

Book review

MASS APPRAISAL METHODS: AN INTERNATIONAL PERSPECTIVE FOR PROPERTY VALUERS

Tom Kauko and Maurizio d'Amato (Eds.), Hardcover, Wiley-Blackwell, August 2008, 360 pages.

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INTRODUCTION

Normalization and harmonization on appraisal methods are an increasing issue on property markets among the developed countries. The need comes from the financial globalization process which has promote capitals to move investing in property markets around the world and, with it, the urgency to know similar rules, risks and guarantees associated to the investment process. In some areas like the European Union, the appraisal methods have tend to converge last years as a result of the coordination in the European regulations, following the need to establish such similar methods to determine the 'single and reliable' value for the any type of property which assure the value of the collateral to any investor with all transparency (Ericsson et al., 2005; Mackmin et al., 2000).

The need to 'know the value' is not different from the one existing in any other commodity's market. However, there is a general recognition that the value in property markets is not easy to fit (McParland et al., 2000). More than that, indefinites on property values, the existence of lags on acknowledgement the determinants of property value together with the deficient assessment of the collateral are on the bases of the recent financial crisis which has change

the business cycle in the world. The accuracy on property valuation system which could restore the confidence on the real estate financial assets and securities plays a key role in the new financial mechanism as well as could contribute to make more comprehensive the process of property price formation in housing and real estate market. These two topics – accuracy on valuation and price formation – are covered in this book, what places it in the top-one line of interest during the current years at the time that the new financial mechanism is being defining and implementing. This is **the first contribution** of this book.

Achieving a single price of any property about which all appraisers agree is a difficult task in a real estate market (McParland et al., 2000; Crosby, 2000). The alleged reasons to justify the existence of different prices (normally inside a range) for the same asset are distinct. Firstly, property assets are very heterogeneous goods and are submitted to subjective valuations related with many socio-economic particularities (most literature refers to this feature, see Peto et al., 1996). Secondly, location and other determinants space-related vary the values in many properties with very similar characteristics. Thirdly, the difficulties related to the data availability make the as-

assessment to be complex, both because a lack on statistical information, or, on the contrary, due to the existence of rich and very detail database which produce intricate management, less clear or a set of possible values for the same property among which it is needed to choose. Such problems are very well known by appraisers and are accepted like implicit to the process of valuation itself. The role of subjectivity to establish criteria allowing to 'select' the best value among those obtained after the valuation process is accepted within the industry (Crosby, 2000), and it is related with the degree at which the analyst understand the local characteristics influencing the value of the property.

Trying to minimize the impact of the subjectivity component and to produce more accurate and objective valuations, countries have tended to fix common property valuation rules at the same time that valuation researchers have developed new methods to provide with 'exact tools' to appraisal firms in order to produce more robust valuations. From the financial crisis burst, the idea of having similar methods has taking force and the need to obtain precise valuations closer to the property prices in order to avoid unnecessary losses in the distinct economics frameworks, have been stressed widely.

The reasons why the countries have tended to adopt common rules on property valuation are disparate. In the Anglo-Saxon areas, property valuations are generalized as a need to follow trends in property market and serve as a reference for the financial market. In the Continental European region, valuation is a compulsory requirement to support financial operation with a property as collateral, like are loans based on mortgages or pension funds' guarantees, being other purposes less relevant. In the European arena, the methods and valuations systems have tend to converge with the EU recommendation about the valuation techniques to be applied among the

European area and the adaptations of countries regulations to common rules. The need to have a recognizable value which minimizes the financial risk associated to cross Europe investment is the common element among the systems (RICS, 2003; Ericsson et al., 2000 and McParland et al., 2000).

The seek of valuation methods capable to capture the heterogeneity of property values and enhance the finance guarantee has generated an increasing literature using different technical methods to value, from the more traditional estimation tools, using econometric models, until strictly mathematical methods. The hedonic regression models have been the most popular among them. At the same time, the need to develop mass appraisal from the industry perspective have also tended to homogenize the estimating method with the creation of complex software to assign values to property. Valuation techniques from the Academia and their transformation in standard tools have run in parallel with constant feedback creating and improving systematic methods, most of them known as Automatic Valuation. The Automatic Valuation methods become popular last decade, being based in strong availability of data and using multiple analysis tools to combine the existent information. These tools have not been developed sufficiently to obtain more accuracy although it seems to be very useful to high scale valuations. The interaction between the need to 'mechanize' the valuation process and the advances in statistical methods from the valuation researchers have created a knowledge body spread among the countries and systems and a broad experience which have had only a few possibilities to be evaluated jointly.

The book evaluated here, 'Mass Appraisal Methods', summarize, collect case studies and compare most of the representative works falling within these methods, assessing the differences among them. This is **the second main contribution** of this Kauko and D'Amato's

work. In this sense, the book have the ability to show how the continuous search for valuation accuracy drags the appraiser to deep on the understanding of the property price formation process in housing and real estate markets.

The third contribution

The Kauko and D'Amato's book selects representative contributions of each methodology used commonly in valuation process along the world in order to compare their results and measure their pros and contras. The intention does not stop in the simple comparison, adding knowledge in the evaluation and contrasting the described methods and results in order to seek for the most efficient tools to standardize and able to be converted in the general mass appraisal method.

Basically, the book introduces the advances in econometrics models used to construct and improve the housing price and other real estate assets indices. The successive chapters outline how those tools are applicable for valuation purposes and could be prepared to be included in automatic systems of valuation, properly standardized. For this purpose, the book describes carefully different estimation processes and enumerates the limitations and advantages of them.

The book seeks to deal with three objectives. *First aim is understand the problem of advancing mass appraisal methods and expertise from the points of view of the Academia and practitioners. The second is to evaluate a set of methods based on a set of specific criteria: technical/practical and institutional. The third is to establish an international platform for broader networks in mass appraisal* (pp. 308).

The book as such classifies the covered valuation techniques among three groups. Firstly, the methods already used to mass and automated valuation (part I), advanced methods to estimate value based on regression techniques (part II) and alternative or emergent methods

used due to different reasons like limitation on data or the attempt to reach the maximum objectivity on valuation using mathematical tools (part III).

The authors also group the contributions under two umbrellas. First one includes those studies which focus on orthodox statistical models used systematically in mass appraisal and formally acknowledged in real estate. The second one include those tools used only occasionally and more seen as emergent methods in valuation (heterodox) based in the use of strictly mathematics tools, to which Kauko and D'Amato named heretic. The difference between orthodox and heretic are the statistic contrast introduced in the valuation process. In the case of the former, due to orthodox are based on the probability theory, they do not need to do any contrast for results, meanwhile the latter, heretic, follow the mathematical principles which usually contrast the results through a double application to any sub-sample of the data. The discussion about the classification of tools have, then, a deep technical and methodological base which bring the contents forward a simple description of any valuation method.

The orthodox approaches are the most common among the cases presented in the book. The Thomson method (chapter 2) describes the experience in valuation based on a complex structure of stratified data used to estimate successive values (until 7). Borst and McCluskey contribution (chapter 3) compares the comparison method of valuation with other selected techniques where the spatial dimension is included as modified comparable sales method or geographically weighted regression models. Op'tVelt, Bijlsma and Van de Hoef paper (chapter 4) shows an example of an automated valuation tool with a web bases available for appraisers and based in a hedonic price model (named MarktPositie). Hedonic models are also the general framework for the papers written by Des Rossiers and Thériault (chapter

6), Renigier (chapter 7) and Francke (chapter 8) although they are considered as advanced methods with more complexity. Des Rossiers et al use a rich focus on hedonic regression methods combined with spatial extensions through which the impact of externalities are measured into market values as well as the impact of the distance to a significant places. Renigier (chapter 9) apply residual analysis methodology (based in stochastic framework) to estimate changes on housing values on time and space, showing highly explanatory power of those residual concentrations to certain phenomena. Francke (chapter 10) uses a Hierarchical Trend Model, a type of time-series model to estimate property values for tax purposes and also to determine constant quality local price indices.

The heretic classification includes more intense mathematical methods which have been used in other science branches and are starting to be introduced in appraisal methods. These methods require strong computational needs and use to include statistical contrast as a measure of robustness. Among them, the Fuzzy logic is an increasing used tool due to its flexibility to approach uncertainty, allowing the inclusion of human behaviour into the estimated values. D'Amato and Siniak (chapter 5) use this approach in a framework with lack of statistical data availability, intensifying the subjective perception on the valuation. Methods combining fuzzy systems with other analytical tools are recognized as emerging methods in appraisal.

Models based on artificial intelligence, as the neural networks, combined with fuzzy systems are approached by Gonzalez (chapter 9) who compares distinct methods and contrast the efficiency of genetic algorithms to determine fuzzy rules based on location. Fuzzy rules are used to complement the hedonic regression model and value properties by submarkets. Kauko (chapter 10) discusses about how to introduce in valuation process the hu-

man patterns and judgements. He defines two techniques: the SOM, Self Organizing map, a neural network's based method to deal with complex database, and the AHP, Analytic Hierarchy Process, which includes a decision taken rule aware to quantify a large amount of properties attributes. Both are complementary to the more orthodox methods. Last paper from D'Amato (chapter 11) applies a very qualitative method questioning the mathematical results of some valuation processes and defending how the consideration of other reasons out of the sample ought to be introduced in the valuation process.

The fourth contribution

The authors move forward from the contribution with a step beyond which is not common to find in books collecting case studies. They deal with a joint evaluation of the main models explained by each author both with technical comparison and testing the accuracy of valuation. The interest moving this initiative, other than the attractiveness of combine two or more techniques to value, is, on the one hand, to check which method could be the more efficient from all proposed to develop a valuation and, on the other hand, to test whether the method to be selected could be influenced by the structure and/or the availability of information. This analysis, carry out in Part IV, constitutes by itself an empirical contribution to valuation knowledge, transforming the shape of the book towards a new dimension more 'research intensive' and going depth into aspects related with the comprehension about the prices' formation process within the property market.

To manage this last exercise, the book coordinators ask to authors to run their methodology using the data information belonging to the other's. Doing that, the scope of the relationship between estimation technique and data quality is evaluated. Results also give the opportunity to test which method have more accurate and statistically robust valuation.

Description of the better results are contained in pages 313 to 315 where it is set that the geostatistical or multifunctional models outperform to lineal modelling giving better results than the simple hedonic models. This result is obtained due to the spatial effects could capture the impacts of externalities affecting housing prices. Kauko and D'Amato discuss about the relevance to classify the property markets and to consider the institutional framework before to run any valuation. Most aspects of the process need to be defined according to the principles of the market efficiency which implies that the selection of the valuation tool is not a simply technical or statistic decision due to any final value is correlated with the market characteristics where the tool is applied.

Market situation, individual action and externalities caused by technological or political changes, determine the sign and magnitude of the price correction (pp. 316), which means that database have to include these type of information associated to each property to allow valuation techniques to produce more accurate and sustainable estimations. Results obtained by Kauko and D'Amato in their last comparison exercise show that not always better valuation is obtained without taking into account elements of the consumer behaviour. The introduction of such type of information needs a new tools with the ability to include taking-decisions' processes as additional variables inside the models. There is also the need to count with a broad comprehension of the local circumstance from the analyst who make the valuation.

IN CONCLUSION

The book *Mass Appraisal Methods: An international perspective for property valuers* approaches case studies covering different tools and methods of systematic property valuation in different countries in the world, with

the aim to describe the processes of valuation with complex methodologies and their limitations, and test how efficient are each of them. It also deal with additional efforts in the aim to find answers related to valuation accuracy, comparing methods, combining databases with the statistical tools and obtaining signals to distinguish the efficient property valuations. Some conclusions have great interest, as the valuation depends of the quantity and quality of information together with the availability of statistical techniques. Valuation accuracy also depends of both the institutional characteristics and the existence of changes in the market. Thirdly, those mixed valuation techniques are better adapted to the institutional reality with spatial dimensions to produce accurate values according to the reality but always need to be in the hand of appraisers who know the market and its dynamics deeply.

This book open horizon to valuation industry, as well as it serves to analysts and academics specialized on property valuation and on housing price index construction, due to it covers some relevant aspects to help to understand how the residential price formation process is.

The book goes beyond the purposes explained by the authors or those expectations created in the readers. It does not only talk about the advanced valuation techniques and their implementation, but also it offers some keys as a 'bouquet' of tools to improve the techniques, avoid problems or recognize the limitations on the calculation of the value. It is of the great interests for researchers and also for housing market analyst as a whole.

I am happy to have had the opportunity to comment this book especially because the origin of it goes back to the European Real Estate Society (ERES) annual meeting I organized in Alicante during the summer of 2001. In that conference most aspects of the international valuations (and other real estate issues) were covered and the sessions gave the opportunity

to authors to meet first time, as Kauko and D'Amato point out in the preface, promoting advances in knowledge like those contains into this book. I fully recommend to read the book and to have it as a reference work. I am sure that based on it, next considerable new advances in valuation will take place.

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