

VILNIUS UNIVERSITY

Viktorija
COHEN

DEVELOPMENT OF COMMERCIAL
PROPERTY MARKET: ANALYSIS AND
ECONOMIC ASSESSMENT

SUMMARY OF DOCTORAL DISSERTATION

SOCIAL SCIENCES, ECONOMICS (04 S)

VILNIUS, 2013

This dissertation was prepared at Vilnius University during the period of 2008 – 2013.

Scientific supervisor:

Prof. dr. Birutė Galiniienė (Vilnius University, social sciences, economics – 04S)

The defense of the dissertation will take place at the Vilnius University Scientific Council in the field of economics:

Chairman:

Prof. habil. dr. Albinas Marčinskas (Vilnius University, Social Sciences, Business Management – 03S)

Members:

Prof. dr. Rimantas Antanas Stanikūnas (Vilnius University, Social Sciences, Economics – 04S)

Prof. dr. Manuela Tvaronavičienė (Vilnius Gediminas Technical University, Social Sciences, Economics – 04S)

Prof. dr. Algirdas Miškinis (Vilnius University, Social Sciences, Economics – 04S)

Prof. dr. Saulius Raslanas (Vilnius Gediminas Technical University, Technology Sciences, Civil Engineering– 02T)

Opponents:

Prof. habil. dr. Jonas Mackevičius (Vilnius University, Social Sciences, Economics – 04S)

Prof. habil. dr. Borisas Melnikas (Vilnius Gediminas Technical University, Social Sciences, Economics – 04S)

The dissertation will be defended at the public meeting of the scientific council in the field of economics on the 12th of September 2013 at 2 p.m. in auditorium 403 at the Faculty of Economics, Vilnius University.

Address: Saulėtekio Ave. 9, bldg. II, LT-10222, Vilnius, Lithuania.

The summary of the dissertation was distributed on 12 August 2013.

The dissertation is available at the library of Vilnius University.

VILNIAUS UNIVERSITETAS

Viktorija
COHEN

KOMERCINIO NEKILNOJAMOJO TURTO
RINKOS PLĖTROS ANALIZĖ IR
EKONOMINIS VERTINIMAS

DAKTARO DISERTACIJA

SOCIALINIAI MOKSLAI, EKONOMIKA (04 S)

VILNIUS, 2013

Disertacija rengta 2008 – 2013 metais Vilniaus universitete Ekonomikos fakulteto Ekonominės politikos katedroje.

Mokslinis vadovas:

Prof. dr. Birutė Galinienė (Vilniaus universitetas, socialiniai mokslai, ekonomika – 04 S)

Disertacija ginama Vilniaus universiteto Ekonomikos mokslo krypties taryboje:

Pirmininkas:

Prof. habil. dr. Albinas Marčinskas (Vilniaus universitetas, socialiniai mokslai, vadyba – 03S)

Nariai:

Prof. dr. Rimantas Antanas Stanikūnas (Vilniaus universitetas, socialiniai mokslai, ekonomika – 04S)

Prof. dr. Manuela Tvaronavičienė (Vilniaus Gedimino technikos universitetas, socialiniai mokslai, ekonomika- 04S)

Prof. dr. Algirdas Miškinis (Vilniaus universitetas, socialiniai mokslai, ekonomika – 04S)

Prof. dr. Saulius Raslanas (Vilniaus Gedimino technikos universitetas, technologijos mokslai, statybos inžinerija – 02T)

Oponentai:

Prof. habil. dr. Jonas Mackevičius (Vilniaus universitetas, socialiniai mokslai, ekonomika – 04S)

Prof. habil. dr. Borisas Melnikas (Vilniaus Gedimino technikos universitetas, socialiniai mokslai, ekonomika – 04S)

Disertacija bus ginama viešajame Ekonomikos mokslo krypties tarybos posėdyje 2013 m. rugsėjo 12 d. 14 val. Vilniaus universiteto Ekonomikos fakulteto 403 auditorijoje.

Adresas: Saulėtekio 9, II rūmai, LT-10222, Vilnius, Lietuva.

Disertacijos santrauka išsiuntinėta 2013 m. rugpjūčio 12 d.

Su disertacija galima susipažinti Vilniaus universiteto bibliotekoje.

INTRODUCTION

Relevance of the topic. Real estate plays a vital share in household or work in the daily life of each individual; it is also a very important sector in each economy. Commercial property is an integral part of the real estate sector and perhaps can be compared to one of the country's most fundamental because it generates a wide range of economic activities: building, planning, design, construction, maintenance, investment; offers shopping, visiting and leisure opportunities. Development of this sector has a significant impact on economic growth, promoting the progress of other economic activities, creating jobs, and affecting the country's gross domestic product and income.

For Eastern European countries, after reestablished independence, this sector has become one of the major in economic development. A rapid expansion of this sector took place during the transitional period, whereas the countries had to adapt to the market economy framework and to emerged needs and opportunities in the real estate market. In this respect, a number of processes influenced the expansion shift: the liberalization, political decisions, growth of economic indicators, globalization, historical events. However, the ultimate objective of any property market, in light of globalization, is its competitiveness and interest of investors, efficient and mature market.

Fluctuations in Lithuania's economic indicators suggest that the rapid growth of the economy has had a positive impact on property market development in general. However, this growth did not impact the long-term market performance, and has had negative consequences for the entire economy. The economy and the property market have close ties, so suitable methodologies are needed in order to assess the specificity of commercial property market development and its efficiency, both of which respond directly to the country's economic trends.

The research problem and scope of research. Scientific literature suggests that commercial property market in developing countries remains an ambiguous process and there is lack of clear understanding about how this market emerged, evolved, grows and operates, and which processes and factors affect its development. Kvedaravičienė (2010) states that development of a commercial property market in developing markets cannot be analyzed based on and compared to the mature markets. The former differ in terms of history, emergence and development contexts, framework and sense of operation. Conversely, this task complicates the fact that property markets in developing countries feature fragmented data and/or lack of reliable data for time series and, therefore, conducting any empirical research on commercial property market analysis, evaluation, and especially any forecast is rather difficult. Thus, a model adapted to these specific markets, an adequate evaluation is required to fill in the gap.

Recent scientific literature on the subject points to new economic trends that have evolved over the past twenty years and have a huge impact not only on the property market but also on the development of the countries in general. Therefore, two main key words are highlighted:

- *commercial property market in the context of developing economies;*
- *development of the commercial property market in a modern economy.*

Commercial property market as a scientific problem has been examined in various directions and through different angles, but it is not often studied in the context of *developing economies*. The current trends in property market *development* are also considered as a relatively new topic. However, both of these trends are highly correlated with each other and attract more attention among scientists. Commercial property is associated with offices, retail and industrial premises (Friedman et al., 1987, Martin and Spencer, 1999; Тарасевич 2000; Galinienė et al., 2006). The term "*development*" can be defined as improved standard of living, embracing development of economic, political and social processes; referred to as quantitative and qualitative changes in the local economy

(O'Sullivan, 2003; Sen, 1983). Consequently, it can be assumed that commercial property market development is an effective market expansion that entails certain processes.

Over the past two decades some foreign scientists devoted their attention to the issue of commercial property market development in light of liberalization and globalization evolution (Castells, 1991; Sassen, 1991, 1994; Amin & Thrift, 1994; Budd, 1995; Adair et al., 1999; Liu et al., 2007, etc.). According to Clark & Lund (2000), the phenomenon of globalization has expanded beyond the usual definition in terms of both cultural and conceptual level. Articulated by several authors, globalization, in general terms, has changed and expanded the business environment by reducing transportation costs, expanding technological capabilities, improving economic and political environment, offering strategies for the internationalization of capital flows, information management, allowing different business sectors and organizations to develop their businesses internationally (Petrella, 1996; Dunning & Rajneesh, 2004; Dunning, 2006; Too et al., 2010). In this respect Hansen (2003) considers that globalization in the property market suggests increasing number of market participants involved in property construction, management, maintenance, use, growing inward foreign investment and equity accumulation. Lindahl (1995) argues that it is an investment theory and investment funds formed the basis for the development of the property markets to switch to a more opened and globally oriented model.

Theoretical constructs of property market development in newly developing countries began to appear following the collapse of the Soviet Union, after which some markets appeared to re-establish to the inexperienced category of market driven economy. In response to these changes, researchers started to analyze the transformation of economies from a command to a market economy, the characteristics of such markets and the formation of property markets (Sykora & Simonickova, 1996; D'Arcy & Keogh, 1994; 1998, Adair et al., 1999, 2005, 2006; McGreal et al., 2002; Watkins & Merrill, 2003).

Meanwhile, the following researchers and scientists devoted their attention to the different issues connected to the Lithuanian property market: Kaklauskas, Zavadskas, Raslanas together with other authors (2002, 2005, 2007, 2009), Joneikytė & Drejer (2012) studied growth and development; Ivanauskas, Eidukevičius, Marčinskas, Galinienė (2008) analyzed residential property market; Dubinas (1997) discussed economic sense of property market and property trade; Rutkauskas (2001) analyzed investment strategies in property market. Raslanas (2000a, 2000b, 2001, 2002, 2003), Galinienė & Statkevičienė (2001); Galinienė (2004), Galinienė & Šopienė (2003), Marčinskas & Galinienė (2005) more focused on property valuation methodology and property aspects, while Galinienė et al. (2006) studied cycles in property market; Belinskaja (2007) analyzed property market bubble issue; Misiūnas et al. (2007) examined factors affecting price increase in residential property market, Stasiulionis (2002) focused on existing commercial properties and those under construction, Kvedaravičienė (2008a, 2008b, 2009, 2010) described the operation of both residential and commercial markets and last but not least Azbainis & Rudzekienė (2011) studied the issues of how transition and economic downturn influenced the property market.

A different range of scientific literature sources in Lithuania demonstrates that aspects of the commercial property market have not been analyzed systematically while major emphasis was strengthened towards two main focuses: property valuation methodologies and residential property market's trends and development. Moreover, the research on foreign literature concludes that there is no sufficient number of studies dealing with the commercial property sector formation and development fundamentals in the post-Soviet countries. As a result, there is a lack of theoretical and empirical studies.

To summarize the foregoing, there is a comprehensive need in commercial property market research in Lithuania, the results of which can depict the market

development, suggest its opportunities and constraints, and propose recommendations to market participants.

Object of the research: analysis of commercial property market growth, expansion, and characteristics of the market operation. Lithuanian commercial property market as the *object* of study was chosen. Peculiarities of operation of this market reflect a young market in transition from command regime to a free market economy.

Purpose of the research: to analyze commercial property market growth and operational characteristics in developing countries, presenting Lithuanian commercial property market growth analysis and appraisal.

In order to meet this purpose the following **tasks** were set:

- to examine the theoretical and economical commercial property market background;
- to identify formation characteristics of commercial property market in the developing countries and determine the market's development stages;
- to generate a model of commercial property market development in developing countries;
- to perform an analysis of commercial property market in Lithuania according to the market's phases;
- to conduct an empirical study identifying barriers and factors influencing the commercial property market's development in Lithuania and evaluating the maturity of the market;
- to empirically reveal development opportunities, limitations, and prospects of the commercial property market in Lithuania;
- to conduct an empirical study (based on the selected criteria) assessing probability of commercial property market factors values change in time, i.e. estimates of risk factors;

- to formulate the conclusions and recommendations (based on the theoretical and empirical findings) for researchers, businesses, investors and constitutional representatives.

Research methods. Taking into account research methods used by previously conducted studies, the main task of the present research methodology is an objective analysis of the commercial property market development features and phenomena in order to fully summarize the development of the market and foresee its prospects, and thus determine the research approach that would examine the problem of the research. The fundamental principle of the study suggests that increased market competitiveness consists of qualitative aspects of the market, whereas market participants' behavior and decisions tend to entail both quantitative and qualitative factors of the development. However, both factors, i.e. market participants behavior and increased competitiveness, are related to the maturity level as a target of the market, which makes it the basis for commercial property market development and operation in developing countries.

The Manifold nature of the field requires a complex research methodology covering different research methods. In order to achieve the purpose of the dissertation and to meet specified objectives the following methods were applied:

- analysis and review of scientific literature both by foreign and Lithuanian authors; secondary data examination and clustering; systematic and comparative analysis methods, graphical modeling; logical and other qualitative techniques;
- expert evaluation method was applied for identifying direct commercial property market participants' viewpoint on the Lithuanian commercial property market development and growth. Quantitative data was coded and entered into Excel tables for further evaluation. Calculations carried out using SPSS (Statistical Package for Social Sciences) software, which checked the expert assessment, reliability of the results obtained from the questionnaire,

consistency for all respondents and for each specific group of the respondents. The results are presented in the form of tables, figures and graphs;

- various factors affecting the commercial property market evolve over time, hence they should be treated as random processes or at least random variables for assessment of which statistics should be applied. It should be noticed that the statistics is one of the most widely applied tools in the investigations of the markets. However, the application of statistics has difficulty in providing a reliable estimation of a value of a factor when sample size is too small. Therefore, the estimation of a factor is almost always presented as an interval. In general, there are two ways to assess the factors: to give confidence intervals or to give intervals of probability of certain value of a factor. Another difficulty in application of the statistics is the character of factors under investigation. Very often there is a need to assess so-called rare events that have insufficient empirical data at all. For example, in Lithuania, the commercial property market exists at the most 23 years. Consequently, if one wants to make a sample of yearly index based on one value, the sample should be equal to 23. Nevertheless, existing market condition and index situation offers a sample consisting only of 10 or 15 values. To overcome this obstacle in the present dissertation, so-called extreme values theory is applied in order to assess a risk of the commercial property market. The extreme values theory allows extrapolating the values of the indexes under review over long-term period comparing with time period that was used to make a sample of the values of the indexes. This analysis was conducted using Statistica, Python, Maple, EasyFit software. The results are presented in the form of tables, figures and graphs.

Limitations:

- Lithuanian state institutions, bank representatives and foreign investors are not inclined to cooperate with researchers;

- access to expert groups, simplified personal experience, commercial property market;
- although modern commercial property market in Lithuania exists since 1999, the time-series remain insufficient to produce a fully-fledged market analysis. It is apparent that there is a lack of qualitative time-series data;
- commercial property market distinguished by its confidentiality. Terms, prices lease conditions are necessary in order to determine the value of projects. There is no common database or requirements for such information to be submitted, which complicates the research.

Defended propositions:

- development of commercial property market in the post-communist countries is an ambiguous process;
- the proposed commercial property market evolution and development model suggests that developing countries are seeking for market competitiveness, which in turn generates property market responses and affects its maturity;
- globalization has a direct impact on the commercial property market development;
- the commercial property market in Lithuania is mature;
- foreign participants affected the commercial property market maturity level;
- the country's history has an impact on modern commercial property market development;
- modern offices and shopping centers are the most stable types of commercial property in terms of investment.

Theoretical and scientific contribution. Lithuanian scientists have studied the commercial property market as a separate segment of the entire real estate market only occasionally. Thus, focus on the market's development, structure and trends is relatively inexplicit on the scientific level. The proposed approach to the study reveals the complexity of the commercial property market evolution in developing

countries. There is a lack of both scientific publications and research techniques on how to evaluate and assess commercial property market development in the developing countries. This thesis will therefore contribute to the commercial property market knowledge by the following aspects:

- analysis of academic literature allowed to formulate a model that suggests commercial property market's development and its operation in the developing countries;
- the author has formulated and defined commercial property market development stages in the development countries, which were applied in conducting Lithuania's commercial property market development analysis;
- the author has carried out an expert survey of the commercial property market, which based on the opinions of the major market's participants has identified issues, constraints, maturity and opportunities of the market;
- extreme value theory application was performed in order to estimate the probability of yield and vacancy values change over time in modern offices and shopping centers.

Practical significance of the research:

- the model of commercial property market development can be applied by analyzing the development that takes place within the market, assessing changes in the countries and establishing the factors interfering the country's competitiveness and maturity;
- the proposed model can be used as a framework for conducting a comparison between other developing countries' commercial property market development;
- expert survey results identify the weak and strong features of the different processes in the market and could be used for recommendations, describing how to achieve greater market competitiveness;

- yield and vacancy change over time probability results using the extreme value theory can be useful for commercial property market participants prior to decisions to invest and develop. In addition, this method can be used as a basis for evaluating other factors of the market, which probability varies over period of time.

Structure of the research. The research is organized as follows: following *introduction*, two main sections form the essence of the study – *theoretical*, where the scientific problem is identified and interpreted and, *empirical*, where theories and methods of new facts are clarified, data examined and results are discussed, while *conclusions and recommendations* are brought as closing remarks. The research contains 206 pages, 44 tables and 68 figures; 219 references were used for the purpose of this research.

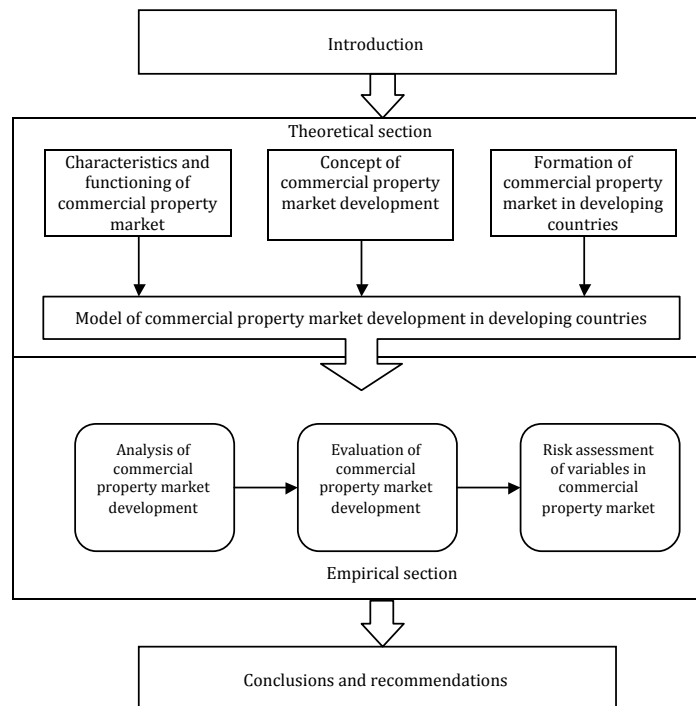


FIGURE 1. **Thesis outline**

Source: compiled by the author

THEORETICAL ASPECTS OF COMMERCIAL PROPERTY MARKET DEVELOPMENT IN DEVELOPING MARKETS

Following the collapse of the Soviet Union back in 1990, the property market in Eastern Europe is one of those sectors affected significantly by transformation and adaption to changing global economic conditions and inevitable processes (Rykiel, 1998). Different countries were faced with the challenge to develop a market economy from its foundation; thus, the *transformation* (or *transition process*) from a command system to a free economy era took place, which in academic literature is defined as the *formation of new markets* (Rikiel, 1998; Adair et al., 1999). In these new markets, the path towards democracy began with the political and economical reforms by promoting the basic principles of economic restructuring policies. The ultimate purpose of these reforms is the growth of the economy and market maturity. Urbanavičienė et al. (2009) state that property market development and construction volumes mainly affect the overall economic growth of the country and can demonstrate the country's economic prosperity or recession. In fact, the property market is closely linked with the economy, because property is considered as a capital, which is developed with the help of economy. Effectiveness of the commercial property market depends on how the capital and its unused value are distributed in the economy. Thus, property market has an impact on the economic development in manufacturing activities, household, investment, and financial sector.

The *property market* is related to a set of different mechanisms incorporating interests, rights, operation, interconnection of market participants carrying out a number of arrangements of purchase, sale, lease, mortgage etc. driven by certain conditions (Гриненко, 2004; Brzeski ir kt., 2006; Kvedaravičienė, 2008; Kaklauskas ir kt., 2012). The emphasis of this dissertation is commercial property (offices, shopping centers and logistic centers) which comparable from residential in its nature and has the following distinctive features (table 1):

TABLE 1. Comparable features of residential and commercial property market

Feature	Residential	Commercial
Liquidity	High	Low
Dependance on regional economic situation	Low	High
Risk	Low	High
Interconnection, "size of credit – value"	High correlation	Low correlation
The main type of operation	Purchase-sale	Lease
Financing possibilities	Comparatably high	Comparatably low

Source: Galinienė (2005)

The central objective of a commercial property market is revenue generation. In other words, *commercial property* is acquired for investment purposes to generate income. Thus, *commercial property market* (in the narrow sense) forms mechanisms linking interests and rights of market participants in certain activities, affected by external factors (figure 2):

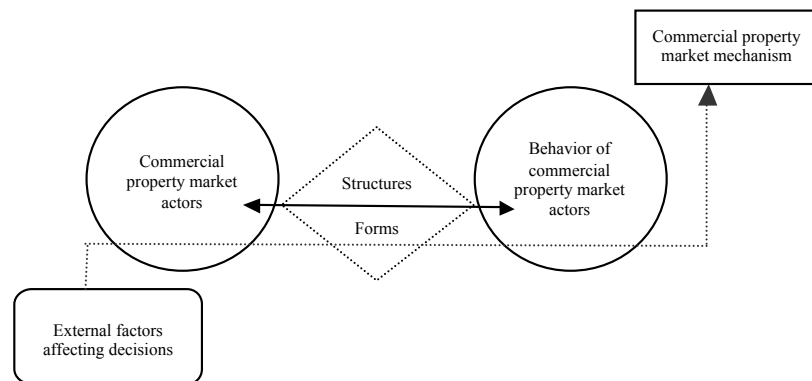


FIGURE 2. Commercial property market operational mechanism

Source: compiled by author based on Kvedaravičienė (2008)

Consequently, it can be stated that market participants (or actors) form the foundation of the commercial property market to operate by taking decisions to acquire, develop, invest and etc., which are driven and determined by a number of external factors and market changes (political, economical, financial, social, globalization process and etc.). Thus, there is a linear relationship between both the actors and the structural market factors. These external factors, in fact, affect every world's economy and market participants moods differently.

A combination of institutional and economic reforms, privatization, and liberalization of various barriers were major factors influencing attractiveness of

new market-based economies to foreign investors. According to some scholars, all these factors coincided with the growth of global forces in the 1990^s and therefore globalization has had a major influence on the cities and affected them in ways of economic and physical transformation, which had important consequences to the growth and development of the property market (Rykiel, 1998; Clark and Lund, 2000; McGreal et al., 2002; Zavadskas et al. 2004; Jones Lang Lasalle, 2007; Too et al. 2010; Cohen, 2012). Ritzer (2003) argues that globalization refers to the standardization of images, products, buildings and market actors' behavior around the world. In fact, one can quite easily recognize that commercial property can be characterized as a globally standardized product with similar physical elements of location, size, shape, architectural design, use of space etc. Adaption of trends that are developed worldwide and existence of such buildings in a city is usually taken as a sign to be internationally recognized. Yet, academic literature suggests that the biggest obstacle to foreign investors in Eastern European markets is the level of commercial property market maturity (McGreal et al., 2002).

In the Baltic States, formation of institutional market model sets the underpinning of the property market, as legal framework and privatization played the main factor for property market operation. The transformation and evolution of the economy together with the demand for new large-scale commercial property (such as shopping centers, malls, hypermarkets, office buildings etc.) brought in international investors, affecting the behavior of local actors and market performance. Commercial property actors, and especially their behavior and interrelation played an important role in the market formation based on their experience, needs, demand, and supply.

A major impact of the evolutionary process of the property market development in Lithuania demonstrates physical transformation of the cities and demand for commercial property space between 2000 and 2012. Commercial property space (in particular offices and shopping centers) in the country emerged greatly: from no space in 2000, to 850 000 sq. m. in shopping centers and almost 500 000 sq. m.

of A and B class office space for the major cities of Vilnius, Kaunas, and Klaipeda in 2012.

The evolution of the property market in Lithuania can be characterized by seven stages of its development (Table 2):

TABLE 2. Property market development and evolution in Lithuania

Stages	Period	Market trends	Characteristics
I	1991 – 1995	Market transition, adaptation, legal and political system restructuring, privatization and institutional reform.	The economy is adapting a framework of free market foundations and regulations in forms of reforms and restructuring political and legal environment, monetary system and different macroeconomical factors.
II	1995 – 2002	Beginning of commercial property market development: supermarkets, shopping centers and office buildings.	Growing demand for commercial property market. The supply of modern commercial real estate began showing up in 1999-2000. There are signs of market growth, growing foreign investors' interest in the market's attractive high yields; change in service towards customers and working environment. Yet, reforms and legal environment still being improved.
III	2002 – 2005	Increase in residential real estate market construction. Macroeconomic stabilization. Growth in bank lendings.	Often referred to as "overheated" (Ivanauskas et al. 2008) stage, supported by rapid and undjustified growth in costs and prices (30-50% early price growth). One of the biggest factors played EU assession, imroved and growing lending, macroeconomic growth and speculative intentions.
IV	2005 – 2006	Residential real estate market booming. Banks' loan portfolio growth. Commercial real estate market activity. Euro as a currency adoption plan.	In light of Euro introduction plans, lack of construction labor and easy access to loans residential real estate experienced rapid price growth (apartment prices on avarege increased 50-120% in one year), creating a bubble concern in residential real estate.
V	2006 – 2008	Commercial property market booming.	Rapid growth in number of issued building permits and commercial property development. Increase in rents and yields.
VI	2008 – 2010	The global economic downturn, recession and contraction.	Shrinkage of macroeconomic indicators, tightened financing, drop of rental rates, decrease of property values, a wave of bankrupcies, decrease in demand and growth in vacancies.
VII	2010 – now	Searching for equilibrium, market adaptation.	While demand is limited, market adjusts to the post crisis needs; rental market is sensitive and prices hit the bottom. Nevertheless, the development of the commercial projects that was halted during the crises is coming back to the ongoing construction. Both minor and major commercial property transactions are closed.

Source: compiled by author

Table 2 suggests that each stage represents the property market development process, whereas market formation principles lie in institutional model in forms of political and legal reforms, monetary policy, and macroeconomic processes representing the foundation of property market formation. Improvements of both quantitative-driven factors, such as economical and financial, and qualitative-driven factors in form of the structural changes, specific cultural influence,

technology etc. result in market competitiveness and encourage investment and general market actors' responses in the market, influencing the level of market maturity (Figure 3).

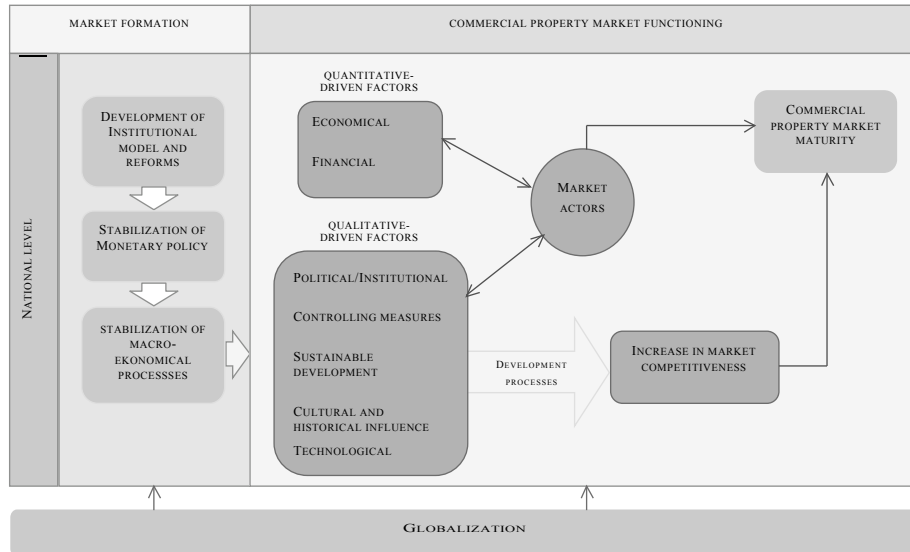


FIGURE 3. **Model of property market evolution and development**

Source: compiled by author

The model mainly reflects that all the processes and mechanisms implemented both during the property market formation period and its current operation are oriented towards improved market competitiveness, which in turn generates property market responses and affects its maturity. Notably, the effect of globalization increased the importance of competition between different countries and therefore qualitative factors of an individual country play an important role in global economy. Globalization forces and processes of economic integration bring structural changes to the economies. As economies emerge and develop, capital flows freely across different countries and national boundaries, actors (property investors, developers, advisors) of the property market increased the demand and brought changes within the property market to meet the requirements of the clients. At the same time, these developments have made individual markets more

vulnerable to changes in global economy, international capital flows and financial markets (D'Arcy and Keogh, 1999), a good example is the recent Global financial crises in 2007-2008 that still has major impact on most countries. Obviously, technological development in supporting these processes played an ultimate part. Economic integration requires structural changes within the local political and institutional environment, additional policy measures and instruments, and sustainable development that overall improve the market's competitive advantage.

There is no common approach in measuring commercial property market development and maturity that could be replicated by all countries, as markets are different from each other. According to Kvedaravičienė (2010), the nature of commercial property markets in Eastern European countries differs from the developed countries by its foundation and operation logic due to the historical facts that occurred within the frames of the command system. Therefore, commercial property markets in newly formed countries require a complex and systematic analysis, taking into account the relationship between the domestic market culture and market processes, efficiency and its ability to respond to changes in the specific context of the country's historical development.

Based on the considerations above, and in order to meet the dissertation's objectives, the following *propositions* are made, which are tested in the empirical research.

TABLE 3. **Propositions**

	Propositions	Empirical results
P_1	The process of globalization has a direct impact on modern commercial property market development.	Accepted
P_2	Commercial property market in Lithuania is mature.	Partially accepted
P_3	The presence of foreign actors in the market affects the country commercial property market maturity level.	Accepted
P_4	Country's history influences commercial property market development.	Rejected

Source: compiled by author

EMPIRICAL RESEARCH ON THE DEVELOPMENT OF THE COMMERCIAL PROPERTY MARKET IN LITHUANIA

The research of the commercial property market begins with the analysis of the market's development and trends (based on the stages introduced in table 2). It is emphasized that economical, political, and institutional changes in the country were used as a system tool to form the commercial property market's foundation, while the privatization process and EU assessment had the biggest influence on the market's development towards its maturity. The presence of foreign funds, investors, and their interest in the Lithuanian market and property market projects, made another important influence on the country's attractiveness and spurred the market's maturity growth. Nevertheless, it can be stated that international requirements for commercial property in Lithuania were recognized and adopted in 1999. Analysis of commercial property market reveals that its development evolved rapidly and was unbalanced with the healthy development of the country.

The research methodology is twofold. First, it draws upon an *evaluation of expert opinions*. Second, the *extreme values theory* is applied in order to assess a risk of the commercial property market using time series of vacancy and yield values.

Evaluation of expert opinions. The survey questions are aimed to obtain objective views from the commercial property market actors. According to Wu et al. (2009), opinions of major commercial market actors form constructive insights on obtaining the evaluation of the market. The target respondents in the research are key market actors: consultants, developers, investors, owners, leaseholders, banks, evaluators, state institutions and other individuals or entities directly connected to the commercial property market. The survey addressed five main themes, namely market formation and its attractiveness; barriers and risks; factors influencing the market's development; maturity assessment; and future tendencies.

Summing up the results, it is revealed that although some scholars relate the Lithuanian market to a market in transition, actors tend to consider the Lithuanian commercial property market as a developing market. It is also concluded that, regardless the recent Global financial crises that affected markets world wide, the commercial property market in Lithuania tends to attract a lot of interest from all the market actors; the crises seems to adjust supply-demand accordingly. Nevertheless, the survey revealed that the major barriers to invest in the country's commercial property market are low turnover and small market, high taxes and bureaucracy that negatively affect the market's development. On the other hand, global forces such as the financial crisis in the Euro zone or the global slowdown are rated as major risks to the local commercial property market. Generally, actors assess the globalization process as a strong factor influencing the development of the commercial property market.

Further results of the survey show that such factors as government intervention in the commercial property market regulations, financial market development, investors' trust, development of the market, and the market's cycles influence the development of the commercial property market the most. Although the market has improved its service quality and actors became more professional and competent in connection to the market trends and changes, the empirical tests show that the maturity of the market is yet average. The survey also revealed that respondents rank market data reliability average (mean of the conferences data was ranked 2.4, while market reports' mean was equal to 3.6, out of 5).

In addition, the results indicate that in line with the market's development trends, the respondents rate the best stage of development between 2005 – 2008, bottom stage for markets' actors between 2008 – 2010, while a slight upswing in 2011. Nonetheless, all the respondents admitted that the current stage of the market is not in its favorable state and its development prospects are quite narrow and thin. The market's trends are closely related to the drift of tendencies within the global and local economies. While the slowdown in the economy negatively

affected the commercial property market, the biggest drawback for future development of the market, based on the survey, was perceived to be the emigration and decline in population – which in turn affects market’s attractiveness and competitiveness.

Application of extreme values theory. To assess the risk of a commercial property market the extreme value theory is applied where availability and quality of time series data is required. The data is presented on a quarter basis, minimum time-series required $n \geq 30$. Information for the databases is gathered by monitoring the market and its trends from market consultants and from different published sources. This raw data is analyzed and the risk of the commercial property market is calculated using various software: Statistica, Python, Maple, EasyFit.

The *risk* in the study defined as follows:

If a low value of a factor v_i is unfavorable then risk is defined as probability that a random variable (r. v.) X_i gains lower or equal values to a given value x_i :

$$\Pr(X_i \leq x_{m,i}) = F_{X_i}(x_{m,i}) = p_i, X_i \in X_I \quad (1)$$

If a high value of a factor v_i is unfavorable then risk is defined as probability that r. v. X_i gains higher values to a given value x_i :

$$\Pr(X_i > x_{d,i}) = 1 - \Pr(X_{d,i} \leq x_{d,i}) = 1 - F_{X_i}(x_{d,i}) = 1 - p_i = \alpha_i, X_i \in X_{II} \quad (2)$$

Where, in equations (1) and (2) F_{X_i} is probability function of the r. v. X_i of the i -factor, p_i and α_i are probabilities that $X_i \leq x_{m,i}$ and $X_i > x_{d,i}$ respectively. Whereas, p_i and α_i values can be regarded as a risk. In equations (1) and (2) the terms $x_{m,i}$ and p_i as well as α_i and $x_{d,i}$ are interconnected with each other respectively.

In the research the probability p_i corresponding to time interval Δt and return periods $T_{ret,i}$ are calculated. When a low value is unfavorable, then:

$$p_i = \Delta t \frac{1}{T_{ret,i}}. \quad (3)$$

When a high value is unfavorable, then:

$$p_i = 1 - \Delta t \frac{1}{T_{ret,i}}. \quad (4)$$

Empirical probability functions were selected on the basis of following tests: Kolmogorov-Smirnov (K-S), Anderson Darling (A-D) and the χ^2 . The probability functions were selected out of 50 distributions.

According to the extreme value theory the probability that $X_i \leq x_{d,i}$ through the period $u\Delta t$ is equal to p_i^u :

$$\Pr(X_i \leq x_{d,i}) = (F_i(x_{d,i}))^u = p_i^u \quad (5)$$

where, F_{X_i} is the probability function of one realization.

By applying of (5) one can calculate the probability that $X_i > x_{d,i}$:

$$F_{max,X_i}(x_{d,i}) = \Pr(X_i > x_{d,i}) = 1 - \Pr(X_i \leq x_{d,i}) = 1 - (F_i(x_{d,i}))^u = 1 - p_i^u \quad (6)$$

Similarly, the probability that during period $T = u\Delta t$ the probability that $X_i \leq x_{m,i}$ can be defined as following (Castillo et al., 2004):

$$F_{min,X_i}(x_{m,i}) = \Pr(X_i \leq x_{m,i}) = 1 - [1 - (F_{X_i}(x_{m,i}))]^u = 1 - [1 - p_i]^u \quad (7)$$

It should be noted that according to formulas (5) or (7) the probability that $X_i \leq x_{m,i}$ or $X_i > x_{d,i}$ does not equal 1 during the forecast periods $u\Delta t$, that are greater than the return period $T_{ret,i}$.

Two factors of the commercial property market were tested: vacancy and yield of modern offices and shopping centers in Vilnius. Thus, there are four objects in total, $n = 4$. Assuming that four factor sets of indices $I = \{1, 2, 3, 4\}$, and factor sets $V = \{v_1, v_2, v_3, v_4\}$. Where values $v_i, i \in I$, are the arithmetic average of the three months, so $\Delta t = 3$. Samples were made from 2001 to 2012. Basic descriptive statistics indicators are outlined in table 4:

TABLE 4. Basic descriptive statistics indicators

Indicator	Sample			
	Modern offices, yield	Shopping centers, yield	Modern offices, vacancies	Shopping centers, vacancies
Sample width	0,082	0,088	0,174	0,066
Average	0,0931	0,092	0,083	0,047
Stand. Dev.	0,0227	0,025	0,050	0,019
Min. value	0,06	0,0545	0,01	0,02
Max. value	0,142	0,143	0,184	0,086
Median	0,086	0,086	0,089	0,043

Source: complied by author

Four periods of forecasting of probabilities $\Pr(X_i \leq x_{m,i})$ and $\Pr(X_i > x_{d,i})$ were selected, see table 5. Since $\Delta t = 3$ months = 0.25 years, then for (5), (6) and (7) formulas values of $u = (T/\Delta t)$ are 4, 12, 20 and 40 years, respectively (Table 5). Table 5 also presents the probability p_{ret} corresponding to the return period $T_{ret} = T$.

TABLE 5. u values depending on the estimated duration of the period T and the probabilities p_{ret} based on (5), (6) and (7) formulas

T	u	Probability p_{ret} meeting $T_{ret} = T$	
		When a small value is unfavorable, (3) formula	When a large value is unfavorable, (4) formula
10 year	40	0,025	0,975
5 year	20	0,050	0,950
3 year	12	0,083	0,917
1 year	4	0,250	0,750

Source: complied by author

Relatively risky boundaries are assumed as: highest yield – 6.5%, the lowest – 12%, and low vacancy rate is 5% and a high vacancy rate is 30%. Then, $x_{m,i} = 0,065$ ir $x_{d,i} = 0,12$ where $i \in \{1, 2\}$ and $x_{m,i} = 0,05$ and $x_{d,i} = 0,30$ when $i \in \{3, 4\}$. These risky boundaries are used for comparing different commercial property market's sectors and risk factors. Step by step calculation of the analysis is described in the doctoral dissertation, while table 6 represents the final results of the analysis.

TABLE 6. Final results of the analysis

Yield risk values for modern offices (based on Frechet two parameters distribution)			
<p>The results conclude (table 6.1) that the probability that 3 months average yield for modern offices in the period of 10 years ($T=10$) might be lower than 6,5% and exceed 12% rate is quite high. However, it might also be concluded that the risk that 3 months average yield for modern offices within the next 5 years will be equal or lower 6,5% rate is insufficient. Results suggest that there are more chances that the yield will reach 12% rate, given $T \in \{3, 5, 10\}$.</p>	TABLE 6.1. Yield risk values for modern offices		
	Estimated time period T	$x_{m,1} = 6,5\%$ $\Pr(X_1 \leq x_{m,1})$	$x_{d,1} = 12\%$ $\Pr(X_1 > x_{d,1})$
	10 years	0,901	0,996
	5 years	0,686	0,934
	3 years	0,501	0,803
	1 years	0,207	0,419
	0,25 year (3 months)	0,056	0,12
Yield risk values for shopping centers (based on Dagum distribution)			
<p>Based on the estimates (table 6.2) the probability that 3 months average yield for shopping centers in the period of 10 years ($T=10$) will be lower than 6,5 % and higher than 12% is very high and equals to 1. Estimates for yield risk value for $T=5$ years that it will reach lower than 6,5% is also very high – 0,9.</p>	TABLE 6.2. Yield risk values for shopping centers		
	Estimated time period T	$x_{m,2} = 6,5\%$ $\Pr(X_2 \leq x_{m,2})$	$x_{d,2} = 12\%$ $\Pr(X_2 > x_{d,2})$
	10 years	0,99	1,0
	5 years	0,90	0,5
	3 years	0,75	0,3
	1 years	0,370	0,4
	0,25 year (3 months)	0,109	0,14
Vacancy risk values for modern offices (based on Dagum distribution)			
<p>As table 6.3 shows, the probability that 3 months average vacancy rate in the period of 10 years ($T=10$) will be exceeding 30% is not high, therefore the risk that the vacancy will be higher than 30% is insignificant. Whilst the probability, that vacancies for modern offices can be lower than 5% is quite high.</p>	TABLE 6.3. Vacancy risk values for modern offices		
	Estimated time period T	$x_{m,3} = 5\%$ $\Pr(X_3 \leq x_{m,3})$	$x_{d,3} = 30\%$ $\Pr(X_3 > x_{d,3})$
	10 years	1,0	0,072
	5 years	0,998	0,037
	3 years	0,980	0,022
	1 years	0,730	0,007
	0,25 year (3 months)	0,279	0,002
Vacancy risk values for shopping centers (based on Johnson SB distribution)			
<p>Comparing vacancy probability distribution functions for modern offices and shopping centers (tables 6.3 and 6.4) it is obvious that vacancy values fro shopping centers are much lower. If the probability that modern office vacancies will be exceeding 30% given $T=10$ is $\Pr(X_3 > x_{d,3}) = 0,072$, then the probability that shopping center vacancies will be higher than 30% equals to 0, that is $\Pr(X_4 > x_{d,4}) = 0,0$. Therefore it is concluded that risk for modern office vacancies is much higher than for the shopping centers.</p>	Table 6.4. Vacancy risk values for shopping centers		
	Estimated time period T	$x_{m,4} = 5\%$ $\Pr(X_4 \leq x_{m,4})$	$x_{d,4} = 30\%$ $\Pr(X_4 > x_{d,4})$
	10 ears	1,0	0,0
	5 years	1,0	0,0
	3 ears	1,0	0,0
	1 years	0,975	0,0
	0,25 year (3 months)	0,601	0,0

Source: compiled by author

The application of the extreme value theory suggests that the probability that investment in shopping centers will be profitable is greater than the probability that the investment in modern office buildings will be profitable, and the probability that the modern office space will not be leased or buildings will not be sold is much higher than the probability that shopping centers will not be leased or

sold. Thus, the value of the shopping centers, this sector's fluctuations in time tends to be more attractive during both pick and bottom stage of market development. Nevertheless, the application of the theory does not allow forecasting the prospects and the trends of the market, it rather suggests which of the sector of the commercial property market is less vulnerable to risk.

CONCLUSIONS AND RECOMMENDATIONS

- The reviewed academic literature on development of commercial property markets in developing countries give the impression of narrow consideration of this topic. The model of commercial property market evolution and development presented in this dissertation can illustrate the broader understanding of the problem. The model mainly reflects that all the processes and mechanisms implemented both during the property market formation period and its current operation are oriented towards improved market competitiveness, which in turn generates property market responses and affects its maturity.
- Development of the commercial property market associated with qualitative economic structural changes (adopting economic policies, sustainable development, improving maturity) affect the competitiveness, forming a favorable and attractive environment for business development for both local and foreign actors. These determinants of qualitative development define quantitative aspects of the country's growth trends.
- Having completed the literature analysis, the author proposes clustering the development of the market into stages according to trends over time, permitting detection of the market's behavior that reflects the cyclical volatility of the market and path of the development.
- The analysis shows that institutional and macroeconomic processes were the main driving forces in development of the Lithuanian property market until 1999. At the same time, this is the starting period of the commercial property

projects development and the growth of demand that influenced faster economic recovery. The analysis reveals that shopping and logistic centers were more frequently traded types of property, while construction, trade, rents and prices reached the peak in 2007. Nevertheless, the fundamental origins of exponential growth of the market are imbalanced loan portfolio growth of commercial banks together with the passive approach of the Bank of Lithuania and the failure by the Lithuanian government in regulating economic policy.

- There is a strong interdependence between financial markets, commercial property markets and the economy; therefore the irrational market's growth in 2002 – 2008 had a negative effect on the long-term development of the commercial property market while the Global financial market crisis accelerated the Lithuanian economic slowdown.
- Information confidentiality and fragmented data on the commercial property market in developing countries offers very limited methods to assess a market's development.
- Based on the empirical test results, the Lithuanian commercial property market is still in its developing stage. Although the market seems to be attractive, the most important market barriers are identified as small size of the market, offering low turnovers, local government bureaucracy and high taxes. The main risks influencing development of the market are highlighted as euro zone financial instability, the slowdown and instability of the global market. The main factors affecting the development of the Lithuanian commercial property market are government intervention in the market's regulations with no targeted economic policy measures to promote the development, the process of globalization, financial market stability, investor confidence, cyclical fluctuations of the market and the process of transformation from command economy to a market economy. It is also discovered that foreign participants have had a significant impact on the market's development.

- The commercial property market's maturity is evaluated as average; yet, this rate indicates insufficient competitiveness of the country and inefficient implemented structural changes. On the other hand, the indicator of transparency of market information best suits the characteristics of a mature market as it is accessed freely and rated as reliable. Furthermore, it suggested that although the actors in the market offer a high level of competence, international competition and attract large investors for Lithuania, its a challenge. Nonetheless, respondents acknowledge that the topic of the research is underdeveloped in Lithuania and the researchers' competences on commercial property market are yet to be advanced. This leads to the conclusion that practicing professionals offer more advanced competences than researchers.
- Although the macroeconomic movement influences the market trends, the survey reveals that national economic policy and regulations can boost the country's competitiveness towards sustainable development, impact the country's overall economic condition and prospects for the actors' choices.
- Empirical analysis for market's risk assessment points out that the probability that risk of modern offices yield will be lower than 6.5% is less than probability of the shopping centers 6.5% yield when projected time periods are 0.25, 1, 3, 5 and 10 years. However, the risk that vacancies for modern offices will be higher than 30% is significantly higher comparing to the 30% vacancies for shopping centers given the same forecast periods. Having these results, it is obvious that shopping centers is a more certain type of investment comparing to modern offices. Shopping centers are more likely to reach lower yield than 6.5% in the upside market stage and have less chances to stretch the vacancies to the level of 30% during the stage of the slowdown.
- Nevertheless, based on the analysis, the extreme value theory does not provide an unambiguous answer which commercial property market sector is more reliable in terms of investment or operation. It also does not contribute a clear

understanding on the market's fluctuations. The answer the application of the extreme value theory does propose is that probability that investment into shopping centers will be profitable is greater than the probability that the investment into modern office buildings will be favorable and the probability that modern office spaces will not be leased or buildings will not be sold is much higher than the probability that shopping centers will not be leased or sold. Thus, the value of the shopping centers tends to be more attractive during both peak and downside stages of the market development. However, commercial property market risk must be analyzed through additional statistical and expert evaluation techniques.

Approbation and dissemination of the scientific research results. The main findings and results of the scientific research were published in five academic publications and presented in one conference:

1. Cohen V. (2011) Nekilnojamojo turto rinka ir jos plėtros perspektyvos, Kolektyvinė monografija – *Ekonomikos modernizavimas: efektyvumo paieškos ir šiuolaikiniai prioritetai*. // Vilniaus universitetas. Vilnius: Vilniaus universitetas, p. 320–336.
2. Cohen V., Galinienė B. (2011) Lietuvos nekilnojamojo turto rinkos cikliškumas // *Ekonomikos ir turto vertės pokyčiai: tendencijos ir valdymo priemonės*. Konferencijos, vykusios Vilniuje, Vilniaus universitete 2011 m. kovo 25 d., mokslo darbai. Vilnius: Vilniaus universiteto leidykla, p. 25–33.
3. Cohen V. (2012) Komercinio nekilnojamojo turto rinkos modeliai ir veiksniai globalizacijos kontekste // *Turto vertinimo teorijos ir praktikos apybraižos 2012*. Recenzuojamas elektroninis leidinys. Vilnius: Lietuvos turto vertintojų asociacija, p.18–29.
4. Cohen V., Galinienė B. (2012) Lietuvos nekilnojamojo turto rinka – brandumo link // *Viešieji ir privatūs aktyvai: transformacijų, efektyvaus naudojimo ir vertinimo aspektai*. Konferencijos, vykusios Vilniuje, Vilniaus

universitete 2012 m. spalio 19 d., mokslo darbai. Vilnius : Vilniaus universiteto leidykla, p. 14–20.

5. Cohen V., Galinienė B. (2013) Evaluation of commercial property market maturity: a case of Lithuania, *International Journal of Strategic Property Management* 18(2).

About the author

Viktorija Cohen was born on 10 January 1978 in Vilnius, Lithuania.

Education:

- 2008 – 2013 **Doctoral Studies in Economic Policy**
Faculty of Economics, Vilnius University, Lithuania
- 2001 – 2003 **Master's in Science in Finance and International Business**
Aarhus School of Business, Aarhus, Denmark
- 2000 – 2003 **Master's in Business Administration and Management**
Vilnius University, Lithuania
- 1996 – 2000 **Bachelor in Business Administration and Management**
Vilnius University, Lithuania

Professional experience and competence:

- 2009 – 2012 Restartas Food Products Ltd., Vilnius, Lithuania
Position: Senior Sales Executive for Russian Market, Wholesale
- 2005 – 2008 Koba Ltd., Vilnius Lithuania
Position: Commercial Property Consultant
- 2004 – 2005 Nadiga Ltd, Vilnius, Lithuania
Position: Marketing Manager

For contacts: viktorija.cohen@ef.vu.lt

DISERTACIJOS SANTRAUKA

Temos aktualumas. Kiekvieno žmogaus kasdieniniame gyvenime nekilnojamas turtas būtinas tiek būsto, tiek darbo atžvilgiu, jis sudaro labai svarbų sektorių kiekvienoje ekonomikoje. Jo sudedamąją dalį – komercinį nekilnojamąjį turtą – ko gero, galima prilyginti vienam svarbiausių šalies ūkių dėl to, kad jis generuoja platų ekonominių veiklų spektrą: komercinių nekilnojamųjų pastatų planavimą, projektavimą, statybą, priežiūrą, suteikia daugybę darbo vietų ir investicijų galimybes bei siūlo apsipirkimo, apsilankymo ir laisvalaikio praleidimo galimybes. Šio sektoriaus plėtra ir vystymasis ekonomikos augimui turi didelę įtaką skatinant kitų ūkinių veiklų plėtrą, darbo vietų sukūrimą, atsiliepia šalies bendrajam vidaus produktui ir pajamoms.

Naujosioms ir nepriklausomybę atkūrusioms Rytų Europos šalims šis sektorius tapo vienas svarbesnių ekonomikos plėtroje. Pereinamojo laikotarpio metu, kai šalys turėjo prisitaikyti prie laisvosios ekonomikos pagrindų ir, atsiradus nekilnojamojo turto rinkos plėtros būtinybėms, poreikiams bei galimybėms, prasidėjo spartus šios rinkos vystymasis. Ši plėtra pasireiškia daugybe procesų – liberalizacijos, politinių sprendimų, ekonominių rodiklių augimo, globalizacijos, istorinių įvykių, tačiau galutinis bet kokios besivystančios šalies komercinio nekilnojamojo turto rinkos tikslas – tarptautinių rinkos dalyvių pritraukimas ir konkurencingumo didinimas, t.y. rinkos brandumas ir jos ilgalaikis efektyvumas – tema, kuri labai ribotai nagrinėjama minėtų šalių kontekste. Ekonomiką ir nekilnojamojo turto rinką sieja glaudūs ryšiai, todėl, siekiant įvertinti komercinio nekilnojamojo turto rinkos plėtros specifiką, efektyvumą ir tendencijas, kurie tiesiogiai atsiliepia šalies ekonomikoje, reikalinga tinkama metodika.

Mokslinė problema ir jos ištyrimo lygis. Pagrindinė problema, iškelta šiuolaikinėje mokslinėje literatūroje – komercinio nekilnojamojo turto rinkų tyrimas besivystančiose šalyse yra neapibrėžtas procesas, reikalaujantis aiškaus

šių klausimų supratimo: kaip ši rinka atsirado, vystosi, plečiasi bei funkcionuoja, kokie procesai ir veiksniai turi įtakos jos plėtrai. Beje, bet kokio empirinio tyrimo atlikimas reikalauja laiko eilučių ir patikimų duomenų, kurių fragmentiškumas ir šiai rinkai būdingas informacijos konfidencialumas apsunkina komercinio nekilnojamojo turto rinkos nagrinėjimą, vertinimą ir juo labiau bet koki prognozavimą. Be to, besiformuojančių šalių komercinio nekilnojamojo turto rinkų plėtros specifika negali būti analizuojama ir lyginama su subrendusiomis rinkomis dėl skirtingos istorijos, formavimosi ir vystymosi aplinkybių, pagrindų bei veikimo logika (Kvedaravičienė, 2010). Todėl reikalingas būtent šioms rinkoms pritaikytas modelis ir atitinkamas vertinimas. Atsižvelgiant į tai, besivystančių šalių komercinio nekilnojamojo turto rinkos plėtros etapų susisteminimas, modelio sukūrimas, šios rinkos dalyvių nuomonių tyrimas ir tam tikrų rinkos veiksnių vertinimas prisidėtų prie mokslinių tyrimų bei užpildytų šioms rinkoms būdingas spragas nagrinėjamos rinkos atžvilgiu.

Komercinio nekilnojamojo turto rinka, kaip mokslinė problema, yra nagrinėjama įvairiais „pjūviais“ ir per skirtingas „prizmes“, tačiau ji nėra dažnai nagrinėjama besiformuojančių ekonomikų kontekste. Dabartinės *plėtros* tendencijos nekilnojamojo turto rinkos kontekste laikoma nepakankamai ištirta ir nagrinėjama tema. Pastarąjį dvidešimtmetį komercinio nekilnojamojo turto rinkos plėtra pasižymėjo ypatingu suaktyvėjimu liberalizavimo ir globalizacijos proceso plitimo dėka. Tai paskatino *užsienio mokslininkus*, iš kurių galima išskirti Castells (1991), Sassen (1991, 1994) Amin ir Thrift (1994), Budd (1995), Adair ir kt., (1999), Lindahl, 1995; Petrella, 1996; Clark ir Lund, 2000; Dunning ir Rajneesh, 2004; Dunning 2006; Liu ir kt. (2007), Too ir kt., 2010 ir kt., skirti daugiau dėmesio komercinio nekilnojamojo turto rinkos plėtrai.

Galima teigti, kad komercinio nekilnojamojo turto rinkos plėtra yra efektyvus šios rinkos kūrimas, apimantis tam tikrus procesus (O’Sullivan, 2003; Sen, 1983). Naujai besiformuojančių šalių nekilnojamojo turto rinkos plėtros problemų nagrinėjimas prasidėjo žlugus Sovietų Sąjungai, kuomet keletas rinkų atsidūrė

naujoje joms nebūdingoje rinkos ekonomikoje. Mokslininkai iš esmės pradėjo analizuoti šalių ekonomikų transformaciją iš komandinės į rinkos ekonomiką, tokių rinkų ypatumus ir nekilnojamojo turto rinkos formavimąsi (Sykora ir Simonickova, 1996; D'Arcy ir Keogh, 1994, 1998; Adair ir kt., 1999, 2005, 2006; McGreal ir kt., 2002; Watkins ir Merrill, 2003).

Iš *Lietuvos autorių* – nekilnojamojo turto klausimus nagrinėjančių mokslininkų ir specialistų – *mokslinių darbų* reikėtų išskirti darbus, parašytus, Kaklauskas, A., Zavadskas, E. K., Raslano, S. kartu su kitais bendraautoriais (2002, 2005, 2007, 2009), Joneikytės N., Drejerio R. (2012), Ivanauskas F., Eidukevičiaus R., Marčinko A., Galinienės B. (2008), Dubino V. (1997) Rutkausko A. (2001), Raslano S. (2000a, 2000b, 2001, 2002, 2003), Galinienės B. ir Statkevičienės L. (2001), Galinienės B. ir Šopienės I. (2003), Marčinsko A. ir Galinienės B. (2005), Stasiulionio A. (2002), Kvedaravičienės I. (2008a, 2008b, 2009, 2010), pereinamojo laikotarpio ir ekonomikos krizės poveikį nekilnojamojo turto rinkai tyrė Azbainis V. ir Rudzekienė V. (2011) ir kiti.

Lietuvos autorių mokslinių darbų analizė rodo, kad komercinio nekilnojamojo turto klausimai ir problemos nebuvo sistemiškai analizuojami, o dėmesys dažniausiai skiriamas turto vertinimo metodikoms, gyvenamojo nekilnojamojo turto rinkos plėtrai, dinamikai ir tendencijoms. Reikia pastebėti, kad užsienio literatūra taip pat nepasižymi gausybe tyrimų, nagrinėjančių posovietinių šalių komercinio nekilnojamojo turto sektoriaus formavimo ir plėtros pagrindus, todėl pasigendama teorinių ir empirinių tyrimų bei modelių.

Apibendrinant tai, kas išdėstyta, kyla išsamaus Lietuvos komercinio nekilnojamojo turto rinkos tyrimo poreikis, kurio rezultatai pavaizduotų šios rinkos plėtros galimybes ir apribojimus bei pasiūlytų rekomendacijas rinkos dalyviams.

Mokslinio tyrimo objektas – komercinio nekilnojamojo turto rinkos plėtros ir vystymosi analizė ir šios rinkos funkcionavimo ypatumai. Šiai analizei atlikti kaip

tyrimo objektas buvo pasirinkta Lietuvos komercinio nekilnojamojo turto rinka, kuri atspindi jauną, iš komandinio režimo į laisvąją ekonomiką pereinančios komercinio nekilnojamojo turto rinkos funkcionavimo ypatumus turinčią rinką.

Tyrimo tikslas. Išanalizuoti komercinio nekilnojamojo turto rinkos plėtros ir funkcionavimo ypatumus besivystančiose šalyse, pateikti Lietuvos komercinio nekilnojamojo turto rinkos plėtros analizę ir vertinimą.

Darbo uždaviniai tikslui pasiekti:

- pateikti komercinio nekilnojamojo turto rinkos teorinį ir ekonominį pagrindimą;
- atskleisti besivystančių šalių komercinio nekilnojamojo turto rinkos formavimosi ypatumus ir nustatyti jos plėtros etapus;
- sukurti besivystančių šalių komercinio nekilnojamojo turto rinkos plėtros modelį;
- atlikti Lietuvos komercinio nekilnojamojo turto rinkos plėtros analizę, atsižvelgiant į etapus;
- atlikti empirinį tyrimą, nustatant Lietuvos komercinio nekilnojamojo turto rinkos kliūčių ir veiksnių įtaką plėtrai ir įvertinant rinkos brandumą;
- empirinio tyrimo pagalba atskleisti Lietuvos komercinio nekilnojamojo turto rinkos plėtros galimybes, apribojimus ir perspektyvas;
- pagal parinktus kriterijus atlikti empirinį tyrimą, įvertinant komercinio nekilnojamojo turto rinkos veiksnių reikšmių kitimo laike tikimybę, t.y. veiksnių rizikos įverčius;
- apibendrintų teorijų, atliktų tyrimų rezultatų pagrindu suformuluoti išvadas bei rekomendacijas tyrėjams, verslo, investuotojų ir vyriausybės atstovams.

Tyrimo metodologinis pagrindas. Daugialypis tyrinėjamos srities pobūdis reikalauja kompleksinės tyrimo metodikos, apimančios skirtingus mokslinio

tyrimo metodus. Darbe iškeltai problemai tirti derinami skirtingi pagrindiniai ir papildomi tyrimo metodai:

- disertacijoje pateikta užsienio ir Lietuvos autorių mokslinės literatūros ir antrinių šaltinių apžvalga bei jos analizė ir grupavimas, remiamasi sisteminės ir lyginamosios analizės metodais, taikyta loginė analizė ir kiti kokybiniai metodai. Atliekant Lietuvos komercinio nekilnojamojo turto plėtros analizę, buvo taikomi šie metodai: statistinių duomenų rinkimas, analizė, grupavimas, duomenų sisteminimas bei grafinis duomenų modeliavimas ir kt.;
- kadangi komercinio nekilnojamojo turto rinkos dalyviai sudaro vieną svarbiausių rinkos funkcionavimo pagrindų, jų elgesys rinkoje gali būti interpretuojamas kaip kiekybinių ir kokybinių veiksnių vystymosi rezultatas, darbe buvo naudojamas ekspertinio vertinimo metodas, kuriuo buvo tikimasi išsiaiškinti tiesiogiai su komercinio nekilnojamojo turto rinka susijusių dalyvių nuomones (t.y. pirminius duomenis) apie Lietuvos komercinio nekilnojamojo turto rinkos vystymąsi. Tolimesniam įvertinimui gauti duomenys koduojami ir naudojant Excel programą suvedami į lenteles. Apskaičiavimai atliekami naudojant SPSS (*angl. Statistical Package for Social Sciences*) programinę įrangą, tikrinami ekspertinio vertinimo ir anketinių klausimų patikimumas, gautų rezultatų suderinamumas tiek visiems respondentams, tiek atskiroms respondentų grupėms, o rezultatai pateikiami lentelių, paveikslų ir diagramų pavidalu;
- atskiras metodas buvo taikomas siekiant įvertinti komercinio nekilnojamojo turto rinkos veiksnių reikšmių kitimo laike tikimybę ir pateikti naują tyrimo požiūrį, numatant jos vystymosi ir plėtros tendencijas. Minėtos rinkos veiksniai yra kintami laike dydžiai ir iš anksto jų skaitinės reikšmės nėra žinomos. Todėl labai svarbu įvertinti šių veiksnių galimas reikšmes. Tikimybių teorija yra viena plačiausiai taikomų priemonių. Jeigu veiksnys gali įgyti be galo daug reikšmių, tuomet, taikant tikimybių teoriją, negalima pasakyti, su

kokia tikimybe tam tikras veiksnys gali įgyti vienokią ar kitokią skaitinę reikšmę. Tačiau, taikant tikimybių teoriją pagal užsiduotą tikimybę, galima įvertinti, iš kokio intervalo šis veiksnys įgis vienokias ar kitokias reikšmes. Galimas ir atvirkštinis uždavinys. Užsiduodant dominančio veiksnio reikšmių intervalą ir taikant tikimybių teoriją, galima apskaičiuoti tikimybę, kad ši reikšmė bus dominančiame intervale. Ši tikimybės reikšmė darbe traktuojama kaip komercinio nekilnojamojo turto rinkos rizika, o jos įvertinimui buvo taikoma vadinamoji ekstremaliųjų reikšmių teorija (angl. *Extreme Value Theory*), leidžianti prognozuoti, su kokiomis tikimybėmis dominantis veiksnys įgis skaitines reikšmes iš tam tikro intervalo, kai dominantis veiksnys gali kisti užsiduotą lako tarpą. Šiuo atveju imtis gali būti sudaryta pagal trumpesnės trukmės laikotarpių stebėjimo duomenis. Atliekant šiuos apskaičiavimus buvo naudojamos kelios programinės įrangos, t.y. Statistica, Pythonas, Maple, EasyFit, o rezultatai pateikiami lentelių, paveikslų ir diagramų pavidalu.

Ginamieji teiginiai:

- komercinio nekilnojamojo turto rinkos plėtra pokomunistinių šalių kontekste yra neapibrėžtas procesas;
- siūlomas komercinio nekilnojamojo turto rinkos plėtros modelis pavaizduoja, kad besivystančios šalys siekia rinkos konkurencingumo, sukeltiant tam tikrą rinkos dalyvių elgesį ir įtakojant rinkos brandumą;
- globalizacijos procesas turi tiesioginės įtakos šiuolaikinei komercinio nekilnojamojo turto rinkos plėtrai;
- Lietuvos komercinio nekilnojamojo turto rinka yra brandi;
- užsienio rinkos dalyvių buvimas rinkoje įtakoja komercinio nekilnojamojo turto rinkos brandumo lygį;
- šalies istorija įtakoja komercinio nekilnojamojo turto rinkos plėtros procesą;
- modernūs biurai ir prekybos centrai yra patikimi investiciniai projektai.

Darbo mokslinis naujumas ir teorinė reikšmė. Autorės atlikti tyrimai reikšmingi mokslui šiais teoriniais ir metodologiniais aspektais:

- atlikta komercinio nekilnojamojo turto rinkos plėtros literatūros analizė leido suformuluoti besivystančių šalių komercinio nekilnojamojo turto rinkos funkcionavimo ir plėtros modelį;
- komercinio nekilnojamojo turto rinkos plėtros analizė leido suformuluoti ir apibrėžti besivystančių šalių komercinio nekilnojamojo turto rinkos plėtros etapus;
- atlikta komercinio nekilnojamojo turto rinkos dalyvių ekspertinė apklausa leido nustatyti pagrindinių rinkos dalyvių požiūrį į komercinio nekilnojamojo turto rinkos plėtros aspektus, apribojimus ir perspektyvas;
- numatant modernių biurų ir prekybos centrų pelningumo bei laisvų plotų (arba plotų vakansijų) reikšmes buvo taikoma ekstremaliųjų reikšmių teorija, leidžianti įvertinti šių veiksnių tikimybę kisti laike. Tokį vertinimą galima taikyti prognozuojant tam tikrą rinkos vystymosi tikimybę.

Praktinis reikšmingumas. Disertacijos medžiaga ir rezultatai gali būti panaudoti akademinėje bendruomenėje. Jie gali būti naudingi ekspertams ir rinkos dalyviams, nagrinėjantiems komercinio nekilnojamojo turto rinkos plėtros, perspektyvos ir apribojimo klausimus:

- naudojant autorės siūlomą komercinio nekilnojamojo turto rinkos plėtros modelį, galima nagrinėti kitų besivystančių šalių komercinio nekilnojamojo turto rinkos plėtros procesą, įvertinti pokyčius šalyse ir nustatyti konkurencingumui ir brandumui trukdančius veiksnius;
- minėtas modelis gali būti panaudotas skirtingų besivystančių šalių komercinio nekilnojamojo turto rinkos plėtros palyginimui ir pan.;
- ekspertinės apklausos įvertinimai galėtų identifikuoti silpnuosius ir stipriuosius rinkoje vykstančių procesų bruožus, galėtų būti panaudoti rekomendacijoms,

nurodančioms, kaip siekti didesnio komercinio nekilnojamojo turto rinkos konkurencingumo;

- pelningumo ir laisvų plotų kitimo tikimybių rezultatai, taikant ekstremaliųjų reikšmių teoriją, gali būti naudingi komercinio nekilnojamojo turto rinkos formuotojams prieš priimant sprendimus investuoti bei vystyti. Be to, šio metodo taikymas gali būti panaudotas kaip pagrindas įvertinti kitų rinkos veiksnių tikimybę kisti laike.

Darbo struktūra ir apimtis. Disertaciją sudaro įvadas, keturios dalys, išvados ir rekomendacijos, literatūros ir šaltinių sąrašas, priedai. Disertacijos apimtis – 206 psl., 44 lentelių, 68 paveikslų ir 13 priedų.

Mokslinių publikacijų disertacijos tema sąrašas. Pagrindiniai mokslinio tyrimo teiginiai ir rezultatai paskelbti 5 mokslinėse publikacijose, skaitytas vienas pranešimas disertacijos tematika.

1. Cohen V. (2011) Nekilnojamojo turto rinka ir jos plėtros perspektyvos, Kolektyvinė monografija – *Ekonomikos modernizavimas: efektyvumo paieškos ir šiuolaikiniai prioritetai*. // Vilniaus universitetas. Vilnius: Vilniaus universitetas, p. 320–336.
2. Cohen V., Galinienė B. (2011) Lietuvos nekilnojamojo turto rinkos cikliškumas // *Ekonomikos ir turto vertės pokyčiai: tendencijos ir valdymo priemonės*. Konferencijos, vykusios Vilniuje, Vilniaus universitete 2011 m. kovo 25 d., mokslo darbai. Vilnius: Vilniaus universiteto leidykla, p. 25–33.
3. Cohen V. (2012) Komercinio nekilnojamojo turto rinkos modeliai ir veiksniai globalizacijos kontekste // *Turto vertinimo teorijos ir praktikos apybraižos 2012*. Recenzuojamas elektroninis leidinys. Vilnius: Lietuvos turto vertintojų asociacija, p.18–29.
4. Cohen V., Galinienė B. (2012) Lietuvos nekilnojamojo turto rinka – brandumo link // *Viešieji ir privatūs aktyvai: transformacijų, efektyvaus naudojimo ir vertinimo aspektai*. Konferencijos, vykusios Vilniuje, Vilniaus

universitete 2012 m. spalio 19 d., mokslo darbai. Vilnius: Vilniaus universiteto leidykla, p. 14–20.

5. Cohen V., Galinienė B. (2013) Evaluation of commercial property market maturity: a case of Lithuania *International Journal of Strategic Property Management*, 18(2).

Atlikus glaustą mokslinės literatūros apžvalgą komercinio nekilnojamojo turto rinkos plėtros tematika bei nagrinėjama tema atlikus empirinį tyrimą, gautus rezultatus galima interpretuoti ir suformuluoti tokias **išvadas**:

1. Atskleidus pokomunistinių šalių komercinio nekilnojamojo turto rinkos plėtros ypatumus, autorė siūlo taikyti modelį, kuris leidžia nagrinėti šių rinkų plėtrą ir vystymąsi bei įvertinti kokybinių ir kiekybinių veiksnių, rinkos dalyvių įtaką komercinio nekilnojamojo turto rinkos plėtrai, siekiant rinkos brandumo. Pagrindinė šio modelio esmė – vystymasis brandžios komercinio nekilnojamojo turto rinkos link. Brandi komercinio nekilnojamojo turto rinka pritraukia daugiau investicijų ir skatina ekonominį augimą. Kaip rodo literatūros analizė, kokybiniai ir kiekybiniai veiksniai įtakoja rinkos dalyvių elgseną, tuo tarpu konkurencingumo didinimas yra labiau kokybinių procesų vystymosi rezultatas, tačiau kartu jie gali sudaryti palankias sąlygas rinkos brandumo skatinimui.
2. Komercinio nekilnojamojo turto rinkos plėtra tiesiogiai veikiama globalizacijos ir siejama su kokybiniais ekonomikos struktūriniais pokyčiais, kurie veikia vietinį konkurencingumą, formuojant palankią ir patrauklią aplinką verslo kūrimui tiek vietiniu, tiek užsienio dalyvių atžvilgiu. Kokybiniai šios rinkos plėtros procesai pasireiškia: a) taikant ekonominės politikos priemones, kurios įtakoja vartojimą, ribinio kapitalo efektyvumą ir palūkanų normą, užimtumą ir šalies pajamas; b) taikant nekilnojamojo turto rinkos darnios plėtros principus, siekiant ekonominio augimo ir žmonių gerovės; c) einant nekilnojamojo turto rinkos brandumo vystymo link, t.y.

investicinis klimatas, rinkos lankstumas, palankūs instituciniai ir teisiniai reglamentai, informacijos pasirinkimas ir prieinamumas, rinkos skaidrumas, stambių tarptautinių rinkos dalyvių buvimas ir nekilnojamojo turto paslaugų pilnavertis teikimas. Be to, pažymėtina, kad išvardinti kokybiniai plėtros aspektai lemia kiekybines šalies augimo tendencijas.

3. Atlikus literatūros analizę, nagrinėjant komercinio nekilnojamojo turto rinkos plėtrą, autorė siūlo šios rinkos vystymąsi sugrupuoti į etapus. Sugrupavimas pagal tam tikro laikotarpio tendencijas leidžia pastebėti rinkos elgesį, parodantį rinkos ciklinį svyravimą, vystymosi kriterijus.
4. Atlikta Lietuvos komercinio nekilnojamojo turto rinkos plėtros analizė parodė, kad iki 1999 metų šalyje vyko labiau instituciniai ir makroekonominiai procesai. Savo ruožtu šis periodas pasireiškia komercinio nekilnojamojo turto objektų vystymo pradžia ir paklausos augimu. Tokių objektų paklausa laikoma pagrindiniu miestų plėtros skatinimu, turinčiu įtakos greitesniam ekonomikos atsigavimui.
5. Komercinio nekilnojamojo turto rinkos plėtros analizė atskleidė, kad dėl rinkos plėtros perspektyvų investuotojai išvelgė didesnę patrauklumą Baltijos regione, negu kiekvienoje šalyje atskirai. Dažniausiai prekyba vyko prekybos centrais ir sandėliavimo patalpomis. Rinkoje vykusi statyba, prekyba nekilnojamo turto objektais, ploto nuoma, projektų kainos savo piką pasiekė 2007 metais. Tačiau esminės staigaus augimo ištakos – nesubalansuotas komercinių bankų paskolų portfelio augimas, pasyvus Lietuvos Banko požiūris ir Lietuvos valdžios atitinkamos ekonominės politikos nevykdymas.
6. Finansų rinka, komercinio nekilnojamojo turto rinka ir šalies ekonomika turi tarpusavio priklausomybę ir yra glaudžiai susijusios, todėl galima daryti išvadą, kad Lietuvos rinkos augimas 2002 – 2008 metais vyko nepagrįstai ir turėjo neigiamą įtaką rinkos plėtros perspektyvai, tačiau, įvykus globaliai finansų rinkos krizei, neigiama įtaka rinkai buvo paspartinta, pasireiškiant

Lietuvos ekonomikos augimo sulėtėjimu, neigiamai įtakojant komercinio nekilnojamojo turto rinkos sektorių.

7. Dėl šiai rinkai būdingo informacijos konfidencialumo ir duomenų fragmentiškumo, būdingo besivystančioms šalims, egzistuoja labai riboti metodai, kuriais galima įvertinti komercinio nekilnojamojo turto rinkos plėtrą. Atsižvelgiant į vertinimo metodų trūkumą, autorė siūlo taikyti ekspertinio vertinimo metodą, kuris suformuluoja išvadas bei įvertina rinkos plėtrą, joje vykstančių procesų vystymąsi bei rinkos veiksnių rizikos vertinimo metodą, siūlantį numatyti tikimybę, kad veiksniai įgys vienokią ar kitokią reikšmę.
8. Remiantis empirinio tyrimo rezultatais, galima teigti, kad Lietuvos komercinio nekilnojamojo turto rinka vis dar tebėra besivystymo stadijoje. Nors komerciniai nekilnojamojo turto objektai yra pakankamai patrauklūs rinkos dalyviams, vienomis svarbiausių rinkos kliūčių įvardinta mažas rinkos dydis, siūlantis mažas apyvartas, vietinės valdžios biurokratija ir aukšti mokesčiai. Pagrindinė rizika įžvelgiama euro zonos finansiniame nestabilume, pasaulinės rinkos sulėtėjime ir komercinio nekilnojamojo turto rinkoje esančioje konkurencijoje.
9. Atliekant tyrimą paaiškėjo, kad pagrindiniai veiksniai, darantys įtaką Lietuvos komercinio nekilnojamojo turto rinkos plėtrai, yra: a) valstybės kišimasis į rinkos reguliavimą, netaikant tikslingų ekonominės politikos plėtrą skatinančių priemonių; b) globalizacijos proceso įtaka; c) finansinis rinkos stabilumas; d) investuotojų pasitikėjimas rinka; e) cikliniai rinkos svyravimai; ir f) transformacija iš komandinio ūkio į rinkos ekonomiką. Taip pat nustatyta, kad užsienio rinkos dalyvių atėjimas į rinką turėjo didelę įtaką Lietuvos rinkos plėtrai.
10. Nagrinėjamos rinkos brandumo lygis, įtakojantis šalies konkurencingumą bei struktūrinių pokyčių kokybę, nėra pakankamai gerai išvystytas ir tebe laikomas tik vidutiniu. Tai leidžia daryti išvadą, kad Lietuvai konkuruojant tarptautiniu

mastu dėl šių priežasčių yra sunku pritraukti stambius investuotojus. Labiausiai išvystytomis laikomos komercinio nekilnojamojo turto dalyvių rinkoje teikiamos paslaugos, iš kurių finansuojančių organizacijų, konsultantų, valstybinių struktūrų darbuotojus ir vertintojus galima išskirti kaip turinčius geras kompetencijas. Tačiau respondentai pripažįsta, kad mokslinių tyrimų komercinio nekilnojamojo turto rinkos plėtros tematika yra nepakankamai išplėtotą, o mokslininkų kompetencijos lygis yra tik vidutinis. Tai leidžia daryti išvadą, kad praktikuojantys specialistai yra labiau kompetentingi rinkoje negu tyrėjai.

11. Galima teigti, kad komercinio nekilnojamojo turto rinkos informacijos skaidrumas iš visų ekspertiniame vertinime nagrinėjamų rodiklių geriausiai atitinka brandžios rinkos požymius. Internetinių išteklių technologijos paskatino galimybę laisvai prieiti prie reikiamos informacijos apie rinką. Lengviausiai prieinamais informacijos šaltiniais įvertinti: Valstybės Registrų centras, mokslinės publikacijos ir Lietuvos statistikos departamentas. Rinkos apžvalgos, internetinės paieškos sistemos, Valstybės Registrų centras ir mokslinės publikacijos laikomi patikimiausią informaciją siūlančiais šaltiniais.
12. Atliekant dalyvių perspektyvų analizę, paaiškėjo, kad lemiantys veiksniai rinkos dalyvių atžvilgiu yra šalies makroekonominiai rodikliai, t.y. Lietuvos bendra ekonominė aplinka bei pasaulinės rinkos tendencijos, nuo kurių didžiąja dalimi priklauso užsienio investuotojų nuotaikos. Be to, pasitvirtino ir tai, kad valstybės ekonominės politikos priemonės gali paskatinti šalies konkurencingumą darnios plėtros link ir tuo pačiu įtakoti bendrą šalies ekonominę situaciją ir rinkos dalyvių perspektyvas.
13. Įdomus ir tas faktas, kad Lietuvos komercinio nekilnojamojo turto rinkos plėtros perspektyvos priklauso nuo gyventojų skaičiaus, todėl emigracijos problema taip pat kelia rūpestį šiame sektoriuje.

14. Atsižvelgiant į rinkos veiksmų rizikos vertinimo empirinės analizės rezultatus, modernių biurų rizika, kad pelningumas bus mažesnis nei 6,5% riba, yra mažesnė nei prekybos centrų 6,5% pelningumo rizika, kai prognozuojamų periodų trukmės yra 0.25, 1, 3, 5 ir 10 metų. Tuo tarpu modernių biurų rizika, kad jų plotų vakansijos bus didesnės nei 30% yra žymiai didesnė nei prekybos centrų 30% plotų vakansijų rizika tais pačiais prognozuojamais periodais. Šių rezultatų duomenimis akivaizdu, kad investicijos į prekybos centrus yra patikimesnės nei į modernius biurus: prekybos centrai turi didesnę tikimybę, kad pelningumas gali perlenkti 6,5% ribą rinkos piko metu, ir mažesnę riziką pasiekti 30% ploto neužimtumą rinkos nuosmukio ir dugno metu.
15. Atliktos analizės duomenimis, ekstremalių reikšmių teorija leidžia atsakyti į klausimą, koks komercinio nekilnojamojo turto rinkos sektorius siūlo stabilesnį funkcionavimą ir yra labiau patikimas investicijų požiūriu. Tačiau ši teorija neleidžia numatyti rinkos svyravimų ir tendencijų. Pritaikius ekstremalių reikšmių teoriją, matoma, kad tikimybė, jog investicijos į prekybos centrus bus pelningos, yra didesnė, nei kad investicijos į modernius biurus ir tikimybė, kad modernių biurų patalpos bus neišnuomos ar neparduotos yra žymiai didesnė nei tikimybė, kad prekybos centrų patalpos bus neišnuomos ar neparduotos. Rezultatai rodo, kad prekybos centrų sektorius paprastai yra patrauklesnis tiek nuosmukio, tiek rinkos plėtros metu, t.y. mažiau rizikingas.