A Novel Study of Project Financing in Sport: Technical Acquisition of Infrastructure using Financial Investment Simulation

Marco Remondino
Department of Economics, University of Genova.
Email: marco.remondino@economia.unige.it

Roberto Schiesari
Department of Management, University of Torino,
Email: roberto.schiesari@unito.it

***Abstract* - Project Financing, PF, is an instrument which allows public bodies to relieve their budgets of substantial maintenance costs and private individuals to manage the plant that has been granted under the concession in an independent economic and financial way. In addition to these purely monetary aspects, and looking at the whole picture, granting a building or any other structure of public interest to a private individual makes it possible to better satisfy the needs of the citizen. PF has assumed great importance with the sovereign debt crisis and is used in many areas, not only in sports, of course. This instrument is divided into several phases, such as the feasibility study, the business plan and the identification of the necessary guarantees. What we considered essential to focus on is the business plan, which is also the most important part of the entire PF, as it illustrates all the business and financial dynamics of the project. It is also the part that requires the most information and, in fact, the data entered in the model are the result of estimates, some of which are very accurate and reliable.**

Keywords* - *project financing, sport, technical acquisition, infrastructure, financial investment, simulation

I. INTRODUCTION

Project Financing (PF), also known as project finance, is today a widespread phenomenon in domestic and international financial practice, as well as in the execution of major projects. Despite its complex nature and high financing costs, the PF is an instrument of strategic importance for the financing of long-term capital-intensive projects.

The peculiarities of this approach are induced, on the one hand, by the project's ability to self-finance itself; on the other hand, by the lenders' participation in the business risk, so much so that the return of the loan disbursed by them depends on the project's ability to produce cash flows, as there is no or little relevant corporate finance's own guarantee logic.

The most important aspect for the financing of projects is therefore the accurate estimation and evaluation of expected cash flows, together with the sharing of financial risks among the participating lenders. The analysis of cash flows and their volatility is relevant for determining the project and its feasibility in its operational, financial and extraordinary components.

In recent decades, PF has been an important vehicle for financing public and private initiatives, most commonly used for capital-intensive infrastructure and services such as power plants, refineries, toll roads, car parks, oil pipelines, telecommunication systems and industrial plants with relatively transparent, riskier and long-term financing needs.

According to Esty and Sesial (2007), PF is an agreement to set up a new independent, debt-financed capital-intensive project entity.

Nevitt and Fabozzi (2001) present the PF as a financing process of a 'certain economic unit in which a lender is satisfied with his expectations exclusively on the basis of expected cash flows for the purpose of repayment and remuneration of the capital lent'. Consequently, the financial sustainability of the debt is based exclusively on the potential of the project and not on the reliability and solvency of the proposing entities or the value of the assets available to the project. In consideration of this, Gatti (2008) refers to the PF as "the structured financing of a specific economic unit that sponsors create through risk capital, and for which the lender considers the expected cash flows as the source of repayment of the loan, while the project assets represent only a guarantee".

Considering that the repayment of the debt comes from the project's ability to generate positive net cash flows, Esty (2004b) defines PF as an operation that "involves the creation of an independent project company financed with equity capital by one or more sponsoring companies and other forms of collateral financing directly linked to the specific assets required by the project". Esty focuses on the following three key decisions in relation to the choice of the PF: (i) investment, including specific tangible and intangible assets; (ii) organisational, with the creation of a legally independent entity; and (iii) financing. This definition distinguishes PF from other structured financing

vehicles such as securitisations, debt acquisitions or leasing.

The definitions of the ETH underline the idea that the fund providers have no rights to activities other than those of the project itself. Therefore, donors must assess whether the project is fully able to meet its financial requirements and constraints endogenously. The success of an ETH operation is therefore highly associated with the project's financing structure and its creditworthiness in relation to the underlying entrepreneurial risk.

To understand the motivation for using PF, a thorough understanding of the reasons why an entrepreneurial project is more sustainable if it is financed in a specific and independent way than a business complex where it would be financed by a different composition of sources of financing not directly related.

Brealey et al. (1996) argue that PF creates value by limiting agency costs and improving risk management. Esty (2003, 2004a, 2004b) analyses the problem in a broader way, identifying four main reasons for the use of PF. First, the PF can be used to mitigate agency - particularly motivational agency - between managers within the project company, and funders. The PF in companies with a high level of debt plays an important disciplinary role, because it prevents managers from allocating the available free cash flows less efficiently. Secondly, this type of operation allows companies with a limited debt capacity to avoid the opportunity cost of underinvesting in projects with positive but low NPVs. Thirdly, the PF improves risk management, particularly in its motivational component. The strong commitment on the specific project limits the risk of contamination and dilution with other business projects. In addition, the PF improves the project-specific risk management. Risks are allocated with the objectives of reducing costs and ensuring adequate benefits. Finally, PF can help to reduce underinvestment due to information asymmetry problems. Separating projects from the sponsoring company or companies facilitates the start-up phase by making it easier to communicate and share information and objectives with external stakeholders. Brealey and al (1996) also point out how it allows the creation of joint ventures without requiring a prior in-depth mutual evaluation of the creditworthiness of potential partners.

Taking into account the above arguments, several authors (Brealey et al., 1996; Esty, 2003, 2004a; Corielli et al., 2010) argue that PF reduces the cost of funding by mitigating agency costs, reducing information asymmetries and improving risk management (Pinto and Alves, 2016). Empirically, Gatti et al. (2013) confirm this idea, demonstrating that PF can also create economic value by reducing loan spreads.

Despite the advantages mentioned above, the following main problems related to the use of the PF plant can be identified in the existing literature (e.g. Esty, 2004; Fabozzi et al., 2006; Gatti, 2008; Bonetti et al., 2010): (i) complexity in terms of PF structure design; (ii) higher financing costs compared to conventional financing; and (iii) the negotiation of financing and management agreements takes a long time. As pointed out by Esty (2004a), in an FP the transaction is expensive to set up, it takes a lot of time to execute, and it is more rigid once it is set up.

Brealey and al (1996) also point out that PF is not advisable if there are complex interactions with the rest of the company. Despite PF's growing need for development and capital creation, this form of PF is therefore characterised by a very complex structure (Esty, 2003; Fight, 2006), with high financing costs, rigid covenants imposed by the various parties and complex processes to find suitable sources of financing. The choice of this instrument therefore constitutes a trade-off significantly linked to the reasonableness, reliability and riskiness of the medium/long-term scenario in which the business project is to be located.

II. FEATURES OF PF

The main features of PF concern the duration of the concession (generally between 20 and 30 years) and the economic and financial management of the structure, which is entirely the responsibility of the private individual. The purpose of this institution is to enable public administrations to build or renovate state works without burdening their budgets, but by resorting to capital and private interest. In the case presented in the following, in addition to the public interest, the private interest of a company often appears to be at stake, and it is thus able to manage a structure which is fundamental to its business activity.

The rules governing PF are set out in the Code of Public Contracts, in particular from article 153 to article 160. The fundamental point, and therefore the heart of this instrument, is precisely the proposal. The latter is based on a document called the Economic-Financial Plan (EERP). As John and John (1991) explain their work, the business plan is the document that sets out the assumptions and basic conditions that determine the business and financial balance of investments and the related management for the entire period of the concession. It is developed through a set of interdependent accounts which allows the assessment of the economic viability of an investment project and the ability of the project to repay debt and remunerate risk capital. The PEF is also the tool for estimating the profitability of the project.

This definition shows the importance of some documents on which the EFP is structured. What are they? The schedules of the forecasted Income Statement, the Forecast Balance Sheet and the calculation of the Cash flows generated by the investment. As far as the data are concerned, they are a collection of assumptions and plausible estimates without which it would be impossible

to make predictions. In order to have a clearer picture of the categories of data collected, they must be divided according to their nature according to the following list of hypotheses, as proposed by Finnerty (1990 and 1996):

- Timing assumptions: duration of concession
- Technical assumptions: investment costs
- Operating management assumptions: operating costs, operating revenues
- Financial management assumptions: interest rate, discount factor, financial structure
- Tax assumptions: taxation, depreciation and amortisation
- Hypotheses on reserves: legal reserve and cash reserve
- Hypotheses relating to working capital: payment times and collection

One of the most interesting aspects is the possibility to carry out all the activities of PF in collaboration with other subjects. In other words, different actors of interest to a given project can collaborate according to the project. The legal instrument which allows this is the possibility of setting up a company which is inextricably linked to the concession and its duration. It is generally called special purpose vehicle or project company. The purpose of these companies is to allow promoters to isolate the economic and financial aspect and consequences, as well as the legal consequences, of the concession. This allows the sponsoring companies not to legally take over the investment, thus being able to maintain their financial structure unchanged. All the considerations made are relevant because the project company will be undercapitalised compared to the size of the investment. In other words, everything concerning the project in question is managed by the project company: from the debt it has to bear, through the cash flows generated, to the possible risks, relieving the promoters of any direct responsibility.

III. THE SIMULATED CASE STUDY

After having examined the peculiarities of PF, both legal and economic-financial, we focus on a specific case. We imagine a small, local soccer society, which we'll call the Simulation Soccer Company (SSC) which has expressed its will to directly manage, for a better use of the it, the main sports facility of the city, the "Local Stadium", whose current concession expires on a given date (XXXX)

The intention of the current property is to obtain the plant through a call for tenders in PF that would allow the company to improve the structure and, thanks to the duration of the concession, recover from the expenses incurred. In addition, it would be possible to generate income that would have two functions: to remunerate investors adequately and to bear the costs of other corporate sectors.

Both the main and the subsidiary fields are in precarious conditions due to the respective situations of the grassy coverings, now worn, but also the rest of the structure does not have a better state. After various consultations with companies specialized in the installation of grass coverings, both natural and synthetic, and with construction companies we were able to draw up the total cost of the "restoration" of the entire structure, shown in the following table (costs in $).

TABLE 1. SUMMARY OF THE COSTS

Cost Voice	Cost	Sub Total	Grand Total
Central field grassy coat	40590		
Central field irrigation	23812,8		
Central camp changing rooms	17606,22		
subsidiary camp grassy coat	103320		
Subsidiary field irrigation	13407		
Changing rooms subsidiary camp	11808		
Total Fields		210544,02	
Restructuring Bar	36900		
Restructuring of grandstands	86100		
Total Structures		123000	
Grand Total			**333544,02**

The sine qua non condition is that the Municipality of the city, as owner of the structure, publishes a call for tenders for PF. As previously described, the basic elements on which to base the future investment must be present in the tender, and they are: the duration of the concession and the renovation or construction works required by the Public Administration. Let's now analyse the terms that govern this call: the Municipality of the city, given the public interest that this structure has, requires the remake of the grassy mantle of the central football field, the remake of the synthetic mantle of the subsidiary football field, the renovation of the changing rooms, the stands and the Bar point, granting management of the entire structure. The duration of this concession is 20 years. As in any public tender, what is considered, according to certain criteria, the best proposal wins. As previously illustrated, the legal nature of PF allows the creation of an ad hoc company to manage all aspects of the granted structure. This allows the company interested (not only for economic reasons) in the concession of the structure, to involve other companies in this project, for example a construction company, setting up together with the latter the project company. Assuming an agreement among these two companies for which the share capital is contributed 60% by the main company and 40% of the building company has thus formed the project company for the management of the project concerning the "Municipal" stadium. Two companies join together in a

new joint venture, in order to obtain the management of a certain infrastructure.

They have to convince the Public Administration of the quality of their project. The Economic and Financial Plan for PF, which described before, is now at stake. The first data that we can insert in our PEF are the amount of the investment that the project company will have to sustain, 333.544$, and the duration of the concession, 20 years. Given the nature of the majority shareholder and also considering that the structure is well suited to this type of company, the project company will draw up its own social report no longer based on the calendar year, but setting as the deadline for its fiscal year 1 July, beginning, and 30 June, end. This is very common practice among football clubs, which in this way match the calendar year with the deadlines of the season.

IV. THE INVESTMENT

In this paragraph the investment will be discussed along its possible sources of financing. This is obviously a very important point and the choice will mark the management for the entire duration of the concession. However, the available range is not too wide. The possibilities are to provide equity capital or to use external capital. What the project company has to decide is the right mix between the two alternatives. It has been previously mentioned the fact that the company is undercapitalised. This means that the debt represents a significant proportion of total liabilities, well above 50%. The rationale behind this decision, which almost all project companies share, is logical and does not represent a risk. There are different reasons why companies opt for these strategies. It is important to remember that we have this infrastructure for a limited period of time, although a very long time, after which all rights will be lost. In other words, the property in question is not our property. This is a reason linked to the rule of law. Another good reason is the time factor. If we opted to finance the investment with a prevalence of equity capital, we would find ourselves in the situation of having tied many financial resources owned by us to a long-term project for which the return in the form of a dividend could be deferred over time, not allowing us to quickly remunerate the invested capital. In view of these views, it would seem obvious to have recourse to debt capital, but any credit institution is asked for immediate liquidity, and in return it requires the deferred payment of interest over time. This variable increases the importance of a very accurate estimate of annual cash flows. The management will be responsible for ensuring that costs, including interest on debt, are covered on a regular basis. The interest rate agreement is therefore of fundamental importance. From a strategic point of view, it is therefore clear that it is preferable to finance the project by means of outside capital. The consequence of this is that very high levels of debt on equity can be achieved without, of course, worsening the debt ratios of the sponsoring companies. For these regions we have decided to finance 10% of this project with equity capital, for a total of 33.354,4$, and the remaining 90% with debt capital, for a total of 300.189,6 euros.

This choice leads to very high leverage, but is considered strategically the best because it allows the sponsoring company that holds 60% of the share capital to use its resources in other operations that have a much shorter time horizon and that concern assets in which the company owns full ownership and not just the concession. The other project promoter also fully agrees with this. All this finds its application and sustainability if a credit institution available for financing is identified. This is therefore another aim of the business plan: to provide guarantees of the viability of the project. The assumptions of the data needed to draw up the EEP, which were made in previous chapters, referred to the interest rate and are now estimated as assumptions.

There are two possible ways: opting for the fixed rate or the variable rate. In PF cases, given their duration, it is advisable to choose a fixed rate, because it allows the business plan to be able to count on a certain amount of data and protects both the creditor and the debtor from uncertainty, given the difficulty of predicting the trend of rates over such a long period of time.

The interest rate agreed by the sponsoring company is 4% and for simplicity the loan will be repaid on a straight-line basis over the 20 years of the duration of the concession generating these effects:

- Initial loan with T0: 300.189,6$;
- Mortgage duration: 20 years;
- Constant capital share: 15.009,48$;
- Interest rate: 4% per year, fixed

On the basis of these data, the cash flows for repayment of the loan are as follows:

TABLE 2. CASH FLOWS FOR REPAYMENT OF THE LOAN

Year	Cash Flow ($)	Year	Cash Flow ($)
0	300189,6	11	-21013,3
1	-27017,1	12	-20412,9
2	-26416,7	13	-19812,5
3	-25816,3	14	-19212,1
4	-25215,9	15	-18611,7
5	-24615,5	16	-18011,4
6	-24015,2	17	-17411
7	-23414,8	18	-16810,6
8	-22814,4	19	-16210,2
9	-22214	20	-15609,9

V. SIMULATED INCOME STATEMENTS FOR THE WHOLE PERIOD (20 YEARS)

We are now delving into the perhaps most important part of the Economic and Financial Plan, namely the simulation for the income statements for all the periods envisaged by the concession. In order to prepare a profit and loss account correctly, it is necessary to be able to estimate all positive and negative income items. In other words, revenues and costs attributable to a single period of management. Below we list those that represent the positive components of income:

- sale of advertising space
- rental income from the Bar point
- receipts from ticket offices
- municipal contribution

As we have previously said, through a reliable estimate, we quantify the monetary entity of these four categories of revenues. For the first case, it is assumed that around 18.450$ can be obtained annually, for the second case 36.900$, for the third case 98.400$ and for the fourth case 12.300$. We now analyse the negative income components and list them as for revenues:

- maintenance costs
- depreciation of equipment and work completed
- interest expense on the loan

For simplicity, maintenance costs group several items (annual contribution paid to an association providing maintenance personnel, energy costs, costs for the ordinary maintenance of installations) and their total annual amount is 73.800$. In section B (production cost) we must also include the depreciation of the structures that are exploited during the 20 years of management (16.677.2$ per year). Interest on the loan, which in the first year was worth 12.007,58$, will also be deducted from the value of production.

TABLE 3. SIMULATED INCOME STATEMENT FOR YEAR 1

Sales Revenues	166050,00	
Revenues From Production		166050,00
Operating Costs	73800,00	
Depreciation	16677,20	
Cost Of Production		-90477,20
Production Value		75572,80
Interest Expense	12007,58	
Financial Charges		-12007,58
Gross Income		63565,22
Taxes		-31782,61
Net Income		31782,61

This is a component that is not related to production and is therefore included under C (financial income and expenses). We can now define gross income and, after the deduction of the amount due to the tax authorities, net income. Please note that all the years have been simulated but the following are the estimated income statements in Euro for the first and last (20th) year of the concession.

TABLE 4. SIMULATED INCOME STATEMENT FOR YEAR 20

Sales Revenues	166050,00	
Revenues From Production		166050,00
Operating Costs	73800,00	
Depreciation	16677,20	
Cost Of Production		-90477,20
Production Value		75572,80
Interest Expense	600,38	
Financial Charges		-600,38
Gross Income		74972,42
Taxes		-37486,21
Net Income		37486,21

VI. SIMULATED BALANCE SHEETS FOR THE WHOLE PERIOD (20 YEARS)

The second key part of a PEF is the projected balance sheet. This document shows the situation that changes from period to period, allowing the company to have a complete picture of the economic and financial situation of the project at the beginning of each management cycle.

One of the key points of this document is equality among uses and sources. In our case the sources amount to 333.544$, which is divided into 33.354,4$ of share capital and 300.189,6$ of payables to banks (mortgage). The total of 333.3544$ in loans is of course grouped under B (tangible assets).

We must now make a point. The company that was formed has taken over the management of a plant that is certainly worth more than the value recorded in the balance sheet, but does not dispose of ownership and therefore the simulated balance sheet must only take into account the investment made.

Our fixed assets are therefore depreciated over 20 years, since that is the duration of the concession even if, once that period has ended, it will not be compulsory to believe that they can no longer contribute to the periodic determination of income in future years. If, at the time t0, our asset forecast balance sheet had 333.3544$, at the time t1, that is after one year of management, item B of the assets will be valued at 316.866,9$. The depreciation provision will amount to 16.714,1$. Also at time t1, an increase in the liquid assets in the bank account will be recorded. The total amount will have to be determined by taking into account the operating cash flow (net income and depreciation) and the payment of the principal on the loan. The total amount is therefore 33.450,33$. If we look at the liabilities in the balance sheet at instant t1, we will notice that the share capital remains unchanged at 33.354,4$

while, to complete the shareholders' equity, the profit for the year makes a significant contribution, amounting to 31.782,61$. We will go into this in more detail later. The liabilities are completed by the largest source of the entire investment, i.e. bank debt, which, following payment of the first instalment, decreased to 285.180,14$. Due to the logic on which this document is based, which we have mentioned above, we can say that the assets of this investment amount to 362.617,15$ at the end of the first management period. We postponed the debate on the annual profit. It does not remain in that capacity, but must 'transform' itself.

There are three possibilities:

- allocate the profit to a reserve and therefore keep it entirely within the company's and shareholders' equity
- use it to repay the shareholders of the investment made and then take the form of a dividend
- allocate it partly to reserves and partly to dividends.

In our particular case, it is more prudent and appropriate to set aside a large part of the profit generated by the management, especially in the first years of the concession, as our financial leverage is very high (the debt is 90% of the liabilities). This is correct in the early years of the investment, i.e. until the equity/debt ratio is close to 1. For this reason, in the first 5 years we will set aside 80% of the profit in reserve, then go up to 60% from year 6 to year 10, 40% the next 5, 20% the last 5 years. This forecast is perhaps the riskiest, since the allocation to the reserve serves as self-financing, but above all as a parachute in times of possible difficulty.

It is natural that if there were no crisis situations, setting aside the reserves would be useless and for this reason in our forecast the profit is gradually moving towards a division with the shareholders. The simulated balance sheets are presented below. Please notice that the balance sheets for all the 20 years have been simulated, but only those for year 0, year 1 and last year (20th) are presented in the following.

TABLE 5. SIMULATED BALANCE SHEET, YEAR 0

Assets			Liabilities		
Tangible fixed assets	$ 333.544,02		Share capital	$ 33.354,40	
Fixed assets		$ 333.544,02	Reserves		
Bank			Dividends		
Current assets			Net Equity		$ 33.354,40
			Bank overdrafts	$300.189,62	
			Consolidated liabilities		$300.189,62
Total assets		$ 333.544,02	Total liabilities		$333.544,02

TABLE 6. SIMULATED BALANCE SHEET, YEAR 1

Assets			Liabilities		
Tangible fixed assets	$ 316.866,82		Share capital	$ 33.354,40	
Fixed assets		$ 316.866,82	Reserves	$ 25.426,09	
Bank	$ 33.450,33		Dividends		
Current assets		$ 33.450,33	Net Equity	$ 6.356,52	
			Bank overdrafts		$ 65.137,01
			Consolidated liabilities	$285.180,14	
Total assets		$ 350.317,15	Total liabilities		$350.317,15

TABLE 7. SIMULATED BALANCE SHEET, YEAR 20

Assets			Liabilities		
Tangible fixed assets	$ -		Share capital	$ 33.354,40	
Fixed assets		$ -	Reserves	$338.839,35	
Bank	$ 402.182,72		Dividends	$ 29.988,96	
Current assets		$ 402.182,72	Net Equity		$402.182,72
			Bank overdrafts	$ -	
			Consolidated liabilities		$ -
Total assets		$ 402.182,72	Total liabilities		$402.182,72

VII. FORECASTED CASH FLOWS

This latest balance sheet (for year 20) allows us to understand that after the entire concession cycle the sponsoring companies have a positive cash flow of 372.193,76$ (see table 8). But to better understand this aspect, the third document in a Financial and Economic Plan is necessary, that is, the document concerning the analysis of forecast cash flows. We have on more than one occasion mentioned the concept of cash flow but we have never defined it. Let us do it now. First of all, cash flow relates exclusively to the monetary aspect of any economic

phenomenon, so much so that when we described the way to determine the operating cash flow we added to net income depreciation and amortisation (classic purely economic value). Therefore, in order to determine the cash flow of a management period, we must know exactly all the monetary income and expenditure. This will allow us to understand if and when our project will lead us to go through a liquidity crisis. At time t0 our situation is as follows: the sponsoring company has taken out a loan for 300.189,6$ and this implies a monetary income because money is lent to us. In addition to this figure, the partners contribute 33.354,4$ as share capital to the project company. Thus the monetary situation of the project company is in surplus for 333.544$.

In our project, however, this positive monetary stock is hypothetically immediately reduced by the total amount, or 333.544$, because, of course, it is invested in the project. This means a cash outflow of 333.544$, which brings our monetary resources to 0 euros. The first cash flow of the project company at time t0 is then 0$. At t1, i.e. at the end of the first management cycle, the cash flow generated was 33.450,33$ (see table 6). This figure is the result of operating management (revenues - costs, without considering amortisation and depreciation), and of repayment of the first principal instalment of the loan. This is, however, the most complicated period for the company, since at the beginning of the first management cycle the monetary stock is 0 and therefore any need for liquidity would lead the company to borrow money or, through the increase in share capital, receive the necessary support from the shareholders of the promoting companies. At t2 the scene changes slightly. The fundamental variant is the reimbursement to the members of a part of the profit produced by the management. This is immediately after the balance sheet is drawn up and the amount to be distributed is entered under the item Dividends on the liabilities side of the balance sheet. For this reason, even if it concerns the profit for the period t1 of management, the financial movement is recorded in the following period. Therefore 33.450,33 – 6.356,51 = 27.093,82$. This is the monetary stock immediately after the payment of dividends. During the management cycle of period t2 there will be again monetary income and expenditure which will lead our model to estimate in 60.844,32$ the monetary stock or net monetary availability available to the project company.

The one described now is referenced to as the direct procedure, but there is also an indirect method to achieve the same result. In this case the starting data is the profit from which the credits and the stocks matured in the period are to be subtracted, thus reaching to determine the cash flow of the period that added to the initial balance allows us to understand what the final cash budget is. In our particular case, given the absence of credits and stocks, it would not make sense to use this procedure. The following is a complete simulation of cash flows for the entire period of the concession.

TABLE 8. SIMULATED CASH FLOW, YEARS 0-20

	INITIALTIAL CF	BALANCE CF			ANNUAL FLOW	FINAL BALANCE
0	$ -	$ 300.190	$ 33.354	$ -333.544	$ -	$ -
1	$ -	$ -	$ 48.460	$ -15.009	$ 33.450	$ 33.450
2	$ 33.450	$ -6.357	$ 48.760	$ -15.009	$ 27.394	$ 60.844
3	$ 60.844	$ -6.417	$ 49.060	$ -15.009	$ 27.634	$ 88.478
4	$ 88.478	$ -6.477	$ 49.360	$ -15.009	$ 27.874	$ 116.353
5	$ 116.353	$ -6.537	$ 49.661	$ -15.009	$ 28.114	$ 144.467
6	$ 144.467	$ -6.597	$ 49.961	$ -15.009	$ 28.355	$ 172.822
7	$ 172.822	$ -13.313	$ 50.261	$ -15.009	$ 21.938	$ 194.760
8	$ 194.760	$ -13.433	$ 50.561	$ -15.009	$ 22.118	$ 216.878
9	$ 216.878	$ -13.554	$ 50.861	$ -15.009	$ 22.298	$ 239.176
10	$ 239.176	$ -13.674	$ 51.162	$ -15.009	$ 22.478	$ 261.655
11	$ 261.655	$ -13.794	$ 51.462	$ -15.009	$ 22.658	$ 284.313
12	$ 284.313	$ -20.871	$ 51.762	$ -15.009	$ 15.882	$ 300.195
13	$ 300.195	$ -21.051	$ 52.062	$ -15.009	$ 16.002	$ 316.197
14	$ 316.197	$ -21.231	$ 52.362	$ -15.009	$ 16.122	$ 332.319
15	$ 332.319	$ -21.411	$ 52.662	$ -15.009	$ 16.242	$ 348.560
16	$ 348.560	$ -21.591	$ 52.963	$ -15.009	$ 16.362	$ 364.922
17	$ 364.922	$ -29.028	$ 53.263	$ -15.009	$ 9.225	$ 374.147
18	$ 374.147	$ -29.269	$ 53.563	$ -15.009	$ 9.285	$ 383.433
19	$ 383.433	$ -29.509	$ 53.863	$ -15.009	$ 9.345	$ 392.778
20	$ 392.778	$ -29.749	$ 54.163	$ -15.009	$ 9.405	$ 402.183
	$ 402.183	$ -29.989	-	-	-	$ 372.194

VIII. EVALUATION OF THE INVESTMENT AND CONCLUSIONS

After analysing the investment in all its components, we move on to the next stage, that is the evaluation through the Net Present Value (NPV) and the Internal Rate of Return (IRR). To determine the NPV we first need to know the Actual Value which consists of discounting the annual cash flows at instant t0. The NPV is nothing more than the Current Value at which the initial investment is subtracted. The importance of cash flows and the discount rate are therefore immediately apparent. We will have to make a few considerations for both of them.

Cash flows are not the same as those previously calculated, since they represent the net cash flow generated by the period. In calculating the cash flows useful for the NPV, we must refer to the operating cash flow. We start with an investment in t0 amounting to 333.544$ and representing negative operating cash flow, and continue with the estimate of operating cash flows year by year. To determine these, we take into account total revenues, operating expenses including depreciation, amortization and taxes. To the net income for the determination of the operating cash flow we will have to add the amortization and depreciation. Given the nature of interest, cash flows are not constant over time. There is therefore no evidence of repayment of the principal on loans. The table below shows how we determine what we need for the first year (the same has been done for all the following years).

TABLE 9. CALCULATION OF OPERATING CASH FLOW

Revenues	$ 166.050,00
Costs	$ -73.800,00
Depreciation	$ -16.677,20
Interest Expense	$ -12.007,58
Gross Profit	$ 63.565,22
Taxes	$ -31.782,61
Net Profit	$ 31.782,61
Depreciation	$ 16.677,20
Operating Cash Flow	**$ 48.459,81**

We must now focus on the issue of the discount factor. This rate represents the cost of capital of the company. To calculate the right discount rate we use the WACC formula. First of all, let's give a simple explanation of this model. The acronym stands for Weighted Average Cost of Capital. It considers the percentage of debt and equity by multiplying them by their expected return or cost. In addition, the cost of debt is net of tax, which allows tax benefits for interest to be taken into account. However, in our case, there is a problem. This method includes among its assumptions that of maintaining a constant debt ratio of the company.

As the projected balance sheets show, the debt to equity ratio changes radically due to the intrinsic and particular nature of the project company. Its time horizon is linked to the period of the concession. The other critical factor of the WACC is the project risk, as it is not considered in the model. This absence does not, however, pose any problems, as the risk of the project is estimated to be constant over the whole duration of the project. It was also because of this factor that we were unable to use the Capital Asset Pricing Model (CAPM) to calculate the discount rate. The CAPM theory, in fact, considers the risk through Beta, but also the return on its own securities portfolio. All variables that do not fit with the project in question. Back to the chosen model, below is the mathematical formula for the calculation of the WACC:

$$WACC = D/K * rd (1-T) + E/K * re$$

We suppose a cost of equity of 12.5%, a cost of debt of 6%, higher than the interest rate when the loan was issued. The missing data can be easily found in the income statement and balance sheet schedules: 50% taxes, debt incidence equal to 90% of the balance sheet liabilities and equity level equal to 10%. As already mentioned, this relationship, which is decidedly unusual in any company, is justified by the nature of the project companies. Our discount rate for approximation is 4%.

We now have the data needed to determine the net present value of the project which is equal to EUR 358.530,24$. It is clear that the conditions for determining the discount rate are particular. The significant imbalance between debt and equity leads to a particularly low weighted average cost of capital. The IRR (Internal Rate of Return) is simpler to calculate, since, by definition, it is the discount rate that makes the NPV null (NPV = 0); its value is 13.92%. The theory teaches us that a project should be accepted if the IRR is higher than the cost of capital, i.e. the discount rate used to calculate the net present value. Comparison of the two rates shows that 4% (cost of capital) < 13.92% (internal rate of return) and therefore the project is valid. However, as we have previously argued, the cost of capital cannot be considered as being properly reliable, so the information we obtain from the IRR is double.

One is academic, the second is obvious, but in this particular case IRR is even more important than the NPV: 13.92% represents the discount rate that would make the NPV zero and therefore it would not make sense to proceed with the investment. For this reason, it represents the limit beyond which the cost of capital cannot go. We have understood that this project is to be considered beneficial, but what we have not yet defined is the time that cash flows take to cover the investment.

To get to calculate it we use the payback method. With this calculation model we discover that it will take 6 years

and 9 months for the cash flows generated by the management to cover the initial outlay of 333.544$.

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