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Computer Assisted Mass Appraisal

An International Review

Edited by
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Preface

The rationale for this book arose from the need to establish a forum to publish material on the research and development, use, and application of mass appraisal techniques as used in ad valorem property tax systems. The development of such techniques clearly is of international interest and concern to those involved in mass appraisal. What is significant is the range of techniques which are currently being applied or being field tested. From the established, statistically based, multiple regression approaches to developments in artificial intelligence and machine learning. The main paradigms covered include various forms of regression (additive, multiplicative, hybrid), base home technique, adaptive estimation procedure, comparable sales analysis, expert systems and artificial neural networks

What conclusions can then be drawn from the wealth of information contained in this book? Diversity of approach in applying broadly similar techniques is evident. This demonstrates that such factors as volatility of property markets, availability of property data, presence of cadastres, the expertise of those applying the techniques and the available funding for system development are all relevant in the design and application of systems. A common objective to all the systems reviewed is to achieve assessment fairness at an economic cost. In addition, the integration of geographic information systems and CAMA is an extremely important development. The next generation of mass appraisal systems will need to incorporate the spatial dimension, again leading to enhanced performance in assessment and taxpayer acceptability. One has to suggest that the days of 'manually' appraising or valuing several hundred thousand or millions of parcels is now gone. Mass appraisal processes are now an integral part of the overall property taxation administrative processes.

This book represents an attempt to bring together leading experts and researchers who are linked with the common theme of developing more rigorous,

more objective and more cost effective appraisal approaches to the determination of property values. There was also the underlying theme, to specifically ensure that as many property types were addressed. To this end, chapters cover residential, condominiums, retail, office and industrial property as well as agricultural and forestry land. Much of the material could be described as 'cutting edge' or 'state of the art', and therefore it is hoped that it will be of direct benefit to students, researchers, property tax valuers and appraisers.

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1 A critical review of computer assisted mass appraisal techniques

W. J. McCluskey

Mass appraisal

Mass appraisal has been defined as the systematic appraisal of groups of properties as of a given date using standardized procedures and statistical testing (IAAO, 1978). It differs from single property appraisal only in terms of scale. In mass appraisal modelling the aim is to try and replicate the market within which real estate is traded and to derive a representative mathematical model which achieves this aim. Thus, valuation models developed for mass appraisal purposes must represent supply and demand patterns for groups of properties. The model must be firmly established within micro-economic theory which would support the underlying rationale of the model. Appraisal judgements for mass appraisal must relate to large groups of properties rather than to single properties. The ultimate objective is, however, the same whether the approach is mass or single valuation that is, an accurate assessment of the value of many properties or of a single property. The methods of valuation which the valuer utilizes are essentially the same, the main differences between the approaches are in the areas of market analysis and quality control.

Quality control is measured differently across the two approaches. In mass appraisal given the scale of valuations, statistical methods are used to measure accuracy and variations in the assessed values from actual sale prices. For most mass appraisal models if the average deviation from sale prices falls within a predetermined range, the model and quality is considered good. In single property appraisal, quality can usually be measured by direct comparison with specific comparable sales. In both approaches the valuer will be required to defend his assessment of value, and as one would expect this is somewhat easier in the single property appraisal than in the mass appraisal situation. Nonetheless the model needs to be capable of explanation to demonstrate how the value was achieved.