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SUSTAINABLE DEVELOPMENT OF REAL ESTATE MARKET: IMPACT OF THE MICRO AND MESO LEVEL FACTORS

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Abstract. Fully functioning and effectively regulated real estate market is one of the factors of strengthening the economy of any country. Sustainable real estate market economy is essential to guarantee labor mobility and improve the management of migration flows within the country. In this regard, constant monitoring of factors affecting the selling price of residential real estate is necessary. A number of macro, meso and microlevel factors affects the selling price of residential property in different ways. Some factors have a stronger effect in a long term, some factors – in medium and short term. Each residential property object is unique and has a specific system of qualitative and quantitative micro level characteristics affecting the market price. The aim of this study is to examine and determine the effects of some micro and meso level property factors in two largest cities of Latvia at its price in short term period.

Keywords: factors, market price, residential real estate appraisal of secondary housing market

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JEL Classifications: F34, G21, G24

1. Introduction

The recent global financial crisis was the result of inadequate regulation of the real estate market and the financial markets. Real estate prices have been artificially overblown, mortgage lending was uncontrolled, the financial markets have developed complex financial instruments incomprehensible to most market participants, credit risks have been adequately evaluated (Dubauskas 2012; Baikovs, Garškaitė-Milvydienė 2012; Zariņš 2013; Giriūnas *et al.* 2013; Wahl, Prause 2013; Mačiulis, Tvaronavičienė 2013; Vosylius *et al.* 2013; Borseková *et al.* 2012; Ercsey 2012; Laužikas, Mokšeckienė, 2013; Korsakienė 2013; Wahl, Prause 2013; Fuschi, Tvaronavičienė 2014; Vasiliūnaitė 2014; Korsakienė, Tvaronavičienė 2014). These processes detrimented sustainable developent processes and diminished regional competitive advantage (Makštutis *et al.* 2012; Giriūnas *et al.* 2013, Borseková *et al.* 2012; Garškaitė-Milvydienė 2012; Lankauskienė, Tvaronavičienė 2012; Dudzevičiūtė 2012; Vosylius *et al.* 2013; Laužikas, Mokšeckienė, 2013; Wahl, Prause 2013, Korsakienė, Tvaronavičienė 2014). To control the real estate market and to improve safety of investments in the real estate market is necessary to increase knowledge about the dynamics of the market and improve access to information on the performed transactions (Vasiliūnaitė 2014; Baikovs, Zariņš 2014; Korsakienė 2013; Ercsey 2012) and therefore it is necessary to monitor the real estate prices and the factors influencing these prices. Adequate assessment of residential property, as a basis for lending should be clear to all market operators and be part of the policy for the formation of stable real estate markets. To adequately assess residential property it is necessary to adequately assess

the micro and meso-level factors that form the price of apartments (Tvaronavičienė, Lankauskienė 2011; Korsakienė, Baranauskienė 2011; Ercsey 2012; Balkienė 2013; Antanavičienė 2014; Korsakienė, Tvaronavičienė 2014; Korsakienė 2013; Wahl, Prause 2013; Vosylius *et al.* 2013; Vasiliūnaitė 2014).

Latvia is sufficiently polarized teritory. The population of Riga was 1 182,9 thousand inhabitants in 2011, the population of Daugavpils was 137,4 thousand inhabitants which is 55% of all residents of Latvia (Haite 2014). In the capitals, major regional, cultural Centers with a high level of financial flows, effective investments and good development prospects real estate market is developing fast enough and prices for residential real estate set a relatively high level eventually. Riga is the largest city of central, Riga region and the capital of Latvia, Daugavpils is largest city of the peripheral region of Latgale, the second largest and most important city after Riga. Many factors of macro, meso and microlevel affect the selling price. Some factors have a stronger effect in long-term period, some factors – in medium and short –term period. The object of the research is a nature and strength of association between some factors of residential property and price of the real estate in two largest cities of Latvia: Riga and Daugavpils. The aim of the research is to study and to determine the degree of influence of some micro and meso-level factors of residential real estate at its price in the short term. To achieve the research objectives authors used the following methods: correlation analysis (Pearson's correlation coefficient), ANOVA, Chi-Square Tests, Tests of Between-Subjects Effects, log-linear form of regression.

2. Methodological basis of research

The objective factors affecting the selling price of residential properties mainly include the economic determinants. These economical factors can be classified into macroeconomic, microeconomic and mesoeconomic. The first group includes factors related to the general situation in the market. From the point of view of the demand these factors are socio-demographic factors (population or individual age groups, birth, death, marriage rate, divorce rate, the need for housing etc. (Tze San Ong 2013); socio-economic factors (GDP, (Wheeler and Chowdhury 1993), employment rate, income, purchasing capacity etc.), political factors (housing public policy and subsidies, taxes Tan (2010)), financial and credit factors (savings, availability of mortgage loans, credit conditions – Barakova *et al.* (2003), Peek and Wilcox (2006), Estrella (2002), Mc Carthy and Peach (2002), inflation rate - Zhu (2004). From the point of view of the supply: the territorial and legal factors (land use plans of cities and municipalities, legal availability and support of housing construction), economic and technological factors (the capital return rate, the number of available apartements in the housing market etc.) - Mikulaš 2009; Sander and Polasky 2009; Real Estate Market Review 2012; Krajewska and Szopinska 2011; Kucharska-Stasiak 2010; Kwiecien *et al.* 2010; Rymarzak 2010). The main mesoeconomic factor is belonging of a residential property to national, regional or local level centers etc. (Galati *et al.* 2011; Garmaise and Moskowitz 2004; Green *et al.* 2005; Himmelberg *et al.* 2005).

Microeconomic factors unlike macroeconomical factors characterize only objective parameters of specific transactions. Of these, we pay special attention to to the quality of housing factors describing the apartament, house or cottege as the object of transaction: the number of rooms, type of project (Galati *et al.* 2011), area, type of structure (panel or brick buildings), balcony, loggia, floor, technical condition of residential property, social infrastructure near the object (Yi Wang *et al.* 2012; Black 1999; Owusu-Edusei and Espey 2003; The Reinvestment Fund 2007; Tiebout 1956; Wulsin 2009). Sirmans and Macpherson (2003) found that each additional 1000 square feet of residential property increases the selling price by about 3,3%; each additional bedroom increases the price by about 4%; every extra bathing room increases the price by about 24%; central air conditioning increases the selling price by about 12%; ceiling height of nine feet increases the price by about 6%, availability of the basement increases the price by about 9%; loundry in the basement decreases the price by aboyt 2%; presence of the fireplace has a strong positive impact on the selling price (each fireplace increases the price by about 12%); presence of a garage increases the selling price by about 13%; presence of a swimming pool increases the selling price by about 8% (Sirmans and Macpherson. 2003). Authors studied how residential property prices depend on objective microlevel factors in 2010-2011 when consequences of financial crisis had a strong impact in Latvia, there was an economic downturn, lending for purchasing the residential property was

frozen by political decisions, incomes and purchasing power of the population decreased significantly which had strong impact on real estate market and caused a sharp decline of the real estate prices. In this situation differences in prices of residential property in Daugavpils and Riga largerly determined by meso and microlevel factors.

3. The results of the study

Authors conducted the collection and analysis of the information at three levels: regional, local, individual. The Land Service (Valsts Zemes Dienests (VZD)) database was used by authors to collect the information. Analysis showed that apartments – from one to four rooms – in Riga are significantly more expensive than in Daugavpils (Figure 1).

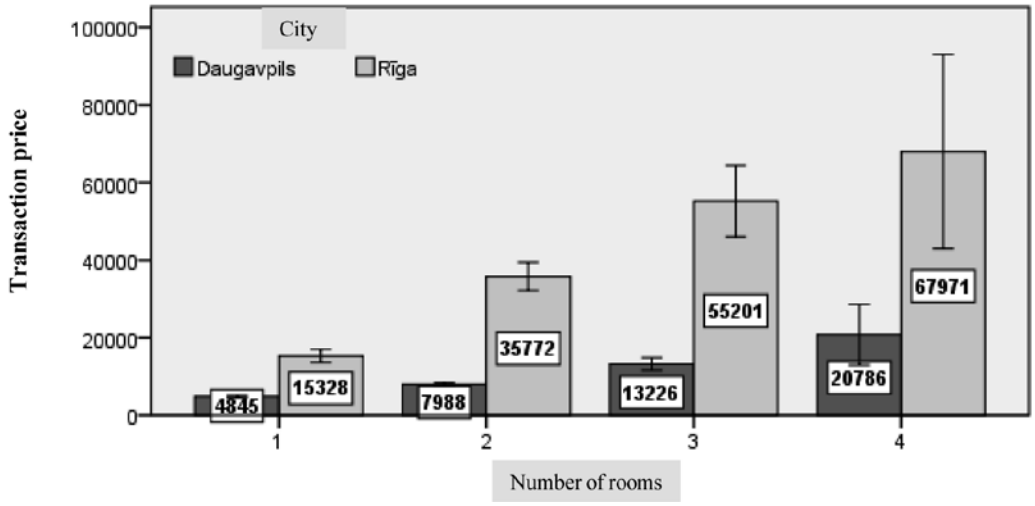

Fig.1. The average market price of the appartments with a different number of rooms in Daugavpils and Riga, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

The cost of one-room apartment in Daugavpils varies from 2000 Ls to 16000 Ls, average price is 4845 Ls with an average standart deviation 1759 Ls. In Riga average price of such apartments is 15328 Ls and maximum price reaches 31000 Ls but price for half of sold apartments is more than 14759 Ls. Even greater differences were observed about the price for everal rooms apartments. So, the average price of three-rooms apartment in Riga is 55201 Ls while the average price in Daugavpils is 13226 Ls.

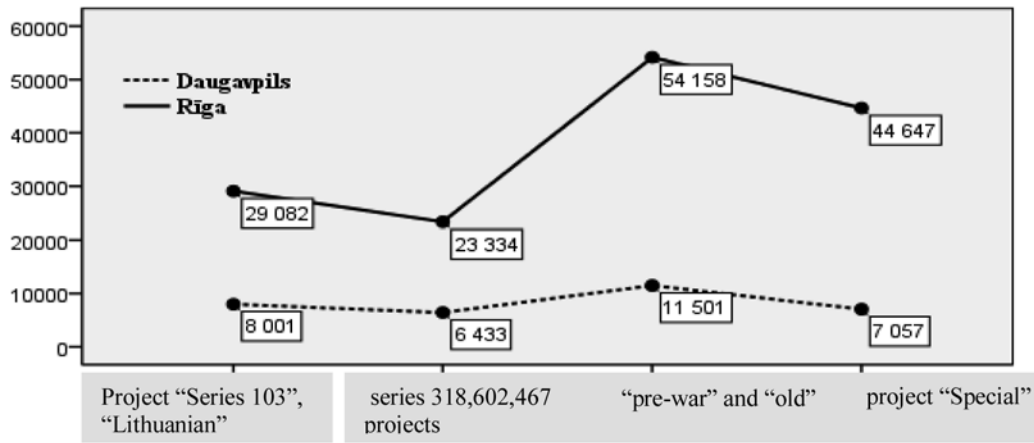

Fig.2. The average apartment price by project type in Riga and Daugavpils, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals (VZD, 2010,2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

Also we can state significant difference in price by comparing apartments of the same project in Riga and Daugavpils. Thus, the average price of apartments of "series 103" or project "Lithuanian" in Riga is 29082 Ls but the average price of similar apartments in Daugavpils is 8622 Ls (Figure 2).

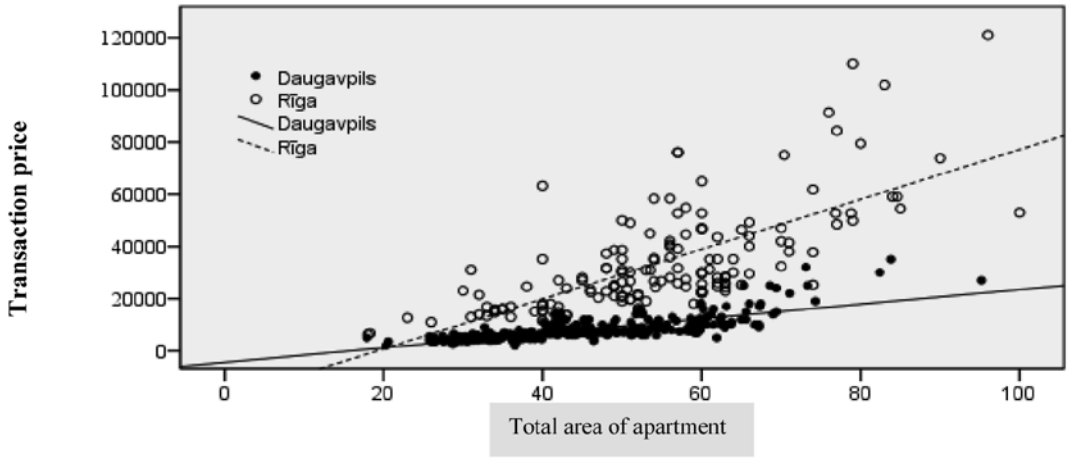

Fig.3. The relationship between the market price of the apartment and its area, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

There is a statistically strong direct relationship between apartment's area and its market price. In Daugavpils correllation is stronger (r=0.811) than in Riga (r=0.715) (Figure 3).

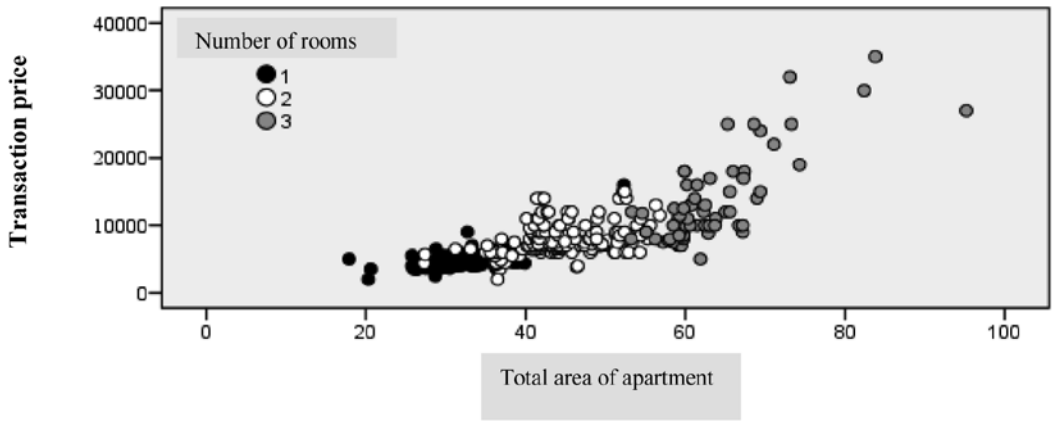

Fig.4. Relationship between value of apartments with different number of rooms and their area in Daugavpils, in 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

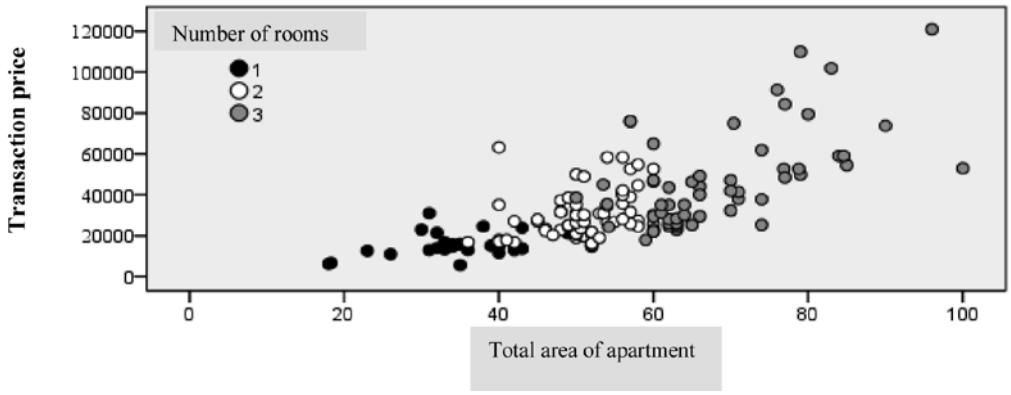

Fig.5. Relationship between value of apartments with different number of rooms and their area in Riga, in 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

Apartment's area most strongly affects its price for three-room apartments (r=0.701 - Daugavpils, r=0.548 – Riga) while the least strong for two-room apartments (r=0.389 - Daugavpils, r=0.359 – Riga). There is a linear dependence between one-room apartment's price in Daugavpils and its area. The price of one-room apartments in Daugavpils depends on their area significantly (r=0.518) while in Riga this dependance is not significant (r=0.183, p=0.317) (Figure 4,5).

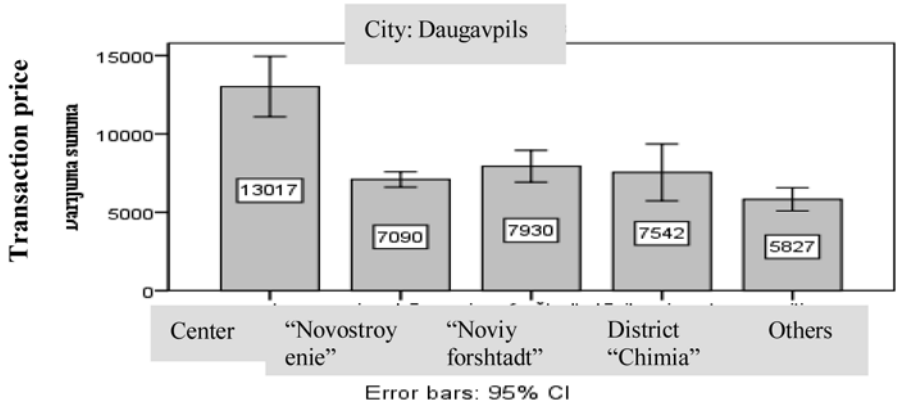

Fig.6. The average transaction amount in popular districts of Daugavpils, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

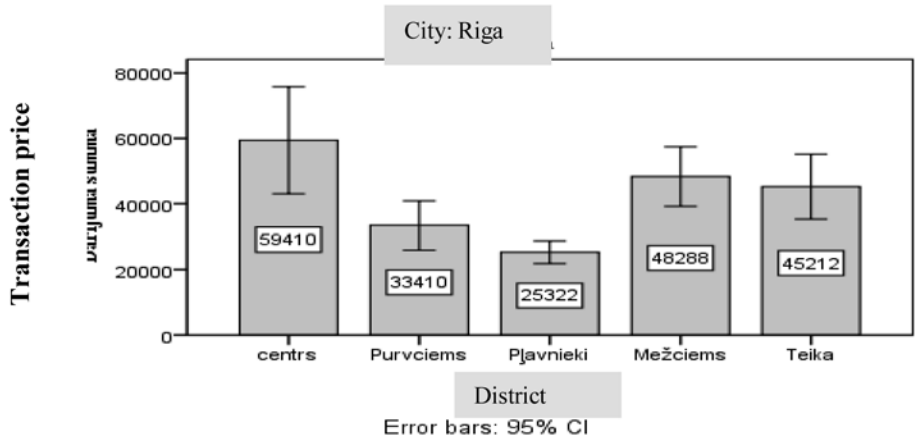

Fig.7. The average transaction amount in popular districts of Riga, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

District factors significantly affects the price of apartments in Riga and Daugavpils as well (ANOVA, $p<0.05$). Apartments in the center of cities are more expensive than apartments in other districts. The average price of apartments is 13017 Ls/sq.m in center of Daugavpils and 5827-7090 Ls/sq.m in other districts. The average price of apartments is 59410 Ls/sq.m in center of Riga and 25322 – 48288 Ls/sq.m in other districts (Figure 6,7).

In Daugavpils the price of apartments in the center is significantly different than the price of apartments in other districts, where significant differences were not observed. Price of apartments in Mežciems district, Riga, is lower than in center and higher than in Teika but the differences are not statistically significant. Apartments in Purvciems and Pļavnieki districts are cheaper but their price does not differ from each other, while its price is different than price of apartments in other districts of city. This can be explained by the fact that over the last two years in these districts few apartments were sold and their condition was poor (requiring repair).

Distance between district and the center of city is not the only factor to explain why there are different prices of the apartments located the same distance from the center. It seems that the city zoning is advisable to carry out by the social and urban planning factors taking into account the quality of the housing and its district location. Social factors should include differentiation of the urban population in terms of income which determines the trend: poor people move to the suburbs. It is so called factor of the social geography (Figure 8, 9).

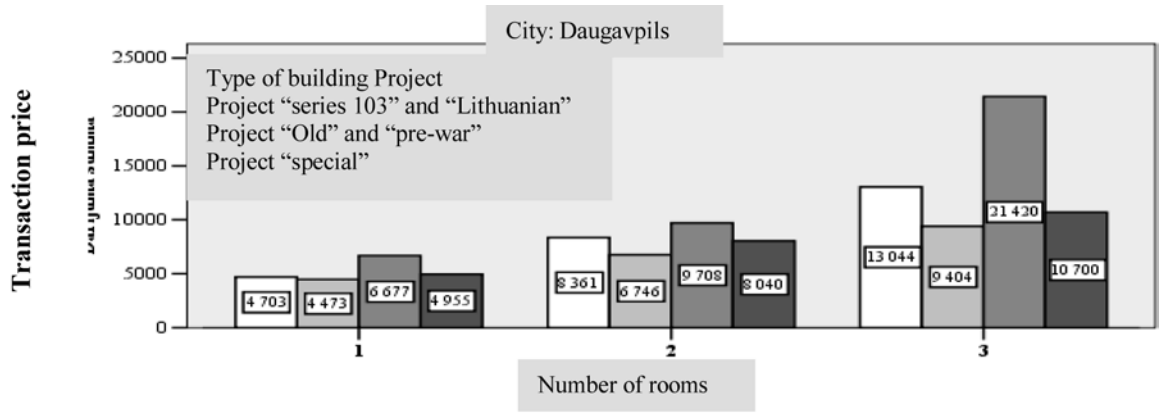

Fig.8. The average transaction price of the apartments of different building project with different number of rooms in Daugavpils, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

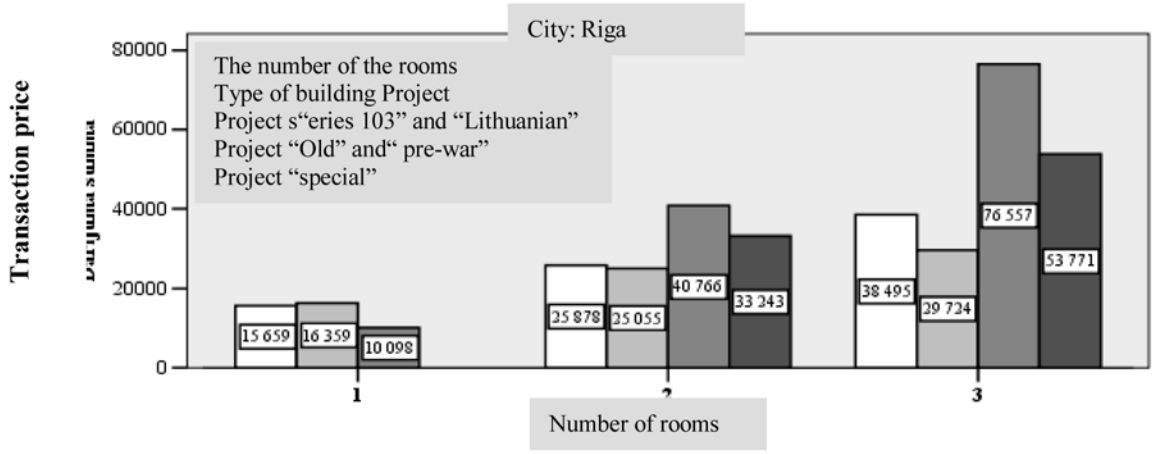

Fig.9. The average transaction price of the apartments of different building project with different number of rooms in Riga, in 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

Type of building project is a factor that has a significant impact on the price of apartments in Riga and Daugavpils (ANOVA, $p < 0.05$).

Comparison of one-bedroom apartments in Daugavpils shows that the price of the apartments in "pre-war" and "Stalin era" type apartments differs significantly from the prices of other types of apartments for which we cannot find statistical differences. The price of two-room apartments in project "series 103" and "Lithuanian" buildings is significantly different than the price of apartments in series 318, 602, 467 buildings and do not differ the price in "special project" type buildings.

In Riga the price of apartments in "pre-war" and "Stalin era" buildings is different than the price of apartments in other buildings but unlike Daugavpils they are cheaper and such differences are statistically significant. Two-room and three-room apartments in "pre-war" and "Stalin era" buildings in Riga are more expensive as well as in Daugavpils. In Riga only three-room apartments in project" series 103" and" Lithuanian" buildings are more expensive than apartments in series 318, 602, 467 buildings while in Daugavpils such differences are significant for two-room apartment level. In Riga two-room and three-room apartments in „special project" type buildings are cheaper than apartments in "pre-war" and "Stalin era" buildings but more expensive than apartments

in „series 103" and "Lithuanian" project buildings. In Daugavpils three-room apartments in "series 103" and" Lithuanian" project buildings are more expensive than apartments in "Special project" buildings (Figure 10, 11).

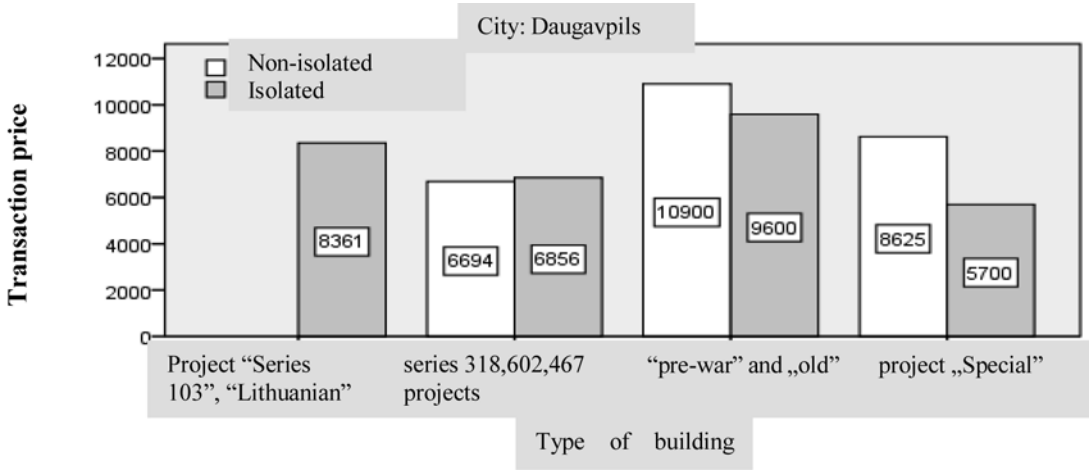

Fig.10. Comparison of price for two-room apartments of various planning in buildings of various type of project in Daugavpils, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

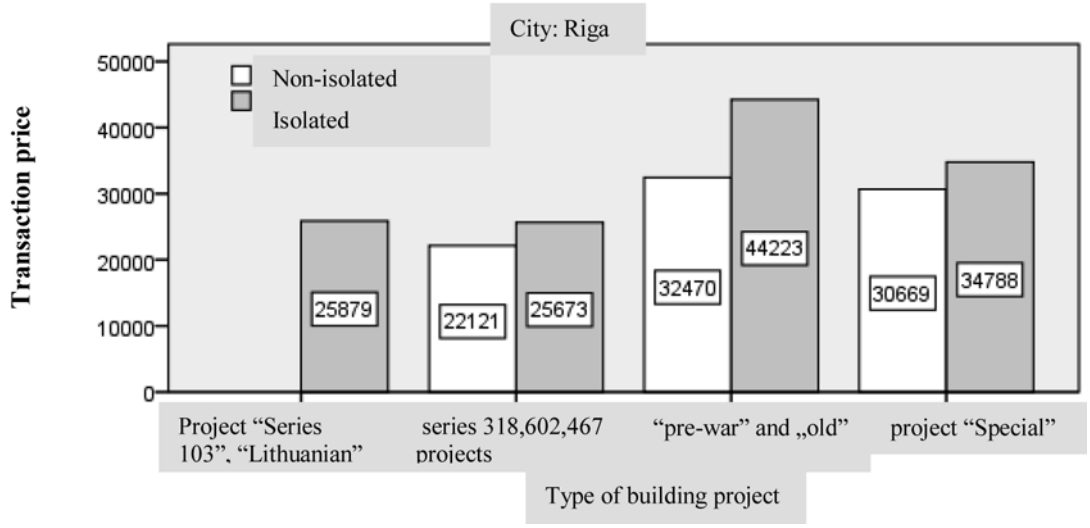

Fig.11. Comparison of price for two-room apartments of various planning in buildings of various type of project in Riga, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

The comparison of price two-room apartments of various planning showed that traditional preference of apartments with isolated rooms is typically for Riga. However in Riga and Daugavpils differences of prices for various planned buildings are shown only at the level of a statistical trend (t-test for Equality of Means, $0.05<p<0.1$).

In Daugavpils and Riga there is observed relationship between type of two-room apartments and their planning (Chi-Square Tests, $p<0.05$). Most apartments with combined rooms belongs to 318, 602, 467 series buildings. In Daugavpils there were sold 68% of such apartments, in Riga – 17%. In Daugavpils there were sold 8% of "pre-war" and "Stalin era" type apartments with combined rooms, in Riga – 29%. Despite the fact that in Riga separated room

apartments are more expensive and the difference in the price is especially noteable for the "pre-war" and "Stalinera" type apartments, the joint effect of rooms planning is not statistically significant (Tests of Between-Subjects Effects, p=0.480).

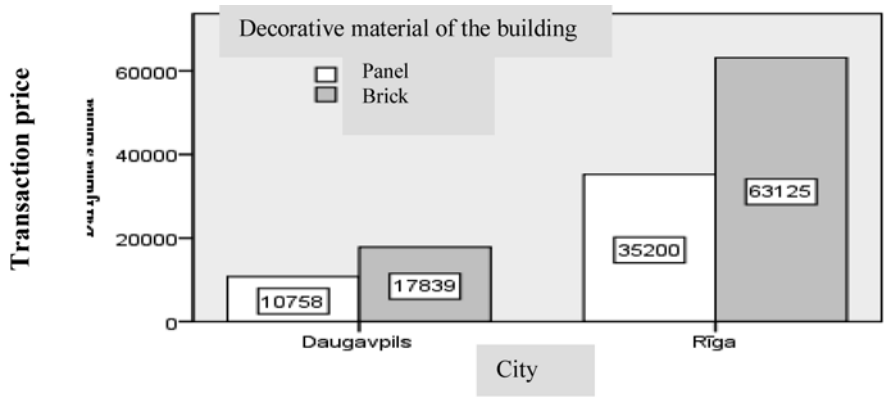

Fig.12. Comparison of the price of apartments in panel and brick buildings in Riga and Daugavpils, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

The comparison of the price of apartments in panel and brick buildings shows that apartments in brick buildings are significantly more expensive both in Riga and Daugavpils ((t-test for Equality of Means, p<0.05) (Figure 12).

Significant relationship exists between material of external walls of buildings and type of building project (Chi-Square Tests,p<0.05). "Pre-war" and "Stalin era" buildings are mostly made of brick, "series 103" and "Lithuanian" project – made of panel.

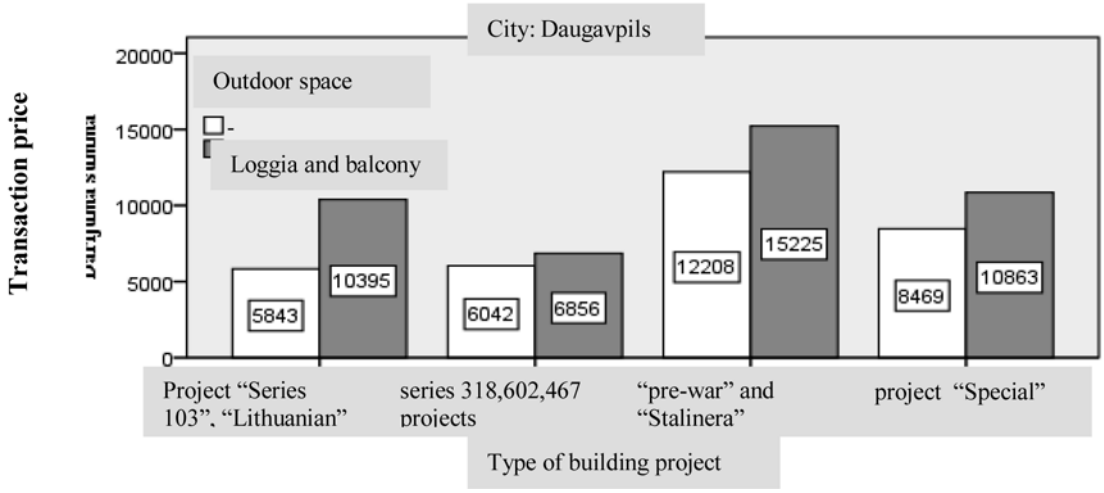

Fig.13. Comparison of price of different type of apartments in Daugavpils by the presence of balcony or loggia, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvijas, 2011), (SIA Arco.., 2010, 2011)

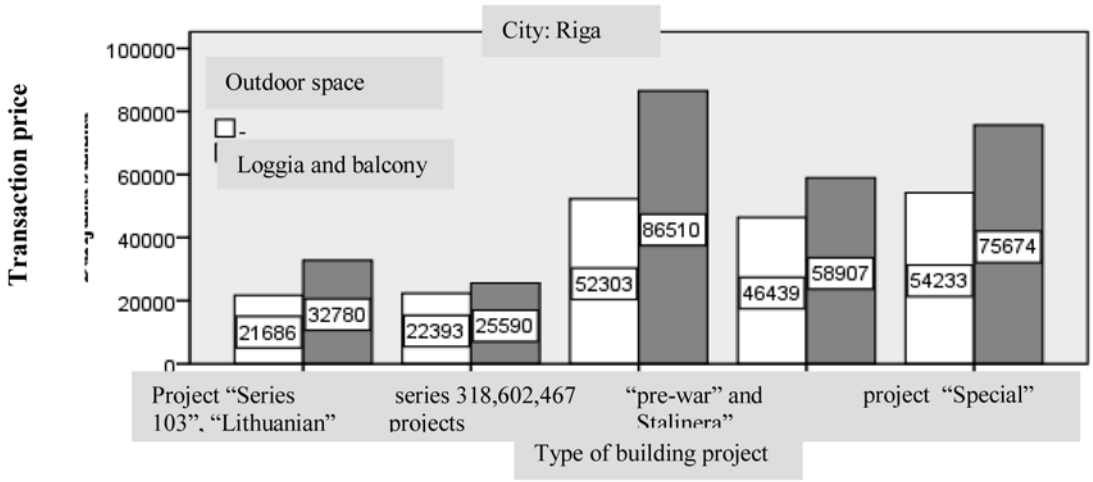

Fig.14. Comparison of price of different type of apartments in Riga by the presence of balcony or loggia, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

The presence of balcony or loggia can significantly increase the price of apartments in "pre-war" and "Stalin era" type buildings and price of apartments in 103 series and "Lithuanian" project buildings (t-test for Equality of Means, $p<0.05$) (Figure 13, 14).

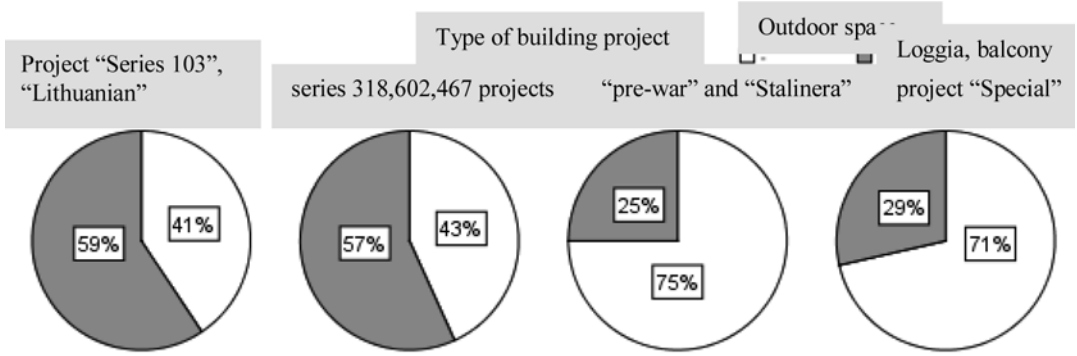

Fig.15. Presence of a balcony or a loggia in different project apartments in Daugavpils, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

The presence of a balcony of a loggia in the apartment significantly correlates with a type of apartment both in Daugavpils and in Riga (Chi-Square Tests, $p<0.05$). Among the apartments in "pre-war" and "Stalin era" buildings only 25% of the apartments in Daugavpils and 20% in Riga have a balcony or loggia. There are 60% of the apartments with a balcony or a loggia in "series 103" and "Lithuanian" type buildings, in series 318, 602, 467 buildings (Figure 15).

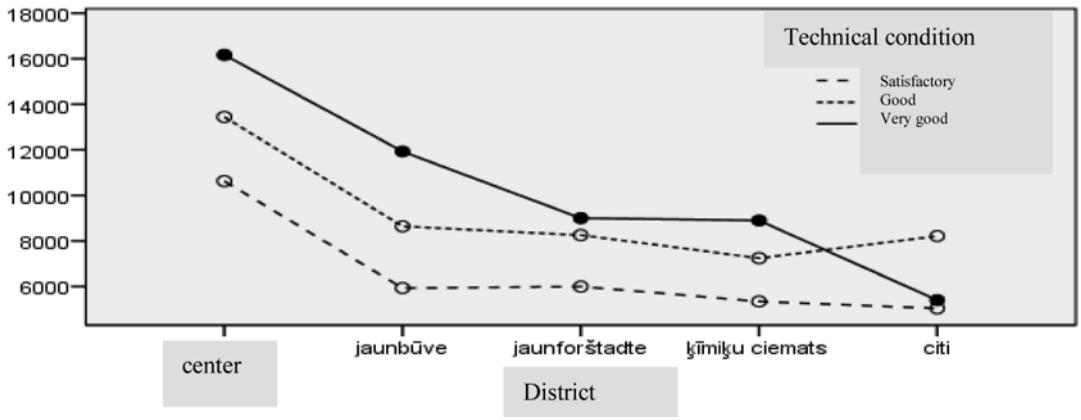

Fig.16. Average price of apartments with different technical condition in different districts of Daugavpils, 2010-2011

*Source:*author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

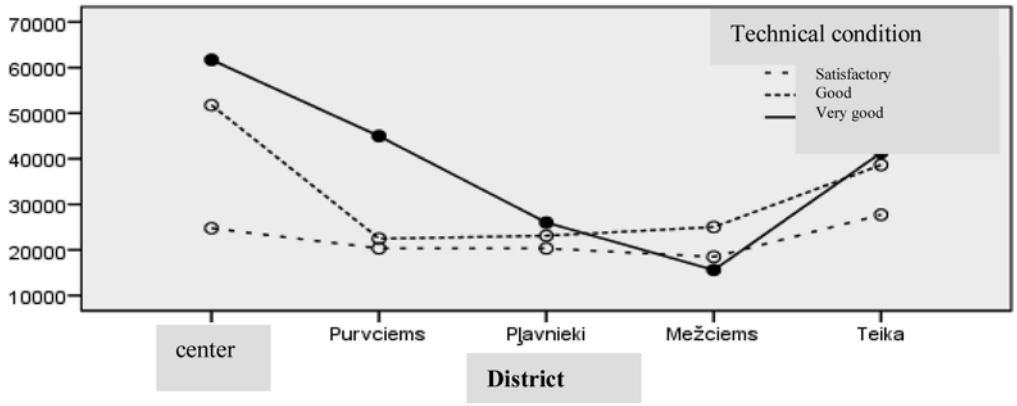

Fig.17. Average price of apartments with different technical condition in different districts of Riga, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

Technical condition has a significant impact on the price of apartments in all districts of Daugavpils (ANOVA, $p<0.05$). In Riga despite the fact that the apartments in the best condition are more expensive in all districts except Mežciems, these differences are significant only in Purvciems district (ANOVA, $p=0.003$). The effect of influence of such factors as district and technical condition was not observed both in Riga and Daugavpils (Tests of Between-Subjects Effects, $p=0.832$, $p=0.831$). There is statistically significant relationship between technical condition of apartments and city apartments are located (Chi-Square Tests, $p<0.05$). In Riga 25% of sold apartments were in very good technical condition, in Daugavpils there were 5% of such apartments. In Daugavpils 65% of sold apartments were in satisfactory condition while in Riga there were 19% of such apartments (Figure 16, 17).

The dependence between the technical condition of the apartments and districts they are located are statistically significant only in Riga (Chi-Square Tests, $p<0.05$), in Daugavpils such dependence was not observed (Chi-Square Tests , $p=0.284$). If in center of Riga 60% of sold apartments were in very good technical condition then in Mežciems percentage of such apartments was less than 6% (Figure 18, 19).

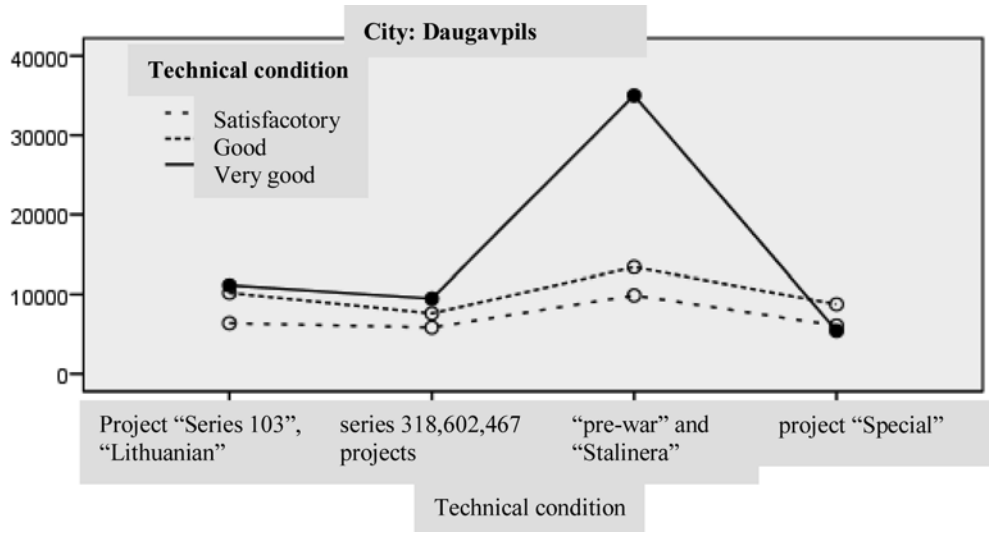

Fig.18. Average price of apartments with different technical condition in different districts of Daugavpils, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

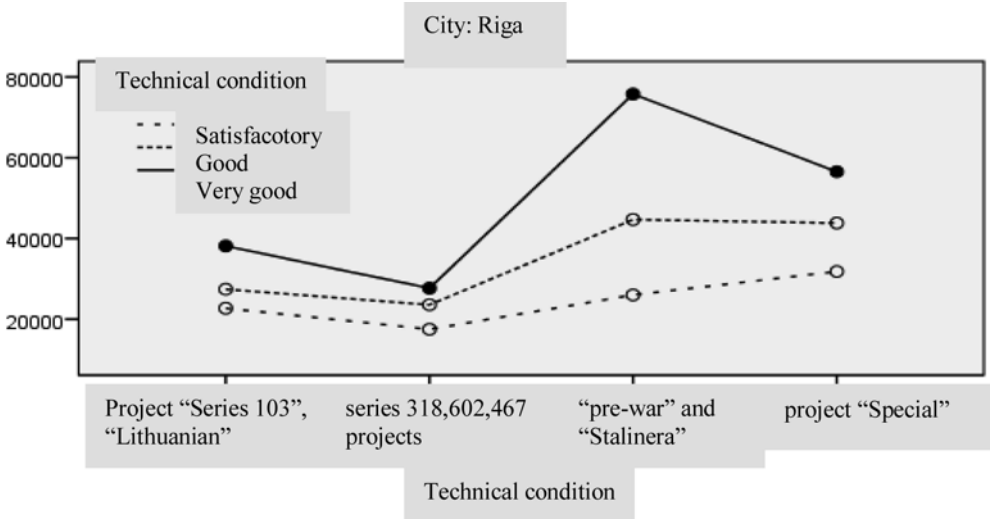

Fig.19. Average price of apartments with different technical condition in different districts of Daugavpils, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

Technical condition of apartments has significant impact on price of apartments with different conditions: if the condition of apartment is better, the apartment is more expensive (ANOVA, $p<0.05$).

The effect of the joint influence of both factors – type and technical condition, is observed in Daugavpils: apartments in "pre-war" and "Stalin era" buildings in excellent technical condition are much more expensive than apartments of the same type in good or satisfactory condition (Tests of Between-Subjects Effects, $p<0.05$).

Statistically significant relationship between technical condition of sold apartments and district they are located are not observed (Chi-Square Tests, $p=0.177$). In Riga such relationship is observed at the level of statistical trend (Chi-Square Tests, $p=0.076$). 39% of apartments in "pre-war" and "Stalin era" buildings sold in Riga were in excellent technical condition. There were only 28% of sold apartments in "series 103" and "Lithuanian" buildings in excellent condi-

tion and 16% of apartments in 318, 602, 467 series buildings (Figure 20, 21).

The effect of the joint influence of such factors as floor (first, last) and project type is observed in Riga (Tests of Between-Subjects Effects, p=0.05). The apartments in first and last floor are significantly cheaper. In Daugavpils this factor has no impact on price of apartments.

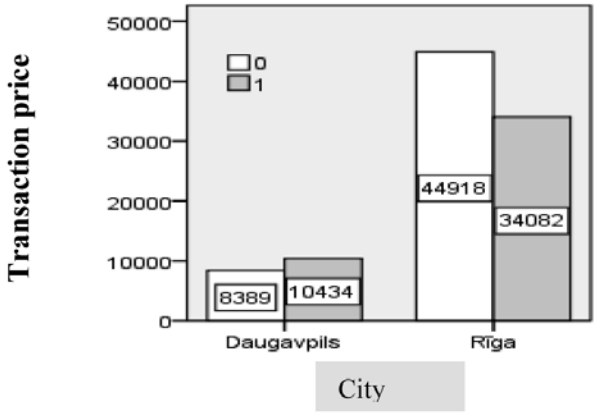

Fig.20. The price of apartments on the top floor in comparison with others

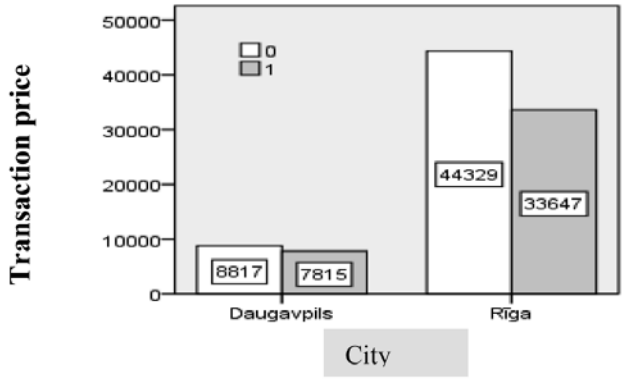

Fig. 21. The price of apartments on the first floor in comparison with others

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

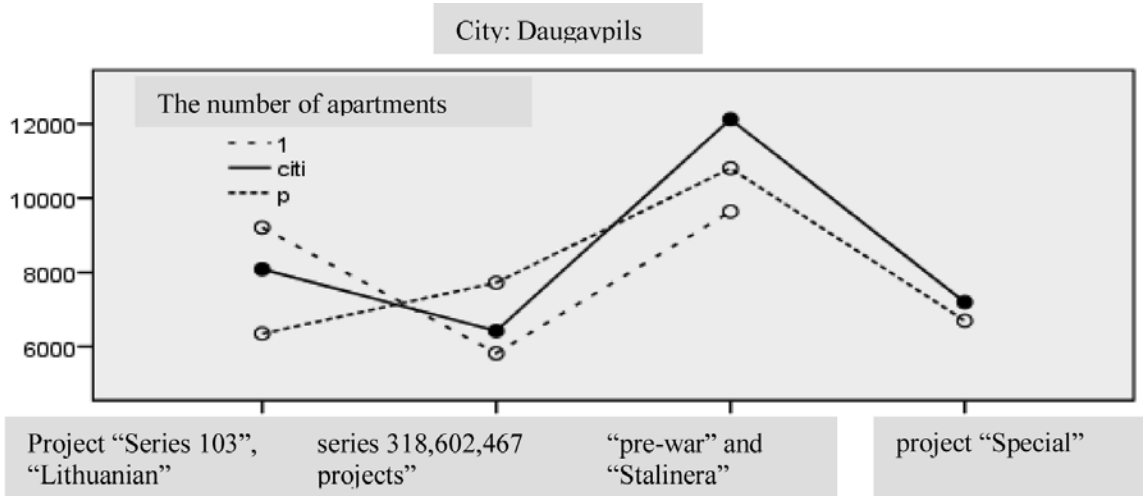

Fig.22. The average price of apartments of different types in Daugavpils depending on the floor they are located, 2010-2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

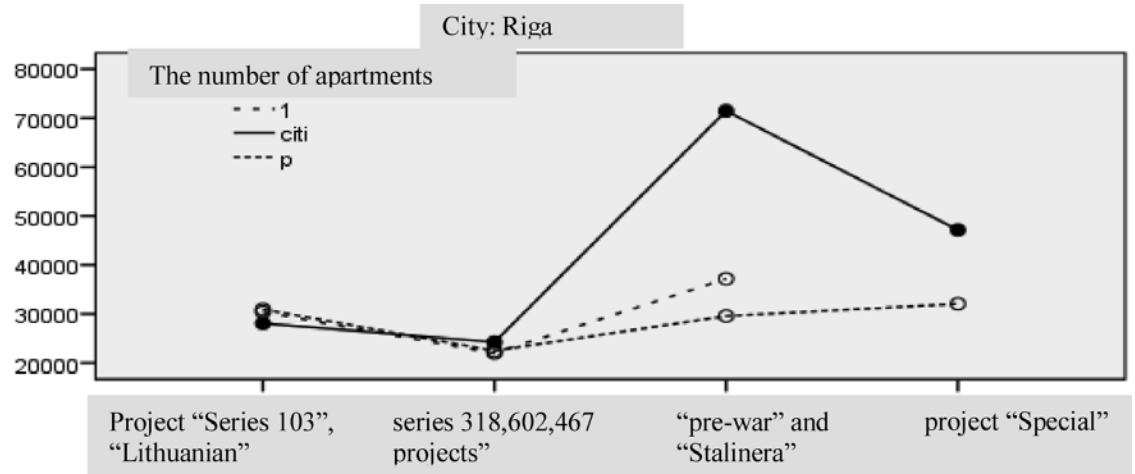

Fig.23. The average price of apartments of different types in Riga depending on the floor they are located, 2010 -2011

Source: author's calculations according to the Lande Service (Valsts Zemes Dienests) database data SIA Arco Real Estate unpublished data, the database of the deals. (VZD, 2010, 2011), (Latvian Sworn Bailiffs Board 2011), (SIA Arco.., 2010, 2011)

In Daugavpils the significant relationship between type of sold apartments and floors they are located is observed (Chi-Square Tests , $p<0.05$). 22% of apartments in "pre-war" and "Stalin era" buildings were located on top floors, 13% - on the first floor while only 12% of apartments in "series 103" and "Lithuanian" project buildings were located on the top floor (Figure 22, 23).

Authors used log-linear regression in order to establish the percentage change of the selling price depending on some characteristics of the property at the micro level in studied cities: $LnY=\alpha+\beta1X1+\beta2X2+\beta3X3+\beta4X4+u$, where X1 – WC and bathroom (combined/non combined), X2 – total area of apartment (sq.m.), X3 – technical condition of apartment (bad, average, excellent), X4 – district of the city (central/peripheral) but the interpretation of the regression coefficients is as follows:

$$\frac{dY}{Y}=\beta dX \Rightarrow \frac{\beta}{dX}\cdot=\frac{dY}{Y}\Rightarrow(dX=1)\Rightarrow \beta\cdot100\%=\frac{dY}{Y}100\%$$

the coefficients at the independent variables show by what percentage increases Y by increasing Xi by 1 unit.

Thus, the following equation were observed:

$LnY=6,683+0,179X1+0,035X2+0,410X3+0,315X4+u$ (significance level of each coefficient and intercept - p=0,000), therefore the presence of separated WC and bathroom increases the price of the property by 18%, increasing of total area by 1 sq.m increases price by 3,5%, improving the technical condition by one level (bad, satisfactory, excellent) increases price by 41% but the location of the apartment in center of city increases price by 31,5% (compared to peripheral area). Presence or absence of a balcony or loggia is not significant ($p>0,5$).

Conclusions

After analyzing the real estate market in Riga and Daugavpils on realized sales in 2010-2011 (see Table 1) we can make the following conclusions:

Residental property has a good economic value which depends not only on consumer properties of a specific object but also the characteristics of the location. Apartments in Riga are more expensive than in Daugavpils. Apartments in the center of cities are more expensive than in other districts.

The influence of individual factors determining the price of apartments in Daugavpils in Riga is different. Therefore it is advisable to analyze the effect of factors on the price of apartments separately.

Factors such as the district has a significant impact on the price of property both in Daugavpils and Riga. The special district is the center of city where the apartments are usually more expensive.

Factors such as "type of building project" also has a significant impact on the price of apartments. The apartments in "pre-war" and "Stalin era" type buildings are significantly more expensive.

Factors such as "material of the building walls", "sanitary-technical room", "planning of the rooms" can affect the price of apartments but they tend to be associated with factors such as "type of building project".

Technical condition of the apartment has a significant impact on the price. Good repair in the apartment is able to increase its value significantly.

One of the main factors determining the price of apartment is its area. The number of the rooms in the apartment is closely related to this factor.

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