STATISTIC ANALYSIS OF HOMOGENEITY OF TOTAL OBJECTS OF OFFICE REAL ESTATE IN ADMINISTRATIVE DISTRICTS OF SAMARA

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This paper considers the theoretical justification and practical use of statistic methods for research of homogeneity of total objects of office real estate selling on local markets of the city in boards of administrative districts. The necessity of using multivariate statistical analysis for definition of typical groups of objects as a basis of development adequate pricing models was substantiated.

The most important theoretical and applied task in valuation of real estate is definition of objects-analogues and it is demand the usage of complex of statistic methods oriented on research as observing and measurable and also latent factors of objects homogeneity.

Diversity of population of office real estate is stipulated by market which is consist of more little markets (local markets and sub-markets). They are connected with each other and can be define on a basis of different features characterized supply of office real estate, demand and market prices.

Separation of sub-markets of office real estate due to administrative districts should be considered as the first step of market structure research for definition of homogenous groups of objects. Grouping feature "administrative district" in his case can reflect indirectly some objective factors of demand and supply at office real estate market, such as customers income level, theirs concentration, types of business activity, placement of objects, infrastructure near by objects, environment conditions and the others. This factor directly characterize the influence of subjective factors on market conditions, especially distinctions in a quality and effectiveness of management of administrative districts, regulating activity of real estate registration services and the others institutes connected with real estate turnover in boards of administrative district.

According to table 1, distribution of researching sold objects of population on administrative districts quite equable. This is supported by data of line 2 in table 2 coefficient of shares variability. According to the article of M.M. Yuzbashev and T.A. Agapova it could calculated by formula.

$$V_d = \sqrt{\kappa \sum_{i=1}^{k} d_i^2 - 1},$$

where Vd - coefficient of shares variability; d_i - shares; i - number of group in population $i = 1$, κ; κ - number of groups in population.

According to data (line 2, table 1) coefficient of shares variability is calculated:

$$V_d = \sqrt{7(0{,}154^2 + 0{,}122^2 + 0{,}222^2 + 0{,}18^2 +}$$

$$\overline{+ 0{,}127^2 + 0{,}103^2 + 0{,}092) - 1} =$$

$$= 0{,}297, \text{ или } 29{,}7\% \ (\angle 33\%) \ .$$

Consequently, administrative districts of Samara are equal by their share of sold office real estate objects.

At the same time they extremely distinguish in average meanings of resulted and factorial exponents of pricing. Also distribution of minimal and maximal average meanings of these exponents are (table 1). It means that processes of sale of office real estate objects are not a population which has common regularities in pricing as it is on a concrete local markets.

This suggestion can be confirmed by quite high variability of exponents characterized the processes of pricing for office real estate objects in administrative districts. Inhomogeneity in boards of districts (data of table 2) leads to refusal of using exponent "administrative district" as a main for unification of objects for definition of statistic regularities of pricing.

Data of table 2 confirms the hypothesis about external objective and subjective factors which lead to localization of office real estate market in boards of administrative districts.

For definition of this we should notice that all exponents characterizing non-price factors of pricing on objects of office real estate are very variable (coefficient of variability is from 50% to 1600%), variation of price -factor V14 (Price of inclusion object at market, rub. for m²) and resulted exponent V15 (Sale price, rub. for m²) in administrative

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districts are extremely lower. This fact confirms local (in boards of administrative districts) pricing influence of above-mentioned objective and subjective factors. This influence is shown in pricing on residential real estate and confirmed be meanings of coefficient of variability in exponent V36 (Sale price of residential real estate, rub. for m^2) which is factorial exponent in this research.

Simultaneous minimum of variation in boards of administrative districts of price exponents V14, V15 and V36 are results of objective independent internal unity of price system , so called "Slutskiy`s Effect".

We should pay attention to one more statistic effect. Its essence is defined by the following correlations (table 2): variation of V4 (Time of exposition of objects at market, days) is significant. In different administrative districts this exponent is 115-135%. It is higher then variation of sale prices of office estate objects for 1 m^2 (V15), which varieties between 22-44%. We can make a conclusion that influence of price factors at local real estate markets less variable then the feedback of these market on price factors.

Refusal of usage of administrative factor as a basis of unification for definition of sta-tistic regularities demands the answer question which economic features of real estate objects should be used as a basis for grouping for definition of typical conditions of pricing.

Theoretically we can offer two variants of unification for objects:

1 - by level of sale price;

2 - by character of change the price for the time of exposition the object at market;

Both account complex of price and non-price factors of pricing.

Assessment of adequacy of above-mentioned approaches for definition of homogenues groups of objects for definition of regularities of pricing demand making adequate groups and proof of reliability statistic models of pricing based on their basis.

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