

From Real Estate Appraisal to Economic and Financial Evaluation of Projects: the experience of Architecture Faculty within University IUAV of Venice

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1 Evolution of the Teaching within study courses in Architecture

Most of Italian Universities are public-sector bodies¹, recently entitled to become private foundations². They are characterized by regulatory autonomy³, teaching autonomy⁴ and financial one⁵. The principle of autonomy in teaching means that Universities may decide the distinguishing features and contents of study courses offered to students. Nevertheless, formative paths designed by each University must meet certain criteria, expressed by ministerial decrees, in terms of objectives to be pursued providing a set of compulsory training activities.

The Teaching of Real Estate Appraisal has been confirmed among fundamental ones as part of all degree courses in Architecture [7]. Until the early twenty-first century it was a single course, held during the fifth and last year. Due to several attempts to reform the Italian academic system, at the University IUAV of Venice as well as in other Universities, the

teaching is currently held in two parts, the former during the last of three year within the first level study course⁶, and the latter during the two years of the second level study course⁷. The above mentioned organizational change implies a remarkable innovation. The learning topics, previously focused only on real estate appraisals commonly used in the Italian context, have gradually expanded to include estimation procedures internationally accepted. As far as the estimation procedures are concerned, deserves to mention an increased interest in methods based on multi-parametric estimates, as Market Comparison Approach and Hedonic Price Model. Although their use is still limited within national appraisal practice, these processes are gradually acquiring a more significant role [8]. On closer inspection, this phenomenon has affected even - and earlier - research, about since the mid-nineties. The reason lies in dealing with peculiar estimation needs, such as the impact of environmental assets or cultural heritage on property values [12, 14], or else the market premium for buildings energy efficiency [10]. The following table attempts to summarize the key issues currently addressed in our teaching of Real Estate Appraisal, in terms of approaches, values and estimation procedures (Table 1).

Moreover, the learning topics have expanded toward issues pertaining to the field of projects'

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¹Law 168/1989.

²Law 133/2008.

³Law 168/1989.

⁴Law 341/1990.

⁵Law 537/1993

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<i>Approach</i>	<i>Value</i>	<i>Procedure</i>
Market	Market	Statistical estimate * Market comparison approach Hedonic price model Depreciated replacement cost
	Synergistic	Complementary value estimate
Income	Market	Yield capitalization
Cost	Cost	Statistical estimate * Bill of quantities

* Based on distribution analysis of known prices

Table 1: Teaching of Real Estate Appraisal: summary of key issues

economic and financial evaluation. This trend, which began to emerge partly fifteen years ago, is now common to most Italian study courses in Architecture, as witnessed by the latest academic textbooks on the subject [6]. Current contents of our project evaluation lectures lie within the framework of "Feasibility Study". It is a document specifically required by laws on public contracts, especially with regard to the design and implementation of public-private partnership interventions⁸. Feasibility Studies can be described as a kind of technical and economical due diligence - carried out on a project or a master plan - in which the technical aspects concern town planning rules, building features and environmental suitability, while economic aspects relate to financial viability and sustainability from the community point of view.

2 Aims and tools of the lectures in the field of projects' economic evaluation

Aim of the lectures on economic evaluation of projects is to highlight, to our students, that financial capital isn't a passive participant in processes leading to construction of ur-

⁸Legislative Decree 163/2006; Presidential Decree 207/2010.

ban landscapes, but an active player with its own behaviors and objectives [15]. In other words, our purpose is to familiarize students with essential methodological tools useful to deal problems linked to projects performance, both in term of feasibility - with respect to spending power and available resources - and convenience - in comparison to alternative investments.

The specific teaching themes follow the sequence of evaluation techniques adopted as reference for the feasibility studies. This means firstly analyze, as preliminary, the estimation procedure based on Investment Value. Indeed, real estate appraisal requires to address the fundamentals of financial mathematics - anticipation and deferral of capital over time - that are in turn propaedeutic to evaluation methods based on discounting. Subsequently, the teaching program turns to evaluation techniques as the life cycle cost assessment, the cost-benefit analysis and the discounted cash flow analysis, which constitute references recommended for feasibility studies [2]. As far as our teaching of Projects Economic Evaluation is concerned, the following table summarizes the key issues, with regard to approaches, values and procedures (Table 2).

After being disregarded for several years, the life cycle cost assessment is currently experiencing a renewed interest, in order to judge the monetary worth of alternative interventions concerning buildings energy efficiency [9].

<i>Approach</i>	<i>Value</i>	<i>Procedure</i>
Transformation	Transformation	Highest and best use estimate
Life cycle	Life cycle cost	Life cycle cost assessment
Discounting	Net present value	Cost-benefit analysis Cost-income analysis Discounted cash flow analysis Financial plan

Table 2: Teaching of Projects economic evaluation: summary of key issues

The development of cost-income analysis in the Italian context can be dated back to some research of the mid-nineties, which were meant to introduce evaluation models already internationally recognized [11]. The interest in discounted cash flow analysis - as in financial plan in general - remains still significant, due to the widespread adoption of public-private partnership forms for carrying out urban renewal interventions [4].

In order to examine in depth the above mentioned techniques - and trying to make students much more involved - during the last few years, the discussion of a significant case study follows most of lectures. Case studies arise from recent research. A relevant one concerns the design of a master plan, a financial plan and a cost-benefit analysis within a Feasibility Study. The intervention area is a highly degraded portion inside the historical center of a medium sized city in Southern Italy. The master plan is expected to be implemented through a special purpose vehicle, established referring to rules governing the so-called institutionalized public-private partnership, namely a mixed equity company. So the financial plan have to examine the convenience from the point of view of all the private entities to be involved, both investors and lenders, and then the role of public bodies, regarding whether to grant or not public funding; while cost-benefit analysis should address the point of view of the community.

3 Opportunities and further developments

For years to come, we expect a further development of at least two trends. The first trend concerns the opportunity of achieving a tighter integration with other subjects, while the second one relate to a more extensive use of case studies given the increasing availability of information.

Both in research and in teaching, the links developed so far relate to Town Planning and Administrative Law. In this field, the main topic lies in the contribution of Evaluation to de-

fine urban renewal projects to be implemented by partnerships between public bodies and private investors [13]. During the next years, we are going to experience growing relationships with the discipline of Environmental Technical Physics, particularly with regard to the role of Evaluation in identifying retrofit scenarios of buildings, characterized by the highest energy efficiency and cost-effectiveness [1, 5]. This implies the opportunity to provide support to buildings' energy efficiency issue by means of traditional techniques of economic and financial assessment, but also the need to deepen the application of innovative evaluation techniques, such as those founded on cost-optimal methodology [3].

Currently, we're starting to develop a number of joint research with colleagues operating in the fields of building physics, energy engineering, and performance of construction components. All the research entail case study analysis, whose purpose is to implement appraisal procedures and evaluation techniques to interventions of energy retrofit, concerning both private residential buildings and public buildings intended for administrative offices and schools. The data collected by case analysis, as well as the empirical findings, will form the knowledge base useful to broaden the experiences to be presented during lectures.

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