą teorinį tyrimo apsektą, bet ir visiems ekonominių sistemų dalyviams būtiną praktinį naudojimo reikšmingumą.

Ekonominė logistinė teorija, atliekant ciklinių ekonominių svyravimų tyrimus, siūlo įvertinti iki šiol mokslinėje literatūroje netyrinėtą rinkų talpos ribotumo problematiką. Šios teorijos, nagrinėjančios logistinio kapitalo augimo ir rinkos kapitalo prisotinimo veiksnius, nuostatos gali būti pritaikytos tiriant ciklinių ekonominių svyravimų procesus. Todėl tikslinga ištirti rinkų talpos ribotumo ir iš jo išplaukiančių inovacinių, rinkos kaitimo, prisotinimo ir paslėptosios perprodukcijos procesų įtaką ekonominių ciklų formavimosi ir veikimo procesams, taip pat ciklinių svyravimų valdymo galimybes.

Problemos ištyrimo lygmuo. Ciklinių ekonominių svyravimų tyrimai yra viena iš populiariausių ekonomikos mokslo sričių, apimanti pačius įvairiausius tyrimo aspektus ir kryptis. Mokslinėje literatūroje galima susidurti su įvairiausiais ekonominių

ciklų tyrimų aspektais. Pati populiariausia tokių tyrimų kryptis - ciklų susiformavimo priežasčių analizė ir vertinimas. Taip pat atliekami ekonominio ciklišKumo poveikio tyrimai įvairių ekonominių sistemų kontekste, ciklų valdymo galimybių studijos ir įvertinimas, ekonominiai ciklai analizuojami vertinant jų trukmės, stiprumo, kilmės ir kitus reikšmingus aspektus bei pjūvius.

Ekonominio ciklišKumo klausimai nagrinėti moksliniuose darbuose, kurių autoriai - R.M.Solow (1956), D.Cass (1965), W.A.Brock ir L.J.Mirman (1972), B.Greenwald ir J.Stiglitz (1993), R.Fiorito ir T.Kollintzas (1994), F.Kydland ir E.Prescott (1988, 1990, 1991), A.Korotayev, S.Tsirel (2010), N.Shiode ir kt. (2004), A.Korotayev, S.Tsirel (2010), S.Solomou (1989), N.Kondratjev (1984, 2002), P.Senge (1982), A.Van der Zwan (1980), J.Van Duijn (1983), B.Berry (1991, 2005), T.Devezas ir J.Corredine (2001), J.Schumpeter (1939, 1954), G.Mensch (1979), A.Graham ir P.Senge (1980), C.Freeman (1983, 1987), G.Modelski ir W.Thompson (1987), A.Kleinknecht (2002), G.Modelski (2006), C.Papenhausen (2008) ir daugybė kitų. Iš Lietuvos autorių galima paminėti M.Valentinaitę ir V.Sniešką (2005), B.Galinienę, A.Marčinską ir S.Malevskienę (2006), M.Dapkų ir B.Romikaitytę (2006), L.Sinevičienę ir A.Vasiliauskaitę (2010), Z.Norkų (2010a, 2010b, 2012), A.Lakštutienę, R.Krušinską ir J.Platenkovienę (2011), T.Ramanauską (2011).

Tačiau visoje paminėtų ekonominių ciklų tyrimų ir ciklo formavimosi modelių pateikiamų ekonominių ciklų priežasčių įvairovėje pasigendama rinkos talpos uždarumo, prisotinimo ir perprodukcijos procesų svarbos pabrėžimo ir išsamios analizės. Disertacijoje siūloma papildyti šią susiformavusią tyrimų nišą, naudojant ekonominę logistinę teoriją.

Logistinių dėsnių pritaikymo ekonominiuose tyrimuose problematika nėra naujas dalykas. Ji nagrinėjama C.F.Alvim (1998), O.C.Fereira (1998, 2002), J.D.Sterman (2000), A.Tsoularis (2001), A.Tsoularis ir J.Wallace (2002), D.Sornette (2003), S.Hohler (2005), M.Florio ir S.Colautti (2005), E.Accineli ir J.G.Brida (2007), L.Guerrini (2006, 2010) ir kitų autorių darbuose. Lietuvoje šią ekonominių tyrimų kryptį reprezentuoja ekonominės logistinės teorijos kūrėjo S.Girdzijausko (2002a, 2002b, 2004, 2005, 2006, 2008, 2010, 2011a, 2011b) tyrimai, taip pat S.Girdzijausko tyrimai, atlikti su bendraautoriais (Girdzijauskas, Štreimikienė, 2010; Girdzijauskas, Štreimikienė, Čepinskis ir kt., 2009; Gronskas, Štreimikienė, Girdzijauskas, 2008; ir kt.), taip pat

V.Moskaliovos (2009), E.Jurkonytės (2011) darbai. Minėtuose tyrimuose nagrinėjami logistinio kapitalo augimo ir rinkos kapitalo prisotinimo veiksniai, analizuojama rinkų talpos ribotumo problematika, pateikiami ekonominės logistinės teorijos pritaikymo sprendimai ekonominių sistemų raidos analizėje, ciklinių ekonominių svyravimų tyrimuose, ekonominių burbulų ir finansinių piramidžių formavimosi analizėje, draudimo sektoriuje ir kitose srityse.

Įvertinant sėkmingus ekonominės logistinės analizės pritaikymus minėtuose tyrimuose, galima daryti prielaidą, kad ekonominė logistinė analizė gali būti naudojama kaip svarbus ekonominių ciklų tyrimo instrumentas, įvertinantis rinkos talpos uždarumą ir iš to išplaukiančius perprodukcijos procesus. Tai leistų atskleisti gilumines ekonominių ciklų susiformavimo priežastis ir pateikti ciklinių svyravimų valdymo sprendimus. Tokią prielaidą pagrindžia disertacijos autoriaus su bendraautoriais atlikti tyrimai bei publikacijos ir pranešimai konferencijose, pateikiančios jų rezultatus. Šioje disertacijoje siekiama išplėtoti ekonominę logistinę teoriją ir ją pritaikius išsamiai ištirti ekonominius ciklus, įvardijant gilumines ciklinių ekonominių svyravimų priežastis, suformuojant ekonominių ciklų tyrimo įrankius ir pateikiant ciklinių svyravimų valdymo sprendimus.

Tiriamoji problema. Įvertinant aptartus probleminius analizuojamos temos aspektus, formuluojami tokie disertacinio tyrimo probleminiai klausimai:

- Kokios yra giluminės ekonominių ciklų susiformavimo ir veikimo ekonominėse sistemose (rinkose) priežastys? Kaip ekonominius ciklus veikia ekonominiai paradoksai?
- Kokie ciklinių svyravimų valdymo sprendimai, įvertinant rinkų talpos ribotumo ir perprodukcijos aspektus, gali būti pritaikyti, siekiant valdyti ekonominius ciklus ar sušvelninti neigiamas ciklinių svyravimų pasekmes?

Darbo objektas — cikliniai ekonominiai svyravimai.

Darbo dalykas – ekonominių ciklų ir ekonominės raidos analizė ekonominės logistinės teorijos pagrindu.

Darbo tikslas - vadovaujantis teorine ekonominių ciklų analize bei ekonomine logistine teorija atskleisti ir nustatyti ciklinio ekonominio svyravimo priežastis, išsiaiškinti ekonominių paradoksų įtaką ir ištirti ciklinio ekonominės sistemos svyravimo priklausomybę nuo inovacijų, rinkos prisotinimo ir perprodukcijos.

Siekiant šio tikslo, kelti tokie teoriniai bei praktiniai **uždaviniai**:

1. susisteminti ir apibendrinti mokslinėje literatūroje analizuojamą ekonominių ciklų sampratą, jų klasifikaciją, ciklinius svyravimus lemiančius veiksnius;
2. išsiaiškinti ekonominių paradoksų įtaką ekonominiams ciklams. Parengti logistinį ekonominio ciklo modelį, įvertinantį rinkų talpos ribotumą, iš jo išplaukiančius inovacinius rinkos sukūrimo, rinkos kaitimo, rinkos prisotinimo ir perprodukcijos procesus bei atskleisti vertybinių popierių rinkų vaidmenį prisotinimo kapitalu procesuose;
3. patikslinti ekonominio ciklo apibrėžimą;
4. parengti logistinį ciklinio ekonominės sistemos svyravimo ir raidos tyrimo modelį, leidžiantį ištirti priežastis, sąlygojančias ekonominių ciklų susiformavimą ir veikimą baigtinės talpos ekonominėse sistemose (rinkose);
5. pritaikius parengtą modelį, atlikti empirinį baigtinės talpos ekonominių sistemų ciklinio svyravimo ir raidos tyrimą, nustatant ciklinio svyravimo ir raidos priklausomybę nuo inovacinių rinkos sukūrimo procesų, rinkos kaitimo, prisotinimo ir perprodukcijos procesų;
6. pasiūlyti ciklinių ekonominių svyravimų valdymo sprendimus, įvertinančius rinkos talpos ribotumo ir iš jo kylančių procesų aspektus.

Darbe ginami teiginiai

- Ciklinius ekonominius svyravimus formuoja inovaciniai procesai, kuriantys ribotos talpos rinkas. Ciklas formuojasi veikiant ekonominiams paradoksams, kuomet inovacijos sukuria arba modifikuoja uždarą arba dalinai uždarą rinką su apibrėžta baigtinio dydžio arba lėtai besiplečiančia talpa, kuri palaipsniui užpildoma tos rinkos produktais. Prisotinus rinką dėl rinkos kaitimo ir

susiformavusios paslėptosios perprodukcijos įvyksta burbulo susiformavimo ir sprogimo procesai. Jie sąlygoja tolimesnį pelningumo sumažėjimą, paslėptosios perprodukcijos virsmą į atvirąją ir to pasekoje sekantį rinkos talpos susitraukimą.

- Uždaro rinkos talpos tipo ekonominės sistemos prisotinimas gali būti valdomas inovacinių procesų pagalba išplečiant rinkos talpą. Tokiu būdu valdomi rinkos kaitimo ir perprodukcijos procesai, nukeliant arba sušvelninant neigiamas ekonominio ciklo piko ir kritimo fazių metu vykstančių pelningumo kritimo ir rinkos talpos susitraukimo procesų pasekmes.
- Rinkos kaitimas gali būti valdomas ribojant kapitalo pateikimą į ekonominę sistemą per vertybinių popierių rinkas.

Tyrimo metodai. Analizuojant teorinius ekonominių ciklų formavimosi aspektus bei ekonominės logistinės teorijos pritaikymo galimybes ciklinių ekonominių svyravimų tyrimų kontekste, darbe taikyti šie tyrimo metodai: logistinė analizė, sisteminė ir teorinė mokslinių šaltinių analizė, sintezė ir apibendrinimas bei teorinis modeliavimas

Atliekant parengto logistinio ciklinio ekonominės sistemos svyravimo ir raidos tyrimo modelio testavimą buvo atliktas empirinis tyrimas, panaudojant faktinius statistinius pasirinktų ekonominių sistemų duomenis. Realizuojant modelį ir tiriant pasirinktų rinkų raidos ir ciklinio svyravimo procesus, naudota logistinio augimo taikomoji programa Loglet.

Darbo struktūra. ***Pirmojoje darbo dalyje*** pateikiama ciklinių ekonominių svyravimų analizė, kurios metu susistemintos ir apibendrintos ekonominių ciklų teorijos, nustatyti pagrindiniai ciklinius svyravimus sąlygojančių priežasčių teoriniai aspektai ir pateiktas jų įvertinimas.

Antroji darbo dalis skirta ekonominio ciklo analizei. Įvertinant ekonominės logistinės teorijos nuostatas, patikslinta ekonominio ciklo samprata, parengtas teorinis logistinis ekonominio ciklo modelis, atskleidžiantis ciklinio svyravimo gilumines priežastis, taip pat logistinis ciklinio ekonominės sistemos svyravimo ir raidos tyrimo modelis, įgalinantis atskleisti ekonominių ciklų susidarymo ir raidos priežastis.

Trečiojoje darbo dalyje atliekamas empirinis tyrimas, pritaikant logistinį ciklinio ekonominės sistemos svyravimo ir raidos tyrimo modelį. Siekiant ištirti suformuotą modelį, atliekamas dviejų dalių tyrimas, analizuojant dvi skirtingo dydžio tarpusavyje nesusijusias ekonomines sistemas. Tyrimo metu modelis verifikuojamas, pagrindžiant disertacijoje suformuotą ekonominio ciklo veikimo principą.

Darbo mokslinis naujumas. Mokslinį disertacijos naujumą apibūdina šie aspektai:

- Išplėsta ekonominė logistinė teorija, pateiktos jos pritaikymo galimybės ekonominių ciklų tyrimuose, pateikiant ir apibūdinant ekonominių paradoksų, rinkos talpos uždarumo, taip pat inovacinių rinkos susiformavimo, rinkos kaitimo, rinkos prisotinimo ir perprodukcijos procesų sąveiką su ekonominių svyravimų procesais;
- atskleistos ekonominių ciklų susiformavimą veikiančios giluminės priežastys, apibrėžiant inovacinių procesų įtaką rinkos susiformavimui, rinkos talpos uždarumą ir iš jo išplaukiančią paslėptąją perprodukciją, esminį vertybinių popierių rinkų vaidmenį rinkų prisotinimo kapitalu procesuose;
- suformuotas naujas teorinis ekonominio ciklo susiformavimo principus atskleidžiantis logistinis ekonominio ciklo modelis;
- parengtas originalus logistinis ciklinio ekonominės sistemos svyravimo ir raidos tyrimo modelis, kurio pagalba pagrindžiamas naujas logistinis ekonominio ciklo veikimo principas;
- disertacijoje atskleistos ciklinių ekonominių svyravimų valdymo galimybės. Jos apima 1) ekonominio ciklo augimo arba piko fazėje galinčius įvykti inovacinius rinkos talpos išplėtimo procesus, kurie leistų prailginti rinkos talpos prisotinimo trukmę bei valdyti galimą paslėptosios perprodukcijos susiformavimą; 2) vertybinių popierių įtakos konkrečioms rinkoms valdymo veiksmus.

Teorinė ir praktinė darbo nauda

Teorinį disertacijos reikšmingumą atskleidžia:

- atliktas skirtingų trukmių ekonominių ciklų susiformavimą tiriančių teorijų įvertinimas ir apibendrinimas, naudojant ekonominės logistinės analizės principus;
- atskleistos ciklinio svyravimo giluminės priežastys, paremtos ekonominių paradoksų egzistavimu: rinkos talpos ribotumas, dėl jo veikimo susiformuojanti paslėptoji perprodukcija, taip pat inovaciniai rinkos susiformavimo ar modifikavimo procesai;
- parengtas naujas teorinis logistinis ekonominio ciklo modelis, įvardijantis ekonominių ciklų metu vykstančius inovacinius, rinkos kūrimo, rinkos prisotinimo, rinkos kaitimo ir perprodukcijos procesus, pagrindžiantis naują ekonominio ciklo veikimo principą;
- parengtas logistinis ciklinio ekonominės sistemos svyravimo ir raidos tyrimo modelis, leidžiantis visapusiškai ištirti ciklinius ekonominius svyravimus konkrečiose rinkose.

Praktinį disertacijos naudingumą atskleidžia:

- logistinio ekonominio ciklo modelio ir logistinio ciklinio ekonominės sistemos svyravimo ir raidos tyrimo modelio pagalba atskleistos praktinio ekonominių ciklų tyrimo galimybės, leidžiančios išsamiai įvertinti rinkos talpos uždarumo, perprodukcijos ir iš jų išplaukiančių procesų veikimą;
- logistinio ekonominio ciklo modelio pagalba atskleistos galimybės valdyti ekonominius ciklus ar sušvelninti neigiamas ciklinių svyravimų pasekmes.

IŠVADOS

Išnagrinėtos rinkos talpos uždarumo veiksnio ir iš jo išplaukiančių inovacinių rinkos suformavimo, rinkos prisotinimo, kaitimo ir perprodukcijos procesų analizės adaptavimo galimybės vertinant ekonominių ciklų susiformavimo ir veikimo procesus leidžia daryti tokias išvadas:

1. Atlikta ekonominio ciklo sampratų ir savybių bei skirtingų trukmių ekonominių ciklų modelių ir teorijų analizė atskleidė, kad teoriniuose ekonominio ciklo modeliuose daugeliu atvejų rinkos uždarumo veiksnys nėra akcentuojamas, neanalizuojami inovaciniai rinkos suformavimo, rinkos prisotinimo, kaitimo ir perprodukcijos procesai.

Nustatyta, kad rinkos talpos ribotumo ir iš jo išplaukianti ekonominių sistemų raidos problematika nagrinėjama logistinės krypties ekonominiuose tyrimuose, ypatingai ekonominės logistinės analizės tyrėjų darbuose, todėl būtina ekonominę logistinę teoriją pritaikyti ekonominių ciklų tyrimuose, kas leis atskleisti nepakankamai išsamiai įvertintas ciklinių ekonominių svyravimų gilumines priežastis.

2. Tyrimo metu suformuotas logistinis ekonominio ciklo modelis, pateikiantis naują teorinį ekonominio ciklo formavimosi išaiškinimą. Šis teorinis modelis naujai ir detaliai paaiškina kiekvienos ciklo fazės metu vykstančius esminius procesus, atskleidžia gilumines ciklinių ekonominių svyravimų priežastis bei leidžia pateikti jų valdymo sprendimus.

Pagal logistinį ekonominio ciklo modelį baigtinės (kintančios) talpos ekonominės sistemos ciklinį raidos pobūdį formuoja:

- inovaciniai procesai ciklo dugno fazės metu, sukuriantys (arba reikšmingai modifikuojantys) rinką ir tokiu būdu duodantys pradžią sistemos augimui;
- augimo ir piko fazių metu dėl rinkos talpos uždarumo ekonominėje sistemoje vykstantys rinkos prisotinimo ir rinkos kaitimo procesai;
- vertybinių popierių rinkų dalyvavimas rinkų prisotinimo kapitalu procese;
- šių procesų pasekoje bei veikiant didėjančio pelningumo paradoksui susiformuojanti paslėptoji perprodukcija, sąlygojanti burbulo susiformavimą piko fazės metu;
- burbulo sprogimas, kuomet nežymiai sumažėjus paklausai, pelningumas krenta smarkiai, taip rinkoje sukeliant paniką ir spartų kapitalo išėjimą iš jos, to pasekoje vykstantis paslėptosios perprodukcijos virsmas į atvirąją perprodukciją bei skolos spąstų veikimas.

Formuojant logistinį ekonominio ciklo modelį nustatyta, kad esminis rinkos prisotinimas kapitalu vyksta per vertybinių popierių rinkas, todėl joms modelyje priskiriamas vienas iš pagrindinių vaidmenų. Modelyje vertybinių popierių rinkos reikšmingą vaidmenį įgauna dėl savo savybių, suteikiančių kapitalui galimybes pakankamai lengvai ir greitai patekti į norimas ekonomines sistemas (rinkas). Tokiu būdu vertybinių popierių rinkų dalyvavimą rinkų prisotinimo kapitalu procese galima priskirti prie esminių burbulo susiformavimo, o tuo pačiu – ir ekonominio ciklo susiformavimo prielaidų ir įrankių.

Logistinio ekonominio ciklo modelio formavimo metu buvo atskleistos vidutinės trukmės ekonominių ciklų susiformavimą veikiančios giluminės priežastys, nustatant inovacinių procesų įtaką rinkos susiformavimui, rinkos talpos uždarumo įtaką rinkos kaitimui, rinkos prisotinimui ir paslėptosios perprodukcijos bei burbulo proceso susiformavimui bei visų minėtų procesų įtaką ekonominio ciklo formavimuisi ir veikimui.

3. Apibendrinant logistinio ekonominio ciklo modelio formavimo metu atliktą analizę bei literatūros šaltinius, patikslintas ekonominio ciklo apibrėžimas, konstatuojant, kad *ekonominiai ciklai yra ekonominių paradoksų įtakoje atsiradę ekonominės veiklos svyravimai. Jie yra sukelti pagrindinių rinkų prisotinimo ir to pasėkoje kylančios perprodukcijos bei skolos spąstų poveikio. Ekonominiai ciklai susidaro spaudžiant investiciniams fondams (finansiniams instrumentams) susiformavusias rinkas ir vyksta vienu metu daugelyje ekonominių veiklų. Ciklas susideda iš plėtros, po jos einančio bendrojo nuosmukio, lėtėjimo ir atsigavimo, kuris virsta naujo ciklo plėtros faze. Ši pokyčių seka yra pasikartojanti, tačiau nereguliari.*

4. Remiantis teoriniu logistinio ekonominio ciklo modeliu sukurtas logistinis ciklinio ekonominės sistemos svyravimo ir raidos tyrimo modelis, kuris gali būti nauju patikimu ekonominių ciklų tyrimo instrumentu, leidžiančiu įvertinti ir ištirti priežastis, sąlygojančias ekonominių ciklų susiformavimą ir veikimą uždarose ekonominėse sistemose (rinkose).

Logistinis ciklinio ekonominės sistemos svyravimo ir raidos tyrimo modelis apima penkis tyrimo etapus, kurių metu naudojami statistiniai, matematiniai, palyginamieji ir kiti metodai: 1) apibūdinamas tiriamas objektas ir atliekamas rinkos talpos uždarumo vertinimas; 2) atliekama rinkos talpos analizė; 3) atliekama nagrinėjamos ekonominės sistemos raidos analizė; 4) atliekama tiriamos sistemos ciklinio svyravimo analizė; 5) apibendrinamas tyrimas ir suformuluojamos išvados.

5. Pritaikius parengtą instrumentą atliktas empirinis tyrimas įrodė, jog įvairių (tačiau atitinkančių baigtinės arba kintančios talpos rinkos tipus) ekonominių sistemų ciklinis svyravimo pobūdis bei raida gali būti tiriami logistinės analizės metodų pagalba. Tyrimas įrodė, jog gali būti tiriamos tiek nedidelės, pakankamai siauros ekonominės sistemos, atspindinčios vienos ar kelių susijusių technologijų ar ūkio sektorių rinkas, tiek didelės, plačios, atskirų valstybių ekonomikas apibrėžiančios ekonominės sistemos.

Atliekant ekonominių sistemų raidos tyrimą, naudojant teorinį logistinį ekonominio ciklo modelį, atskleista, kad :

- tiriamoms sistemoms būdingas logistinis raidos pobūdis;
- ilguoju laikotarpiu gali būti išskiriami nesparčios plėtros, intensyvaus augimo bei prisotinimo etapai;
- rinkos (ekonominės sistemos), veikiant tiek vidinėms, tiek išorinėms jėgoms, buvo plečiamos ne tik ilguoju, bet ir vidutiniu laikotarpiu. Nuosmukių metu nagrinėjamų sistemų rinkų talpos susitraukdavo.

Atliekant ekonominių sistemų ciklinės raidos tyrimą, naudojant logistinį ekonominio ciklo modelį, įrodyta, kad:

- nagrinėjamų sistemų rinkos talpos formavimui ekonominių ciklų dugno fazių metu turėjo įtakos vidinio vartojimo didėjimas, globalizacijos procesai ir inovacijų plėtra. Tiek atominės energetikos, tiek Japonijos ekonomikos rinkos formavimui nagrinėtais laikotarpiais lemiamą įtaką turėjo inovaciniai procesai;

- lemiama nagrinėtų ekonominių sistemų stagnacijos ir nuosmukių priežastimi laikytina perprodukcija, atsirandanti rinkos prisotinimo pasėkoje;

- ekonominiams ciklams lemiamą įtaką daro didėjančio pelningumo paradoksas, kuris pasireiškia per paslėptosios perprodukcijos procesus augimo ir piko (burbulo proceso) fazių metu.

6. Įvertinant autoriaus sudaryto teorinio logistinio ekonominio ciklo modelio nuostatas, galima daryti išvadą, kad, siekiant ilgalaikio ekonominio augimo:

1) tikslinga užtikrinti naujų rinkų kūrimą ir

2) fiskalinėmis bei kitokiomis priemonėmis (pvz., ribojant vertybinių popierių rinkas) kontroliuoti jų kaitimą.

Vertinant teorinius bei praktinius atlikto tyrimo aspektus, darytina išvada, kad perspektyviausia naujų rinkų kūrimo forma – inovacijų plėtra.

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