Introducing a Computerised Market Value-Based Mass Appraisal System for Real Property Taxation in Lithuania

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SUMMARY

Today, nobody has doubts about the need for real property taxation. The main issue in the analysis of the real property taxation is related to the correctness of taxation. In this case the correctness of taxation is understood as the right and grounded estimation of taxable value. World practice shows that the market value and the taxable value of real property computed on its base is the most easy to explain, its reflects the actual property value on the market, the benefit of this property also the receivable and expected income of sale.

Assuming that the real property value is the best to reflect the benefit of property and is the best basis for property taxation the question arises how to make the fair calculation of this value, to assure its up-to-date importance and justification.
At present, the market value is estimated in two ways: by single valuation and mass appraisal. In the course of property valuation for taxation in most cases the single valuation is not applied since it is too time and work consuming, and in some way expressing a subjective opinion of a valuer; difficult to apply for valuation of many property objects, also the costs are too high.

Mass appraisal has some shortcomings and problems too. First, it does not allow the valuation of all individual characteristics of each property; the right value depends on the amount of information and the possibility to use this information. Nevertheless, these shortcomings are successfully address by making the best use of the improving real property information system, and the fact that the individual characteristics are not considered reduces the social consequence of the valuation and taxation.

As to ensure the successful application of mass appraisal system it is very important to make an effective use of the real property information system and latest information technologies.
In 1991, Lithuania started the restitution of real property and privatisation, and at present has the information on all registered real property in the computerised real property databanks. Centralised real property register databank has the comprehensive cadastre, register and property values information, which is constantly updated. The development of an automated real property information system started at the very beginning of the reform, and it provided a basis for the successful development of the computerised mass appraisal system based on market principles. In 2002-2003 the computerised mass appraisal system was developed which integrated the information systems of the cadastre, register and market database into a single system. It provided a possibility to evaluate the real property located in the entire

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territory of the country based on single principles, within the defined time and using the updated market data. It also allows the periodical re-evaluation of the property considering the market developments. The results were integrated with GIS what resulted in a possibility to have public access to the value maps and received mass appraisal results.

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Today, land valuation methods, used in the Land Reform for the estimation of sales prices of the state land as well as for the estimation of land rent and land taxes, are not in line with the market principles; therefore the estimated land parcel values differ from the market values. The aforementioned shortcomings are based on the objective reasons. Valuation methods were elaborated in 1993, when private ownership and market relations were in the initial stage of formation. Having no transactions to compare, the methods were developed using market modelling. This document with small amendments is still valid today; however it does not reflect the current conditions of the developed market. In some cases, values, estimated on the basis of these methods, considerably differ from the market value. In the process of the Land Reform, such values cause unequal granting of land parcels, when land parcels are transferred from the non-marketable area into the areas with high market value. In the areas with low value, land market is throttled because of inadequately high sales prices of the state land, and the areas with high market value – big cities, recreational areas – provide a favourable environment for speculation and corruption. Another bottleneck of these methods is the difference between the indices used for the estimation of value and the structure of indices in the automated Real Property Register. This factor impedes the automation of value estimation using software that will result in the reduction of labour costs. The aforementioned problems related to land values are possible to solve already today. This may be done by using the results of mass land valuation that was performed in Lithuania, using real property mass valuation system, which is still being developed. Mass valuation approach has been used in the countries of European Union for about 20 years. It is based on the market principles; therefore, the estimated values are similar to the market values and neutral with respect to subjectivity. This approach allows automated evaluation of a big group of property objects using digital databanks of the Real Property Register and other registers. The approach is not time-consuming, it does not require huge financial costs; therefore, it is actively implemented in all countries, striving for progress.
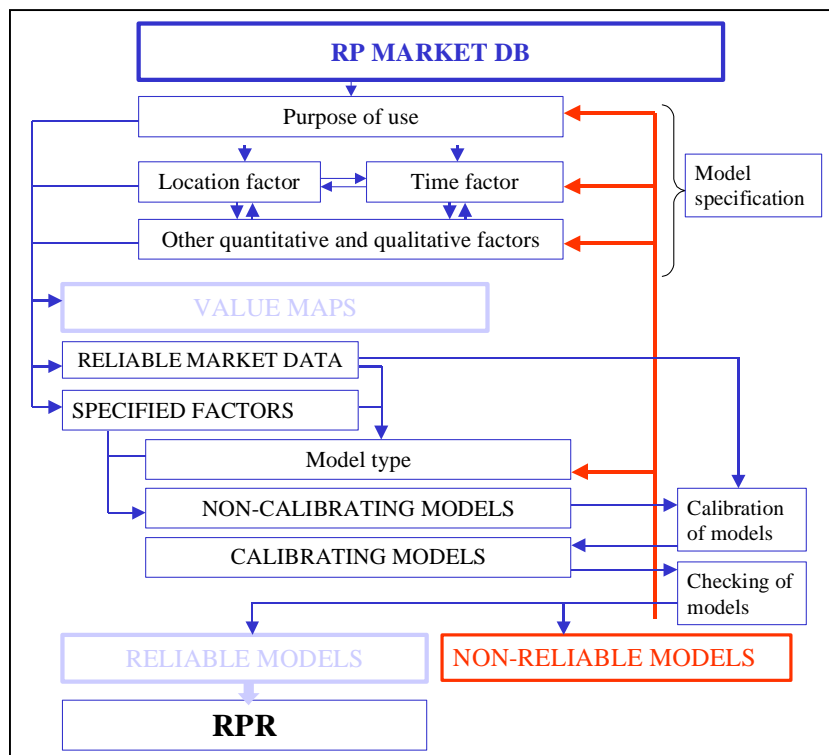
The Law of the Republic of Lithuania on the Principles of Property and Business Valuation sets forth the following definition of mass valuation approach: "mass property valuation means the way of property valuation, when value is estimated not for an individual property, but value margins, including value of property being valued, are estimated, employing the analysis of information collected about the property being valued. Data are collected, analysed and calculations are done on the grounds of systematisation. This approach of valuation is used for the property objects having much in common.

The State Enterprise Centre of Registers performed mass land valuation in Lithuania for the first time in the period of 2002-2003, and in 2004, considering the comments and proposals forwarded by the society, counties, municipalities and other institutions, these works are carried out once more, revising the already compiled value maps. The Centre of Registers,

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compared to other valuation enterprises, has the best technical and organisational opportunities to perform this work. It disposes of a computerised database of all real property registered in the country. 11 branch offices cover the whole territory of Lithuania. The branch offices employ certified real property valuers, who have valuation experience and are familiar with the local market. The automated databases at the Centre of Registers enable to provide valuation results to the clients in digital form and link data with the property owners. The aforementioned measures enable to perform mass land valuation works with the minimum additional technical, human and financial resources, as well as the lowest time input, and ensure the quality of valuation results. The existing legislation provides for a regular updating and provision of this valuation system with new data – newly formed land parcels and revision of cadastral data of the registered land parcels. The mass valuation system enables to change valuation models, in case of the change in land market – re-estimation of land value.

Land value maps and land parcel valuation models play an important role in the mass land valuation system. The more fairly and reasonably these components are developed with respect to the market, the more accurate results are obtained with regard to the market value. The principle scheme of building land parcel valuation models and compiling land value maps is illustrated in Figure 1.

Figure 1. Principle scheme of building valuation models for land parcels and compiling land value maps.

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Labour expenditure and quality of the results depend very much on the reliability of data. Statistical methods and graphical measures are used for checking and revision. The experience of property valuers as specialists and knowledge of real property market within the territory being valued are very important. After elimination of the disputed transactions, a specification of the land valuation model is worked out, i.e. factors and characteristics affecting market prices as well as their relationship shall be determined. The impact of time factor on the transaction prices is being analysed in this phase. Having estimated the influence of the time factor, the adjustment of prices is done. The impact of the location factor results in land value zones, the boundaries thereof are defined, analysing the distribution of sales prices in the area, considering the purpose of land and types of the land use, the development of communications, street (road) network, satisfaction of social needs and other infrastructure elements, prestige of the site. Evaluation of the impact of the location factor ends in land value mapping. In the phase of model specification, land parcel data are grouped by the characteristics, essential to the land market value: value zones, purpose of use, agricultural land, size of the land parcel, productivity grade and its use for recreation. The mathematical expression of relationship between these factors and prices make up a model. The influence of factors (characteristics describing property) in the model upon the land value is determined by calibration of models.

Calibration of the model is the process of estimating the coefficients in a mass valuation model. The calibration shall use the multiple regression analysis (the MRA) and other statistical methods. The MRA is statistical approach of estimating the unknown data, using the known and available information. In mass valuation, the unknown data shall be market value of the real property, and the known and available data – sales prices and characteristics of the objects. The reliability of the estimated coefficients shall be evaluated using the statistical indices estimated in the MRA. Those models, the statistical checking indices thereof match with the ones set or specified in valuation standards, shall be considered as designed correctly and integrated into the Real Property Register database for estimation of mean market values. If it turns out that the indices are incorrect, the model shall be analysed anew – the original market data are checked, the zoning and the specification of models is revised. Later, the calibration of models is done once more. This process will be repeated until the estimated value results are reliable. Works in the transaction database will be completed with the preparation of land value maps covering the territories of municipalities and reliable land valuation models. The obtained results with explanations are included in the reports on mass land valuation of municipal territories.

The State Enterprise Centre of Registers performed the first mass land valuation during 2002-2003. The second mass land valuation is performed on the basis of market as of 1 July 2003. The newly prepared land value maps and reports on mass land valuation of municipal territories were submitted to the County and Municipal Administrations and presented for public discussions. It is also possible to find the results of mass land valuation on the web site http://www.kada.lt. The goal of a valuer is to create the land value estimation algorithms as precise as possible, without deviations from the valuation rules. These algorithms are used to estimate mean market values as similar to the market values as possible. After correction of the noticed inaccuracies, the results of mass land valuation will be forwarded to the National

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Land Service under the Ministry of Agriculture that shall approve land value maps. The compared volumes of works executed during the first and the second mass land valuation are given in Table 1.

Table 1
Volumes of works executed during the first and the second mass land valuation

COUNTIES										
Alytus	Kaunas	Klaipeda	Marijam-pole	Panevezys	Siauliai	Taurage	Telsiai	Utena	Vilnius	Total in Lithuania
NUMBER OF VALUE ZONES Upper line: the first valuation, lower line – the second valuation										
41	52	56	26	29	53	20	27	29	80	413
59	150	99	44	105	113	31	50	46	229	926
FACTORS CONSIDERED Upper line: the first valuation, lower line – the second valuation										
Location; purpose; statistical group, area of the parcel; influence of the parcel size; recreation.										
Location; purpose; statistical group, area of the land parcel; influence of the parcel size; swamps, non-cultivated land, injured land; forest land; waters; recreation.										

The second land valuation has been performed taking into a more precise and accurate consideration not only the most important factor to the real property value – location factor – but also other factors having influence upon value. The number of value zones is higher in the counties with big cities, such as Vilnius, Kaunas, Klaipeda, Siauliai, Panevezys. A more precise consideration of location is caused by high land values. In these areas the inaccuracy of zones would result in higher value deviations than in those areas, where land is not marketable, and its value is low.

During the second land valuation more land market data were available, therefore it was possible to estimate the influence of swamps, non-cultivated and injured land upon value of the land parcels. Agricultural lands mentioned in the reports of previous mass land valuation were not considered; therefore the owners, who had land parcels where land, non-cultivated in agriculture, occupied a major part of the plot, commented on the too high value estimated for the land parcel.

Mass land valuation system, consisting of data management, sales analysis, value estimation and administration sub-systems has not been completed yet. Part of the commands (operations), regulating data exchange between the aforementioned sub-systems, as well as the control of results is done manually. The possibilities offered by geographic information systems have not been fully employed. Other bottlenecks that came to light in the process of works are related to cadastral surveying of land, setting of co-ordinates and addresses, precise registration of land use types, insufficient accounting of new factors that are important for the market, such as usage of the land parcel for recreation, availability of communications.

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The improvement of the system and revision of results (values) must be economically based. In other words, the funds used for the revision of values must serve the purpose of using such values for the goals, raised by the governing institutions, and of course, comply with the standards or the set accuracy requirements, as well as to ensure appraisal of the all real property objects within a short time.

Real property market is rather dynamic in Lithuania with respect to sales prices. In recent years the prices of agricultural land tend to decrease, and the prices of commercial and household land tend to increase regularly. After accession of Lithuania to the EU, most experts forecast greater changes in the real property prices. These marker fluctuations must be reflected in the results of mass property valuation. The aforementioned circumstances show that the stress will be put on the mass property valuation activities. In its turn, the responsibility of the specialists executing these works for the quality of works, accuracy and reliability will also increase.

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