Investing in Sports Facilities: The Italian Situation Toward an Olympic Perspective

Confidence Intervals for the Financial Analysis of Pools

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Abstract. Given the current economic crisis, there is a lack of investments also for public sport facilities, which are vital to the urban quality of the city and the quality of life of its citizens. The situation is serious in Italy, especially after the failure of public policies for funding of major events (World Cup, 1990; Winter Olympics, 2006). Some recent laws (147/2013) have revived the sector with particular attention to the medium size facilities but have neglected the small structures that represent the basic activities. In case of the latter, a convergence of objectives is needed between public administrations and private investors. Therefore, public authorities should think in terms of sustainability and investment performance, a perspective that involves the private sector. The research extends the knowledge framework for the financial outline of investments in the sector of swimming pools, starting with a technical and financial analysis of 18 case studies and building confidence intervals for the relevant variables.

Keywords: Sports facilities · Project financing · Financial evaluation

1 Introduction

The effects of the contingent economic crisis have led to a stagnation in all sectors of public and private investment associated with the construction sector. In particular network and one-off structures were affected by the macroeconomic framework. Among the latter, there are a few new achievements especially in sports facilities. This is due to the compression of per capita income that determines, as a first effect, the reduction of consumer spending for recreational activities and hobbies.

In the recent past the construction of sports facilities has been associated with the construction of residential and commercial buildings, in order to exploit possible derivable synergies [1,2,3,4]. This is the case for Italy. The law 147/2013 allows private individuals to propose the construction of sports facilities along with bars, restaurants, shopping malls, hotels, but prohibits the construction of residential spaces;

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however, the latter conjoint constructions are permitted in many European countries (see, among many, the Arsenal FC stadium in London). The Italian law pushes toward environmentally friendly solutions and above all financially and energy sustainable solutions [5].

The issues of financial sustainability of these specialized structures has an important role in the light of confidence for their concession (if publicly owned), given the need to quantify congruous royalties with the revenues that can be generated and, at the same time, the need to maintain the provided services socially accessible. In this case, the Italian law 221/12 has defined the terms of aligning national behaviour to the European reference standard for SGEI (services of general economic interest), imposing cost-Returns analysis based on the mechanisms of credit [6,7].

Evidently, in the project financing procedures, the two themes come together in a single issue, because the private lender will be the executor of the facility but also the concessionary of the same facility for a period until the return on investment.

This scenario corresponds to the present funds request. The aim is to highlight the elements of reference for the legislative discussion regarding economic evaluation of the matter, proposing the identification of the confidence intervals [8] for design parameters in the construction and management of swimming pools. In other words, the technical-Economic variables characterizing the swimming facilities in the study area are selected; a confidence interval for the average value is constructed for each of these variables (based on observations and data processing); the project performance indicator, namely the IRR (internal rate of return), has also a relative interval of confidence. This will provide a range of values attributable to technical and monetary indicators (independent variables). These values are useful in the previous phase to designing. The respect of the definition intervals for variables should ensure a project falling within the relevant range of yield (dependent variable).

The test is carried out on the base of development from scratch of three analytical designs of swimming pools under construction in the study area.

2 Sports Facilities as Economic Catalysts for the Development of the City

The sensitivity of the subject is immediately evident when observing that the last official census of sports facilities in Italy is dated 2003 [9].

More recent analysis concern only specific regions (Lombardy, Emilia Romagna, Marche, Sardinia, Piedmont and Friuli Venezia Giulia).

The data point out that the sports industry has a significant effect on GDP (1.6%) with nearly a billion equivalent value for Italian products sold abroad.

The great rise of the media has attributed to sporting events a previously unimaginable turnover capacity, therefore in many European and transoceanic countries the facilities have been adapted to the marketing needs dictated by globalization. Not all this

happened in our country. Italy is trying to take the opportunity to revitalize the sector by the candidature to the Olympics that will be held in 2024. Previous experiences (1990 World Cup, the 2006 Winter Olympics, 2009 World Championships) have proved negative if not really disastrous in terms of posthumous sustainability of investment.

Evidently, the situation at a local level is equally degraded; a survey of the website sportindustry.com in 2014 revealed facilities whose construction has remained unfinished. Their value is over 100 million Euro.

Yet concession invitations to build and operate sports facilities continue to proliferate, demonstrating that the space for profit margins in the sector exists and it is well identified by private investors. It would seem that the solution to increase the efficiency of interventions resides in the forms of credit of the projects, passing from the use of public resources, lacking in financial viability checks, to private ones governed by rigid formulas to control the probability of return.

The transfer of entrepreneurial risks to the private sector opens perspectives in a field where the managerial know-How and the cultural innovation represent elements that determine the success or the failure of the initiative. This principle applies not only to the mega-structures but also at a local level, given the easy spread of behavioural patterns and trends due to the media.

The question of the scope of the provision of social services for the practice of sport remains complex, if interpreted as a means of raising the quality of life as well as of increasing the preventive health care. In this perspective, review procedures of the financial sustainability of investments are also vital for the public sector, in order to calibrate properly the economic terms of the relationship with the private investor, negotiating suitable rates for all social groups and compensation in terms of integrative services and infrastructure works.

The financial analysis conducted in this research helps also to provide preventive tools for the control of the bidding process in case of loans for the construction and management of energy efficient municipal pools [10].

3 The Law 147/2013 for Stadiums

The last frontier in the field of legislation regarding sports facilities is the law 147 of December 27, 2013, paragraphs 303-305. A careful reading [11] shows that the few paragraphs of interest concern the medium size sports facilities, as well as the recovery of already existing dilapidated facilities. Evidently, the norm dictates a tight schedule for the necessary permits for the intervention and it structures the path of the investment according to the criteria of a typical PPP (public private partnership). However, it was raised some controversy due to the difficulty of applying this law to small facilities, those that meet the needs of grassroots sport. The norm has been highly criticised, because it refers to exclusively private interventions for basic sport structures, with all the deriving difficulties from fiscal and managerial aspects. In fact, to access on the favourable credit terms from the Institute of Sports Credit, companies have to have special regimes that hinder a real business activity (according to the

Italian laws sports clubs and associations must be no profit). Precisely in this perspective, the present study helps to shed light on the economic and financial terms involved in swimming facilities investments, highlighting the typical constraints and expectations of private investors.

4 The Outsourcing of Sport Facility Management

A question of not secondary importance regards the assignment of the management of sports facilities. The law 221 of December 17, 2012 provides that the public body give evidence of compliance with European standards for the chosen forms of entrustment, as well as it require showing the financial management model of the project presented by the concessionary. These rules constitute an important breakthrough because they force the government to ensure transparent inspections of the monetary sustainability of credit lines, allowing also, if necessary, compensation arrangements for the Public administration. Therefore, the Public administration is called upon to undertake a proper analysis of costs and returns of the initiative thus guaranteeing the avoidance of rash projects that would lead to a termination of service with impairment of social rights to the use of the facilities. Additionally, this check also allows a conscious bargaining of tariffs applied to the service.

The proposed study helps to shed light on the imposed levels of price and on the applicable ones in sports facilities that, even though funded by private individuals (and thus projected on a return on invested capital), must also ensure access to the less wealthy population groups.

5 The Construction of the Confidence Intervals

The disclosed study takes into account the analysis of 18 swimming facilities in the province of Salerno

Figure 1 shows the location of the plants from whom the information was collected.

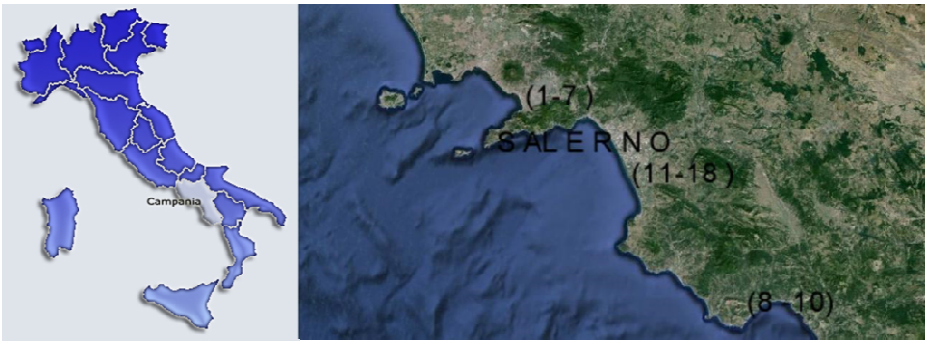

Fig. 1. The location of the swimming facilities in the territory

The main objective was to gather technical and economic information useful in the design phase, in order to select the variables that influence the financial viability of the investment, and to define eligibility intervals for the values of these variables. The interested contractors must take into account these intervals in order to achieve an acceptable return on the financial resources invested in the swimming facility sector.

Table 1 presents the significant variables and their definition intervals.

Table 1. Relevant variables and their definition intervals

Variables			**Definition intervals**	
Technical characteristics of the facility	Olympic pool	length (m)	width (m)	depth (m)
	1	25 - 28	13 - 20	1.5 - 2
	Complementary basins	10 - 16	6 - 8	0.5 - 1.5
	0 - 2			
	Energy recovery systems		Co-generation system	
			Photovoltaic system	
Delimitation of the catchment area	Population		50,000 - 250,000	
Annual per capita income			10,000 - 14,000	
Number of users			2,000 - 7,000	
Investment and management cost	Development cost (€)		1 - 4 mil.	
	Management cost (€/year)		0.2 - 0.4 mil.	
Types of provided service	Opening months		9 - 12	
	Opening hours		8 - 14	
	Swimming lessons		Free, with instructor	
	Additional services		No, bar, restaurant, solarium, sauna, gym	
Rates	With instructor (€/month)		60	
	Without instructor (€/month)		40	
Equity	Equity capital/total capital		0 - 50 %	
Value of money loan			5 - 7 %	
Discount rate of the project			5 % CE	
Pre-tax expected IRR (internal rate of return)			7 - 14 %	

5.1 Significant Variables and Confidence Intervals

For the selection of the relevant variables in the formation of the levels of return on equity, we proceeded with a monetary approach, reconstructing the usual route for the verification of financial sustainability of a project.

So the hypothesized steps can be summarized as follows:

1. recognition of the technical characteristics of the facility (size of the main swimming pool, characteristics of supplementary swimming pools, existence of energy recovery systems, etc.);
2. delimitation of the catchment area;
3. survey of demand levels;
4. investment and management cost analysis;
5. analysis of the types of the provided service (periods and hours of operation, types of provided courses, supplementary services like bar, restaurant, sauna, etc.);
6. analysis of rates of provided services;
7. financial structure of the capital;
8. investment results.

In the case studies, the variable 1 shows the prevalence of an Olympic basin, although the indications of Table 1 are oscillatory. This variability obviously depends on the historical moments of realization of the reservoirs and on different regulations. Some facilities are equipped exclusively with the main basin, while other ones have additional basins for children or for different activities such as therapeutic and rehabilitative activities. The presence (at least in the most modern facilities) of cogeneration systems and the production of energy from alternative sources (photovoltaic) is relevant. The impact on the investment costs of such systems fluctuates between 10 and 15% on average.

The variable 2 refers to the metropolitan conurbation where the facility is inserted. The urban area of Salerno (about 270,000 inhabitants), Nocera (about 280,000) and Cilento (about 50,000) have been substantially the surveyed ones.

The demand levels (variable 3) are determined by studying the actual users of the facilities but also the potential ones. In fact, one cannot exclude a portion of unmet demand due to inefficient business and management strategies employed in the surveyed facilities. The indicator is derived by the cost of travel method: the single facility is analysed as a part of the system of facilities that can compete with it; the costs that users have to incur to enjoy each considered facility is added; the spatial horizon of demand is constructed. The measured costs bring in account the cost of transport (private or public) and the cost of travel time (obtained in relation to the income level of the concerned populations).

The variable 4 is constructed from the recognition of the costs of construction and management. For the first, only the more recent systems (less than 10 years) were considered.

The variable 5 obviously depends on the specific location of the facility; in fact, it is near the sea, so it is little exploited in the summer (the opening period is limited to 9 months). The variable 5 also depends on commercial decisions, on opening hours (morning and afternoon), on swimming related services (free swimming and paid courses), on the provision of extra services like small and medium size restaurants as well as fitness and wellness.

Rates (variable 6) are identified by the case studies.

The reference financial structure (variable 7) reflects the matrix of most public facilities. The few private facilities were made with venture capital between 50 and 100%. The cost of financing varies between 6 and 7%.

The results obtained from these projects (variable 8, namely IRR) are affected by the need to bring a production process that is often not created in a perspective of private-Financial efficiency into a discount cash flow type structure. The latter perspective has slightly modern accounting and managerial practices that provide a greater transparency. The time alignment rate is 5% and is directly borrowed from the practice of the European Community in the definition of EU funding in similar works. The period of analysis is assumed 25 years.

6 Reliability Verification of the Confidence Intervals

Confidence intervals are constructed[1] at a 95% confidence level with the following formula:

$$\bar{x} - t_{n-1}\frac{s}{\sqrt{n}} \leq \mu_x \leq \bar{x} + t_{n-1}\frac{s}{\sqrt{n}}$$

with $n = 18$;

obviously $\bar{x}$ and s are computedin consideration of the average value and the standard deviation that the different variables take in the data sample.

The reliability verification of the identified intervals is conducted through the development from scratch of three case studies, each of which is implemented in one of the conurbations quoted in variable 2 paragraph 4.

Table 2 shows the design parameters for each considered facility. Based on these parameters the relative economic and financial plans were developed. In order to illustrate the conducted analysis, table 3 shows the economic and financial plan relevant to the Project 2. As you can see from the last two lines of Table 2, the analytically calculated IRR fall broadly into the related confidence interval, reaching the top of it.

[1] For those variables that allow to define them in base of the availability and accuracy of input data.

Table 2. Technical and financial parameters for the three projected facilities

Design variables	**Project 1**	**Project 2**	**Project 3**
Technical characteristics of the facility			
Olympic pool	1	1	1
length (m)	25.0	25.0	28.0
width (m)	17.0	13.0	20.0
depth (m)	1.8	2.0	1.6
Complementary basins	2	0	1
length (m)	17.0		11.0
width (m)	8.0		6.0
depth (m)	1.0		0.5
Energy recovery systems	1	1	1
Co-generation system		1	
Photovoltaic system	1		1
Delimitation of the catchment area			
Population	285,000	53,343	268,799
Annual per capita income	10,900	12,000	8,000
Number of users	7,263	1,908	1,964
Investment and management cost			
Development cost (€)	4 mil	1 mil	2.6 mil
Management cost (€/year)	262,090	213,400	266,860
Types of provided service			
Opening months	12	9	12
Opening hours	14	10	12
Swimming lessons	Free, with instructor	Free, with instructor	Free, with instructor
Additional services	bar, restaurant, solarium, sauna, gym	bar	Bar & restaurant
Rates			
With instructor (€/month)	60	50	60
Without instructor (€/month)	40	40	40
Equity			
Equity capital/total capital	40%		20%
Value of money loan	6%	7%	6%
Discount rate of the project	5 % CE	5 % CE	5 % CE
Pre-tax expected IRR (internal rate of return)	7 - 14 %	7 - 14 %	7 - 14 %
Pre-tax calculated IRR	12.93%	11.70%	14.00%

Table 3. Economical and financial plan of Project 2

Year	1	2	3	4	5	6	7	8	9…	20	21	22	25
Investment costs	560,000	500,000											
wages and salaries	0	0	69,290	69,290	69,290	69,290	69,290	69,290	69,290	69,290	69,290	69,290	69,290
miscellaneous expenditure	0	0	80,122	80,122	106,829	106,829	106,829	106,829	106,829	106,829	106,829	106,829	106,829
Taxes	0	0	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300
Fees	0	0	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000
Total Management costs	0	0	186,712	186,712	213,419	213,419	213,419	213,419	213,419	213,419	213,419	213,419	213,419
Residual value													1,060,000
Revenues	0	0	121,173	142,346	466,050	466,050	466,050	466,050	466,050	466,050	466,050	466,050	466,050
loan I	33,600	33,600	33,600	33,600	32,156	30,626	29,004	27,285	25,462				
loan II		30,000	28,711	27,345	25,897	24,362	22,734	21,010	19,181				
Tot. financial costs	33,600	63,600	62,311	60,944	58,053	54,987	51,738	48,294	44,643				
$CF_{before\text{-}Tax}$	-593,600	-563,600	-127,850	-5,311	194,578	197,643	200,892	204,336	207,987	252,631	252,631	252,631	252,631
IRES tax base				-5,311	194,578	197,643	200,892	204,336	207,987	252,631	252,631	252,631	252,631
IRES				-1,460	53,509	54,352	55,245	56,192	57,196	69,474	69,474	69,474	69,474
IRAP tax base	-627,200	-627,200	-155,516	-31,612	171,170	177,300	183,798	190,687	197,988	287,276	287,276	287,276	287,276
IRAP	-31,172	-31,172	-7,729	-1,571	8,507	8,812	9,135	9,477	9,840	14,278	14,278	14,278	14,278
$CF_{after\text{-}Tax}$	-562,428	-532,428	-120,121	-2,279	132,562	134,479	136,512	138,667	140,951	168,880	168,880	168,880	168,880

7 Conclusions

The investment industry for sports facilities is experiencing a severe crisis in Italy over the last twenty years. The problem does not regard only the facilities of national importance, but also the structures that are used for the various widespread and popular disciplines. The laws on recovery (221/12 and 147/13) pay for the current time of severe crisis for public finances, therefore the path for the development of industrial products resides in balanced Public-Private partnerships. In this context arises the present study that investigated the technical and management parameters of 18 swimming pools in the province of Salerno, deducing confidence intervals for the design and financial parameters. These intervals represent areas for the definition of indicators that can be used in a preventive and efficient way, whenever the negotiation between governments and investors is aimed at safeguarding adequate indexes of profitability and, at the same time, social issues regarding access to services.

The choice of the confidence intervals, instead of directly developing a statistical function of interpretation and possible prediction, depends on the strong inherent uncertainty in the process of developing a design proposal in project financing. This proposal has such a number of hypotheses that it makes uncertain any pressing future projection. In this context, the integration of additional case studies (8) will allow to experiment more accurate analysis tools than the actual ones [12,13], taking into account the qualitative aspects of the design.

Therefore, the strengths of model are the ease of implementation and a medium-high reliability; so, at the prior stage of planning or design, verifying the economic feasibility of investments becomes easier. On the other hand, the weaknesses are the narrow number of study cases in order to define the indicators of the model and the problems that these approaches can cause when it must decide quickly about the ranking of funds.

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