MDPI

Editorial

Real Estate Economics, Management and Investments: New Perspectives and Frontiers

Vincenzo Del Giudice and Pierfrancesco De Paola * (iD)

Department of Industrial Engineering, University of Naples "Federico II", 80125 Naples, Italy;
vincenzo.delgiudice@unina.it
* Correspondence: pierfrancesco.depaola@unina.it; Tel.: +39-320-66-11-888

Abstract: New perspectives and frontiers were highlighted in a Special Issue on "Real Estate Economics, Finance and Investments". The twenty-eight papers that were selected and published emanated from scholars from universities all over the world with the aim to represent more recent advances in building management, mass appraisal methods, real estate risk management, economic evaluation of real estate investment projects, real estate market, property, social housing, real estate economics, real estate finance, building transformation and economic effects on environment. These papers helped to determine a unique and valuable opportunity to experiment with multiple approaches to these ever more crucial topics. This note proposes a brief review of the twenty-eight papers, concluding with some reflections about policy, practice and research on real estate issues.

Keywords: real estate economics; real estate management; real estate investments

1. Introduction

The current difficult situation of production and consumption activities has determined a weakness in the real estate economy. The main problems are the subordination of public decision-making, which is subjected to pressure from big companies, inefficient appraisal procedures, excessive use of financial leverage in investment projects, the atypical nature of markets, income positions in urban transformations, and the financialization of real estate markets with widespread negative effects.

A delicate role in these complex problems is assigned to real estate appraisal activities, which are required to make value judgments on real estate goods and investment projects, for which prices are often formed in atypical real estate markets.

Recently, theoretical and empirical research on real estate has seen a great expansion, especially using the paradigms and methodologies of finance and economics.

The Special Issue on "Real Estate Economics, Management and Investments" is dedicated to developing and disseminating knowledge related to the most recent real estate evaluation methodologies applied in the fields of architecture and civil, building, and environmental and territorial engineering. The selected papers include studies on building management, risk management and real estate appraisal, mass appraisal methods applied to real estate properties, the application of economics and financial techniques to real estate markets, the economic valuation of real estate investment projects, and the economic effects of building transformations on the environment.

The papers are reviewed more detail in the section below. A collective conclusion is drawn in the final section, with some wide-reaching recommendations for policy, practice and research on real estate issues.

2. Perspectives and Frontiers on Real Estate Economics, Management and Investments

In "*Rough Set Theory for Real Estate Appraisals: An Application to Directional District of Naples*", Del Giudice, De Paola and Cantisani, propose an application of Rough Set Theory (RST) to the real estate field, in order to highlight its operational potentialities for mass appraisal purposes. RST allows one to solve the appraisal of real estate units regardless of the deterministic relationship between characteristics that contribute to the formation of the property market price and the same real estate prices. RST was applied to a real estate sample and was also integrated with a functional extension so-called "Valued Tolerance Relation" in order to improve its flexibility [1].

In a further paper, the same authors established a basic framework of Fuzzy Logic for real estate investments, showing a correct correlation between theory and practice; the results obtained with Fuzzy Logic—applied to the purchase of an office building—have also been compared with those arising from a deterministic approach through the use of crisp numbers. The work demonstrates that, with the application of Fuzzy Logic, it is possible to improve investment decisions in terms of quality, reducing the risk arising from the uncertainties of inputs [2].

Again, Del Giudice et al. used Genetic Algorithms (GA) for the interpretation of the existing relationship between real estate rental prices and geographical location of housing units in a central urban area of Naples. The use of GA for real estate appraisal purposes is a new frontier in the real estate field [3].

In "*Buildings Energy Performance in a Market Comparison Approach*", Salvo et al. addressed the issue of the energy performance of buildings, contextualizing it in a methodological proposal for appraising the contribution that it provides to the formation of real estate prices. The energy performance hedonic price and the CO_2 emission price were appraised in the Market Comparison Approach. For its simplicity of application, the proposed methodological approach is well suited to being used by valuers, considering that the energy certification characteristic of buildings is not insignificant [4].

Ciuna, Milazzo and Salvo propose a new model for mass appraisal purposes that considers micro-level characteristics of the properties and macro-level parameters of the real estate market segments. The appraisal model defines the prediction function with both the statistical models and estimation procedures. Among its advantages, the model is also able to operate with reduced information or data, considering the practical circumstances, the boundary conditions, the application precautions and the significance of the results [5].

An interesting case study is presented by Guarini et al., addressing a Multi-Criteria analysis in compound decision processes, and showing that a greater attention to the definition of the features that characterize the quality of the project in the decision-making steps leading to the identification of the best solution would bring technical and cultural benefits, capable of guaranteeing more solid choices also in the recovery process of degraded urban areas in the presence of high historical-artistic value buildings. In this sense, the matter described in this text is also useful to develop an "improvement" approach in the editing of project proposals [6].

A model to assess the feasibility of public–private partnership for social housing is proposed by Guarini and Battisti, considering the intervention possibilities that arise from the regulations in force and from the requirements in force in the intervention area. The evaluation techniques considered in the case study examined are the Break-Even Analysis and the Contribution Margin Analysis, which is useful in planning interventions including Social Housing initiatives in the context of real estate development or retraining initiatives in Public–Private Partnership (in negotiation processes or in project financing) [7].

In "*Measuring and Interpreting Urban Externalities in Real-Estate Data: A Spatio-Temporal Difference-in-Differences (STDID) Estimator*", Dubé et al. propose a spatio-temporal difference-in-differences estimator to measure the effect of urban externalities, such as transport infrastructures, as revealed through real-estate prices. Based on an empirical application for a new development of commuter trains in the Montreal suburbs, this paper showed how such propositions can help to better understand and evaluate changes in mass transit systems [8].

A Choice Experiment following a Random Parameter Logit model was employed by Marmolejo-Duarte and Bravi for the city of Barcelona. Their results suggest that the Energy Label does matter in the real estate market in relation to other residential attributes. Besides, as energy policies are linked to savings or public incentives, the study highlighted that they should take into account not only the characteristics of the current housing stock, but also the housing market structure. For these reasons, environmental policies must be integrated in the framework of housing policies [9].

In a further paper, Salvo et al. deal the economic evaluation of ground mounted photovoltaic systems using the Discounted Cash Flow Analysis, quantifying the costs related to installation and maintenance and the economic benefits related to the energy saving. An innovative aspect of this study is the procedure to determine the discount rate through the combination of a conventional financial method (Build-Up approach) and the analytical method which makes recourse to the use of the ascending and descending influences that act, each with positive or negative sign, on the specific risk factors related to the photovoltaic investment [10].

Galle, De Temmerman and De Meyer, in their study "*Integrating Scenarios into Life Cycle Assessment: Understanding the Value and Financial Feasibility of a Demountable Building*", propose an innovative approach to integrate scenario planning and life cycle assessment [11].

A multidisciplinary approach for supporting decision making in design activities (new projects or retrofitting of existing buildings), assuming the principles of Life Cycle Thinking and Circular Economy focus posed at the end-of-life stage, is adopted in the paper of Fregonara et al. More precisely, the study proposes a conjoint "economic-environmental indicator" in order to select, between two different technologies, the most viable solution for a multifunctional building glass façade project in Northern Italy. The study demonstrates that the initial investment decisions depending on the design solutions (from the early stages) related to the whole building life cycle considering conjointly the construction-management phases and the end-of-life stage [12].

An innovative research is presented by Tajani et al., concerning the socio-economic determinants of housing market values and highlighting their respective contributions to the formation of the property prices (verifying, in particular, the property tax liability). The functional correlations of housing prices with the main socio-economic variables considered have been explained through an econometric analysis implemented with an innovative methodology that uses multi-objective genetic algorithms [13].

Starting from some reflections on consequences of urban sprawl and about possible kinds of cities (sustainable city, smart city, and compact city), Saaty and De Paola analyze the criteria for the planning and design of the alternative city models, subsequently used for the prioritization of some European cities [14].

With a mass appraisal approach, Napoli et al. propose a methodology for the analysis of the capitalization rate for urban real estate asset. With reference to the case study, the cap rates of 500 properties for sale have been calculated following two approaches: the statistical one, via cluster analysis; and the territorial one by neighborhood. The two partitions of the sample surveyed—by cluster and by neighborhood—highlight the relationship between this gap and the characteristics, and show that in the territorial approach the characteristics are able to embody the circumstances driving the agents to practice real estate hoarding, whereas in the cluster segmentation this relationship is weak, suggesting the inclusion within the set of characteristics ones explicitly indicating the liquidity of real estate assets, as they are relevant to the urban fate [15].

Based on ten case studies conducted in Europe, Shapira and Ben-David investigate the characteristics of equipment planning for multi-crane building construction sites. The study found that multi-crane sites are characterized by unique features; equipment planning for such sites differs significantly from that conducted for regular sites; the site-surroundings interface plays an important role in equipment and logistics planning for such sites; and the awareness of reputation plays a role in crane selection. The study's main contribution is in reducing the knowledge gap that exists with regard

to the unique determinants of equipment planning for multi-crane projects and to its importance to the success of such projects [16].

In "*Research on Investment Risk Management of Chinese Prefabricated Construction Projects Based on a System Dynamics Model*", Li et al. adopted system dynamics and builds a risk identification feedback chart and risk flow chart, to comprehensively identify investment risks that projects in China may face and to process quantitative estimation of investment risk factors [17].

Della Spina et al. focus their paper on an integrated multi-methodological evaluation process; it is aimed at supporting public administrators in developing alternative strategies for intervention in urban planning and urban regeneration processes that focus on abandoned urban areas located in a central position. The methodological approach was applied to a pilot case study that concerned the choice of priority intervention between two abandoned and blighted areas located in the central area of the city of Reggio Calabria [18].

Antoniucci and Marella ran multivariate regressions in several steps on an original dataset of housing prices and socio-economic factors concerning 112 Italian provincial capitals to elucidate whether immigration is correlated with the housing market divide. This study confirmed that larger immigrant populations coincide with steeper housing price gradients on a national scale. It also demonstrated that the relevance of this phenomenon varies for different urban forms, confirming the relevance of elucidating urban density in relation to housing price dynamics between the cities of northern and southern Italy [19].

Barreca, Curto and Rolando investigate the link between social and territorial vulnerability and the real estate market, by means of an exploratory analysis related to the possibility that spatial analyses can help to identify spatial latent components and variables in the process of price determination. A three phase approach is proposed, using the geographical segmentation of Turin and its related submarkets as a case study [20].

Napoli proposes a methodology to assess threshold-income as an index for measuring housing affordability by applying a combination of the ratio income and residual income approaches. The methodology is applied to two particular areas of Sicily in Italy, with results diversified for income level, as well as for town and urban zones. This allows the authors to compare the housing affordability problems between towns belonging to the same metropolitan area [21].

A contribution focused on the Strategic Environmental Assessment (SEA) is proposed by Torrieri and Batà. More specifically, the paper provides an evaluation method based on the integration of Geographic Information System (GIS) and Multi-criteria Analysis (Integrated Spatial Multi-criteria Decision Support System, ISMDSS) to support the preparation of environmental assessment reports and the construction of scenarios for the adoption of urban plans, as an innovative tool that integrates objectives and multidimensional (economic, environmental, and social) components, as well as different approaches and models for the construction of a long-term shared vision [22].

With the aim to estimate the value generated by bottom-up enhancement processes and to evaluate their economic feasibility from the perspective of the administration owner of the asset, Mangialardo and Micelli adopt an approach that combines Discounted Cash Flow Analysis with dynamic simulation models and Monte Carlo methodology [23].

For a district in Turin (Italy), Abastante, Lami and Lombardi present a new method to support urban energy decisions in real-time processes, which was developed in the context of a European project (DIMMER—District Information Modeling and Management for Energy Reduction). The proposed method is composed of three parts: a new web-based spatial decision support system (Dashboard); an ad hoc energy-attribute analysis tool to be integrated into Dashboard; and a multi-criteria decision analysis [24].

Cohen and Fedele examine land ratios in New London, New Haven, and Hartford Connecticut and sub-groupings within these cities for an interval of four years. Overall, the work highlights that the land ratios coefficients of dispersion, a measure of horizontal equity, are too large for an equitable split tax. Also, the authors look at land assessment equity among sub-groupings of properties near parks,

highway exits, airports, Yale University (for New Haven), residential versus commercial properties, land with old versus new properties, and large versus small parcels and 'expensive' versus 'less expensive' properties (by examining price per square foot) [25].

Rosato et al. present a model for the valuation of benefits generated by environmental and urban improvement investments adopting a mixed hedonic-multi-attribute procedure for modeling a value function of urban real estate values. The peculiarity of the proposed model is that the independent variables are aggregated indicators, which synthesize more detailed characteristics. The valuation model was integrated into a GIS for mapping the housing value, and its variation induced by urban investment. The model was applied to the real estate market of Venice to test the effects of the MOSE project (Electromechanical Experimental Module) for the protection of Venice from high tides [26].

Ezebilo presents a study of house rent prices in Port Moresby (Papua New Guinea), factors influencing them, and affordability of the prices. Data are analyzed using the ordinary least squares regression model [27].

Finally, Guarini, Battisti and Chiovitti present a paper with the aim to propose, by formulating a taxonomy of the endogenous and exogenous variables of tools of multi-criteria analysis, a methodology capable of selecting the tool best suited to the queries of evaluation which arise regarding the chief categories of decision-making problems, and particularly in the settlement sector [28].

3. Concluding Remarks

In recent years, problems concerning real estate sector have grown very quickly. Therefore, in-depth knowledge of this sector is highly relevant for real estate predictions, investments, and taxation issues.

Increasingly important is an expansion of theoretical and empirical research on real estate sector using the paradigms and methodologies of finance and economics.

The real estate sector requests accurate tools and approaches useful for stakeholders that pursue several objectives such as keeping real estate values under control or updating their profitability returns [29,30]. For these reasons, the interpretation of real estate phenomena is a critical issue together with its evolution and dynamism, and at the same time appropriate techniques are required to be able to analyze adequately the characteristics of the real estate sector.

Valuable examples of these new tools and approaches are provided by the papers included in the Special Issue, the main aim of which is to investigate and expand the frontiers of knowledge that cover all areas of real estate economics, management and investments.

Author Contributions: This note is to assign in equal parts to the two Guest Editors of the Special Issue.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Del Giudice, V.; De Paola, P.; Cantisani, G.B. Rough Set Theory for Real Estate Appraisals: An Application to Directional District of Naples. *Buildings* **2017**, *7*, 12. [CrossRef]
2. Del Giudice, V.; De Paola, P.; Cantisani, G.B. Valuation of Real Estate Investments through Fuzzy Logic. *Buildings* **2017**, *7*, 26. [CrossRef]
3. Del Giudice, V.; De Paola, P.; Forte, F. Using Genetic Algorithms for Real Estate Appraisals. *Buildings* **2017**, *7*, 31. [CrossRef]
4. De Ruggiero, M.; Forestiero, G.; Manganelli, B.; Salvo, F. Buildings Energy Performance in a Market Comparison Approach. *Buildings* **2017**, *7*, 16. [CrossRef]
5. Ciuna, M.; Milazzo, L.; Salvo, F. A Mass Appraisal Model Based on Market Segment Parameters. *Buildings* **2017**, *7*, 34. [CrossRef]

6.　Guarini, M.R.; D'Addabbo, N.; Morano, P.; Tajani, F. Multi-Criteria Analysis in Compound Decision Processes: The AHP and the Architectural Competition for the Chamber of Deputies in Rome (Italy). *Buildings* **2017**, *7*, 38. [CrossRef]

7.　Guarini, M.R.; Battisti, F. A Model to Assess the Feasibility of Public–Private Partnership for Social Housing. *Buildings* **2017**, *7*, 44. [CrossRef]

8.　Dubé, J.; Legros, D.; Thériault, M.; Des Rosiers, F. Measuring and Interpreting Urban Externalities in Real-Estate Data: A Spatio-Temporal Difference-in-Differences (STDID) Estimator. *Buildings* **2017**, *7*, 51. [CrossRef]

9.　Marmolejo-Duarte, C.; Bravi, M. Does the Energy Label (EL) Matter in the Residential Market? A Stated Preference Analysis in Barcelona. *Buildings* **2017**, *7*, 53. [CrossRef]

10.　Salvo, F.; Ciuna, M.; De Ruggiero, M.; Marchianò, S. Economic Valuation of Ground Mounted Photovoltaic Systems. *Buildings* **2017**, *7*, 54. [CrossRef]

11.　Galle, W.; De Temmerman, N.; De Meyer, R. Integrating Scenarios into Life Cycle Assessment: Understanding the Value and Financial Feasibility of a Demountable Building. *Buildings* **2017**, *7*, 64. [CrossRef]

12.　Fregonara, E.; Giordano, R.; Ferrando, D.G.; Pattono, S. Economic-Environmental Indicators to Support Investment Decisions: A Focus on the Buildings' End-of-Life Stage. *Buildings* **2017**, *7*, 65. [CrossRef]

13.　Tajani, F.; Morano, P.; Torre, C.M.; Di Liddo, F. An Analysis of the Influence of Property Tax on Housing Prices in the Apulia Region (Italy). *Buildings* **2017**, *7*, 67. [CrossRef]

14.　Saaty, T.L.; De Paola, P. Rethinking Design and Urban Planning for the Cities of the Future. *Buildings* **2017**, *7*, 76. [CrossRef]

15.　Napoli, G.; Giuffrida, S.; Trovato, M.R.; Valenti, A. Cap Rate as the Interpretative Variable of the Urban Real Estate Capital Asset: A Comparison of Different Sub-Market Definitions in Palermo, Italy. *Buildings* **2017**, *7*, 80. [CrossRef]

16.　Shapira, A.; Ben-David, A. Characteristics of Equipment Planning for Multi-Crane Building Construction Sites. *Buildings* **2017**, *7*, 81. [CrossRef]

17.　Li, M.; Li, G.; Huang, Y.; Deng, L. Research on Investment Risk Management of Chinese Prefabricated Construction Projects Based on a System Dynamics Model. *Buildings* **2017**, *7*, 83. [CrossRef]

18.　Della Spina, L.; Lorè, I.; Scrivo, R.; Viglianisi, A. An Integrated Assessment Approach as a Decision Support System for Urban Planning and Urban Regeneration Policies. *Buildings* **2017**, *7*, 85. [CrossRef]

19.　Antoniucci, V.; Marella, G. Immigrants and the City: The Relevance of Immigration on Housing Price Gradient. *Buildings* **2017**, *7*, 91. [CrossRef]

20.　Barreca, A.; Curto, R.; Rolando, D. Assessing Social and Territorial Vulnerability on Real Estate Submarkets. *Buildings* **2017**, *7*, 94. [CrossRef]

21.　Napoli, G. Housing Affordability in Metropolitan Areas. The Application of a Combination of the Ratio Income and Residual Income Approaches to Two Case Studies in Sicily, Italy. *Buildings* **2017**, *7*, 95. [CrossRef]

22.　Mangialardo, A.; Micelli, E. Simulation Models to Evaluate the Value Creation of the Grass-Roots Participation in the Enhancement of Public Real-Estate Assets with Evidence from Italy. *Buildings* **2017**, *7*, 100. [CrossRef]

23.　Torrieri, F.; Batà, A. Spatial Multi-Criteria Decision Support System and Strategic Environmental Assessment: A Case Study. *Buildings* **2017**, *7*, 96. [CrossRef]

24.　Abastante, F.; Lami, I.M.; Lombardi, P. An Integrated Participative Spatial Decision Support System for Smart Energy Urban Scenarios: A Financial and Economic Approach. *Buildings* **2017**, *7*, 103. [CrossRef]

25.　Cohen, J.P.; Fedele, M.J. Where in Connecticut Is the Best Location for a Split Tax? An Analysis of Land Assessment Equity in Several Cities. *Buildings* **2017**, *7*, 108. [CrossRef]

26.　Rosato, P.; Breil, M.; Giupponi, C.; Berto, R. Assessing the Impact of Urban Improvement on Housing Values: A Hedonic Pricing and Multi-Attribute Analysis Model for the Historic Centre of Venice. *Buildings* **2017**, *7*, 112. [CrossRef]

27.　Ezebilo, E.E. Evaluation of House Rent Prices and Their Affordability in Port Moresby, Papua New Guinea. *Buildings* **2017**, *7*, 114. [CrossRef]

28.　Guarini, M.R.; Battisti, F.; Chiovitti, A. Public Initiatives of Settlement Transformation: A Theoretical-Methodological Approach to Selecting Tools of Multi-Criteria Decision Analysis. *Buildings* **2018**, *8*, 1. [CrossRef]

29. Del Giudice, V.; De Paola, P.; Forte, F.; Manganelli, B. Real Estate Appraisals with Bayesian Approach and Markov Chain Hybrid Monte Carlo Method: An Application to a Central Urban Area of Naples. *Sustainability* **2017**, *9*, 2138. [CrossRef]
30. Del Giudice, V.; De Paola, P.; Manganelli, B.; Forte, F. The Monetary Valuation of Environmental Externalities through the Analysis of Real Estate Prices. *Sustainability* **2017**, *9*, 229. [CrossRef]