THE ECONOMIC EFFECTS OF INVESTMENT FINANCING DECISION

Prof. Nicolae SICHIGEA, PhD
Assoc. Prof. Dorel BERCEANU, PhD
Dan Florentin SICHIGEA, PhD
Adrian BUDICĂ
University of Craiova

1. Introduction

The need of financing the companies, created by the trend of increasing workload often exceeds their potential for funding and therefore, companies are forced to turn to debt in its many forms: long, medium and short-term credits, bond issues, credit providers and other operating liabilities. Development strategy, however, is done depending on permanent capital, i.e. equity and medium and long-term credits. By constructing an optimal funding structure and achieve a positive leverage effect of debt, financing is done at a weighted average minimum cost that reflects in the economic efficiency by increasing the value of the company.

2. Research methodology

The impact on medium and long-term borrowing in business management is reflected by financial leverage where it provides finance profitable investment projects, namely when the economic profitability is higher than the rate of borrowing cost.

In principle, financial leverage measures the impact of debt financing on the firm's net profit and on financial yield. The principle of financial leverage is as follows: when the firm use borrowed capital which is paid with an interest lower than the economic yield rate, all the increase of the net result goes entirely to shareholders because it increases their placement profitability. So:

$$R_f = R_e + (R_e - r_d) \cdot \frac{D}{C}$$

where:

$(R_e - r_d) \cdot \frac{D}{C}$ - financial leverage (financial leverage premium);

$\frac{D}{C}$ - indebtedness leverage;

R_f - financial yield (owed to shareholders) ;
R_e - economic yield (promised to shareholders);
C - equity capital;
D - borrowed capital;
d - nominal rate of the interest on borrowed capital;
dxD - bank interest;
r_d - rate of cost of indebtedness; r_d =d(1-T), since interest is deductible in calculating taxable profits and creates tax savings, or dxT;
T- profit tax quota.

As economic yield is higher or lower than the interest rate, the overall debt involves the change of financial yield level in the sense of its increase or decrease.

Thus:

a) if **Re- r_d >O**, financial yield will be even greater as the leverage is higher. The company has, in this case, the interest to borrow at "maximum" to be eligible for financial leverage. This maximum is limited by the risk of falling into the other extreme, namely

"insolvency risk";

b) if **Re- r_d =O**, it results **Rf=Re**;

c) if **Re- r_d <O,** the increase of company's indebtedness has an adverse effect on the financial yield. In this case, borrowing has a "club effect", and it results the decrease of financial yield.

According to the basic objective of financial position of the company, managers concern is the continued growth of enterprise value, so as to achieve a maximization of its value depending on the structure of the assets that form it. If the objective of maximizing the enterprise value is tracked on each investment project that is intended to be achieved by getting a bigger net present value, the company considered that a sum of investment projects will increase in value. But the net present value is greater either because of obtaining higher net cash-flows, or because of recording a lower weighted average cost of capital; this weighted average cost represents the discount rate of net cash-flows of the investment.

So, achieving an optimal financial structure of the invested capital will allow minimizing weighted average cost of capital and thus maximizing the value of the enterprise.

There is, therefore, an interdependence between *the cost of capital - financial structure.* Therefore the problem of optimizing the capital structure is the subject of *capital structure policy*, financial management problem that differentiates, in terms of efficiency, competitors with similar financial efforts.

Optimizing financial structure involves the combination between borrowed capitals and equity capitals, in terms of profitability and risk, which can maximize the enterprise shareholder value[1].

Theoretically we can talk about an optimal combination between shares and debt, but there was not found a *magic formula* by which to calculate the perfect ratio between them. However, by analyzing the combinations that have worked well in the past and combinations of companies that have successfully completed at a certain time and given the cyclical economic activity shows that maintaining a low level of debt is bearable crossing a period of regression. So, the financial manager can not decide on a permanent financial structure, but he must continually review the relationship between equity financing and debt, so that capital structure to be appropriate. The conclusion is that capital structures are dynamic.

Although was not find an accessible formula for determining the optimal financial structure, there is a helpful guide for managers followed for the choice of the capital structure, namely **FRICTO**[1] **guide**, acronym derived from the name in English of the operations: **flexibility, risk, income, control , timing, other**:

- **flexibility**, i.e. how much financial flexibility needs the manager to meet some unforeseen events, such as new competitors or lawsuits filed against the company;
- **risk**, what risk accepts the manager faced with foreseeable events, such as the decline of the business cycle, strikes, or shortages of raw materials? In some areas (the demand for toys is strongly influenced by the production of animated films for children), prudent managers should be prepared for a collapse in sales and therefore the ratio, *debt / equity capital* must be small;
- **income**, what level of interest and dividends can be sustained from company profits? The financial manager should develop relevant cash flow forecasts in order to determine the payments that can be performed by the enterprise;
- **control,** the extent to which the manager wants to share ownership of the

[1] Silbiger, S.-MBA în 10 zile, Ed. Andreco Educational Grup, ediția II-a, Bucureşti, 2006, pag. 215-216

company to outside investors, especially for smaller companies with major shareholder manager?

- **exploiting favorable moments**, i.e. to what extent the company is overvalued on the capital market or banking market offers credits with attractive interest? If the manager believes that the company's shares are overvalued is advantageous to launch a new share issue, and on the contrary, if there are too cheap, he can buy them back, by reducing or increasing the ratio of financing by debt;
- **other**, namely, equity financing decision adopted by the manager is influenced by the refusal of banks to lend the businesses as a result of a high degree of indebtedness, or reach for the practice of affordability interest of the company.

Financial structure optimization, after following the steps implied by the guide can be done in two ways[2]: *analysis of dynamics rates of financial structure* and *Modigliani and Miller's theory*.

Rates of financial structure are guidance parameters for the enterprise management regarding the influence of the funding sources the level of cost efficiency, but also clues to potential creditors regarding the risk of regaining leveraged.

In this regard, there are calculated and interpreted several installments of financial structure, including:

- global indebtedness rate $= \frac{Total\ debt}{Equity\ capital}$, its level should be less than one, as low as possible. As debt level increase there is a decrease in the share market. Banks will charge a higher interest rate, and at the level of indebtedness considered as critical to stop crediting. However, increased cost of borrowing will decrease progressively the profitability of the company, shareholders are forced to give up a significant proportion of the dividends and to capitalize the income as a prerequisite for the future growth of the dividend, as reflected by Gordon and Shapiro's model for determining the share;
- financial autonomy rate= $\frac{Debt > 1\,year}{Equity\ capital}$, offers indices regarding the structure of the permanent capitals of the company, respectively of the ratio between medium and long-term credits and equity capitals.

Complementary, in the analysis can be used auxiliary rate, which do not refer only to the structure of the balance sheet liabilities such as:

- gross self-financing margin $= \frac{Gross\ self-financing}{Investments}$, rate that expresses what amount of the investments is covered by internal resources of the enterprise (net profit and depreciation);
- net self-financing margin $= \frac{Net\ self-financing}{Investments}$, rate that expresses what amount of the investments is founded from net profit intended for development;
- rate of investments $= \frac{Investments}{Added\ value}$, expresses the tendency of the company to invest, giving an appreciation to business development as a result of the investment policy;
- earnings retention ratio = $\frac{Gross\ self-financing}{Added\ value}$, expresses the propensity to save of the company, namely to capitalization compared with the wealth created (added value).

Interpretation of each of these rates suggest one or another of the important aspects of the financing and

[2] Sichigea N., Sichigea D.F.-Scenarii de fundamentare a structurii financiare a întreprinderii, Rev. Finanțe. Provocările viitorului, nr.7/2008, pag. 49-56

the structure of this financing. However, to increase the accuracy of the analysis results and hence the consolidation of future strategic decisions it is also required the calculation of other aggregate indicators expressing the influence of different sources of funding and, in the same time, to set up the real position of the company on the market.

Modigliani and Miller theory substanciates the logical relationship between the weighted average cost of capital and financing structure in two situations:

- assuming the absence of taxation, where the financing structure has no effect on the weighted average cost of capital;
- in the case of taxation, the financing structure can enhance enterprise value.

In the absence of taxation, the authors based their conclusions on a set of assumptions that characterize the perfect market (market access is equal for all investors, their information level is identical, there is no market transaction costs), but considering the couple profitability –risk, because there are opportunities on the market to profit without any risk, operations made by the investors with more risk-taking, are aimed to increase efficiency investments when the market is in disequilibrium.

When the market is in disequilibrium, investors will sell shares from the levered company and will buy shares from the company without debts (arbitration operations) until the removal of profit opportunities, state what records when the values of the two companies are equal and the market equilibrium is achieved. Equal amounts of the two companies is accompanied by that of the weighted average cost of capital, Modigliani and Miller concluded that of *neutrality* of financing structure, i.e. weighted average cost of capital is independent of the financing structure. Always the profit allowed by the award of loans at a lower rate cost is entirely absorbed by the additional cost entailed by the financial risk premium required by the shareholders of the indebted company as a result of the financial risk which it incorporates.

In this case, the financing decision does not determine the division of profits between shareholders and creditors, and the notion of optimal financial structure loses its relevance.

On the assumption of taxation, financial structure is not neutral anymore, because the interest is deductible in calculating taxable income, and the financial structure influences the value of the company. To confirm the conclusions of this hypothesis, it starts from the formation of the net profit of the company and especially from illustrating the consequences of taxation on the value of the two categories of businesses: indebted and without debts.

The incidence of taxation on the net income is as follows:

	Company N (without debts)	**Company I (indebted)**
Gross operating result	RBE	RBE
Interest	0	$R_F D$
Goss current result	RBE	RBE - $R_F D$
Net result (income) (after taxation)	RBE(1-T)	(RBE - $R_F D$)(1-T)

from which:

R_F = rate of yield without risk;

T = income tax rate.

By updating the net profit based on profitability rate proper to shareholders, respecively on cost rate of equity capital (R_C), on an indefinite time horizon, it is obtained the value of the enterprise without debt (V_N), as follows:

$$\mathbf{V_N} = \frac{RBE(1-T)}{R_C}$$

For the indebted enterprise, flows generated from operating activities must ensure both shareholders and creditors payment, as follows:

- (RBE - R_FD)(1-T) – net income for shareholders +
- R_FD - interest for creditors

= RBE(1-T) + TR_FD- proper operating flows

Proper operation flows consist of two components:

- RBE(1-T), equal to the net profit after tax in the company without debt N, which must be updated with the same rate, R_C;
- TR_FD, equal to the interest tax savings, i.e. un-risky component that can be updated with risk-free rate of yield.

So, the indebted company value (V_I) is determined by updating the two categories of flows, as follows:

$$V_I = \frac{RBE(1-T)}{R_C} + \frac{TR_F D}{R_F} \text{ , or}$$

$$\mathbf{V_I = V_N + TD}$$

So $V_I > V_N$, the value of the indebted enterprise is greater than the value of the company without debt with the updated value of tax interest savings (TD).

Optimization of the financial structure in terms of profit taxation consists in fully indebtedness. However, the rate of yield claimed by shareholders greater, in order to cover the financial risk of the indebtedness. Thus, when calculating we must take into consideration the incidence of bankruptcy risk due to the inability of the company to fulfill all payment obligations and costs associated with bankruptcy.

These costs are either direct costs, legal or administrative, or opportunity costs related to the loss of trust of the business suppliers and creditors, mainly of banks.

Considering the risk of bankruptcy due to debt ratios increase, causing the bank to withdraw any cash appeared in customer's account as maturity of loan repayments, changes the relationship for calculating the value of the indebted enterprise with the upated value of the bankruptcy cost, VA_{CF}, as follows:

$$\mathbf{V_I = V_N + TD - VA_{CF}}$$

To maximize the value of the indebted enterprise it is necessary to pursue a compromise between the updated value of savings from taxes on paid interests and losses entailed by the present value of bankruptcy costs.

The determination, however, of the minimum weighted average cost of capital, which would take into consideration the measurement of bankruptcy risk and would allow to maximize the value of the enterprise, is a difficult test. This is often done in a pragmatic way. Company managers must seek and based on the analyzes, to determine the financial structure capable to achieve the objective of maximizing the enterprise value.

Strengthening the decision regarding the capital structure means following two stages:

- calculating the weighted average cost of capital (CMPC) ;
- evaluation of available cash flow (free cash flows), the enterprise value.

Funding decisions follow an optimal combination between shares issued (raised capital) and company debts resulting from loans.

Weighted average cost of capital (CMPC) is calculated using the following relationship:

$$\mathbf{CMPC = Rc}\,\frac{C}{C+D} \mathbf{+ rd}\,\frac{D}{C+D},$$

where:

Rc= rate cost of equity capital (yield claimed by shareholders);

C = equity capitals (market value);

D = capital borrowed in the medium and long-term (market value of debt);

rd = rate of borrowing cost (rd= d(1-T); d= interest rate; T= income tax rate).

When calculating CMPC must be taken the market value of equity capital and debt, because the market is the true measure of the value which is given by

shareholders and bond to their investments. The cost of debt is an explicit cost, reflected in the profit and loss of interest, fees and other bank charges, expenses deductible when calculating taxable income. When the enterprise operates with more loans, borrowing cost rate, **rd,** is the updated rate that determines the equalization of the amount of debt contracted and the fund flows (annuity = repayable rate + annual interest) updated at this rate:

$$\mathbf{D} = \sum_{i=1}^{n} \frac{Ai}{(1+rd)^i} \quad ,$$

where:

Ai = annuity;

n = scadența în ani.

Being known, D, Ai and n, borrowing cost rate rd is determined by successive trials and then by linear interpolation.

More difficult to calculate is the cost of equity capital, perceived as the rate of profitability required by shareholders. It depends on the size of future profit and on the decision of the General Meeting of Shareholders regarding the proportion of net profit distribution for dividend. Cost of equity capital is calculated depending on expected elements but with a high probability degree of achievement. The cost of equity capital regards the amount of equity capitals, external (by capital contribution) or internal (from cash flow, by capitalizing a portion of the net profit remained after taxing) and is determined either by updated dividend with the particular model of Gordon and Shapiro, or by the Capital Asset Pricing Model-CAPM.

Gordon and Shapiro's model is a simplified version of the present value model, under which the price (rate) of an share equals the present value of future cash flows they generate: dividends for a certain length of time and the residual value (rate of sale at the end of this period). The update rate used is the rate of profitability claimed by shareholders taking into account the company's prospects and the risk they incorporate.

According to the general model of update, the current share price or rate (P_0) is as follows:

$$\mathbf{P_0} = \sum_{i=1}^{n} \frac{Di}{(1+Rc)^i} + \frac{Pn}{(1+Rc)^n} ,$$

where:

Di = dividend per share expected in the investment horizon (n);

Rc = rate of profitability claimed by shareholders (equity capital cost rate);

Pn = the resale of share after **n** years.

Since the general model (Irving Fisher's formula) involves difficult estimation of the dividends in the given range of investment operation and even more difficult estimation of the rate of sale of shares over **n** years, Gordon and Shapiro proposed a simplified model which takes into account the dividend for the next year (D_1) and a constant rate of growth of the dividend in an infinite horizon (g):

$$\mathbf{P_0} = \frac{D1}{Rc - g}$$

It results that the rate of the cost of equity capital, Rc is:

$$\mathbf{Rc} = \frac{D1}{P_0} + g$$

In Gordon and Shapiro's model, the cost of equity capitals has two components:

- dividend yields, $\frac{D1}{P_0}$ (dividend per share);
- increase of the dividend per share, g.

Paradoxically, the equity capital cost rate does not depend on the dividend policy, but on the economic outlook of the enterprise and its characteristics expressed in terms of risk. According to the model, a high growth rate of the dividend per share does not imply a higher cost of capital, because there is compensation between yield

components and growth. A greater distribution of dividends reduces growth and conversely, a higher capitalization of profits accelerates growth.

Equity capital cost assessment through this model treats mainly the estimation problem of the growth rate of the dividend, **g.**

This estimation is done either by estimating past trends or by modeling the expected yield by shareholders, financial yield, R_f. If net profit is entirely reinvested, dividend growth rate will be equal with the financial yield. But if from the net profit is retained a certain share, **b**, for capitalization (self-financing), the growth rate of the dividend will be:

$$g = b*R_f$$

From analyzes of financial markets is observed that there is a direct correlation between investment profitability and embedded risk.

Capital asset pricing model highlights the link between profitability level and risk level and assesses the risk premium for the investor, as follows:

$$R_c = R_f + ß_s *(R_m - R_f),$$

where:

R_f = risk-free rate of profitability;

$ß_s$ = risk coefficient, measures sensitivity of the profitability rate of title with respect of the average profitability of the market;

R_m = average profitability of the financial market;

$ß_s *(R_m - R_f)$ = risk premium.

The cost of equity capital is highly dependent on the financial leverage of the company, i.e. the ratio between borrowed capital and equity capital ($\frac{D}{C}$). Because leverage is risk, "beta" **$ß_s$,** factor is taken into account, which takes different values for different levers that for listed companies is published by the exchange. Financiers start from the current value of "beta" and recalculate it for a zero degree of leverage (unlevered), **$ß_u$**, step A, then they can calculate the appropriate value of any hypothetical capital structures, **$ß_l$**, step B, so[3]:

- Step A: zero degree of leverage

$$ß_u = \frac{ßl}{1+(1-T)\frac{D}{C}}$$

- Step B: with some degree of indebtedness

$$ß_l = ß_u * 1+(1-T)\frac{D}{C}$$

l = capital structure with leverage (with debt);

u = capital structure without leverage (without debt);

Making the decision of forming the financial structure of a listed company, as is the case of SC TRANSGAZ SA, requires consideration of the indebtedness degree and the weighted average cost of capital.

The capital structure that minimizes the weighted average cost of capital is reflected in the value of the company, which records a growth because of the leverage effect of debt.

The growth of the value would be more evident if the tax rate would be higher, if the tax advantage, the resulted tax savings due to interest deductibility would be higher.

3. Calculation and interpretation of data

a. Project description: *Romania-Bulgaria interconnector for gas transport on the route Giurgiu-Russe*: the amount of gas transported by the pipeline interconnection is at full capacity, i.e. 1 mld mc / year; the total investment is 20 million euro; direct beneficiaries of this project are Romania and Bulgaria, represented by national gas transmission companies, Transgaz and Bulgartransgaz; value of investment in Romania is equal to the investment in

[3] Silbiger, S.- Op. cit. pag. 220

Bulgaria, namely 10 million euros (the study is on the share of Romania). Data on exchange rate and the price per TRANSGAZ share are dated March 13, 2012. Thus 1 euro was quoted at 4.3575 lei and one TRANSGAZ share was evaluated at 230 lei. We chose this date because it is very close to the start of the grants contest launched by the company. The value of the investment is 10 million euros, i.e. 43.575.000 lei. European funds represent 8% of the investment, i.e. 800.000 euro, respectively 3.486.000 lei. It means that it must be found the best source of funding for the funding gap of the investment, i.e. 40.089.000 lei.

b. Calculation of indicators: we calculate the net present value (VAN) of the investment project and Internal Rate of Profitability (RIR). These indicators are the most effective and most commonly used in economic practice. Also we calculate the cost of financing sources, finally opting for the best way to finance the investment project, calculation starting from the existing financial structure.

We calculate the income generated by the investment project based on the information published by the company on income and expenditure of the transit activity in 2011, given that the interconnector is intended primarily for use in transit activity:

Transit income $_{2011}$ = 256,6 million lei;

Transit expenditures $_{2011}$ = 77 million lei;

Transit expenses are 30.24% of the income from transit. We will keep this ratio when estimating expenses for the new investment project;

In estimating income generated by the investment project we used the current average rate per transit of 16.3 lei/1000 mc.

Income generated by the investment project = 1 mld mc/year x 16.3 lei/1000mc = 16.300.000 lei

Expenses related to the investment project = 4.929.120 lei; (i.e. 30,24% of income)

Annual profit for the investment project = 11.370.880 lei

Net profit related to the investment project = 9.551.539, 2 lei

We calculate the self-financing capacity (CAF) of the company using information from the Transgaz profit and loss account.

CAF_{2011} = Net income $_{2011}$ + Adjustments $_{2011}$

Adjustments = Adjustment of tangible and intangible assets + Adjustments of circulating assets + Adjustment of provisions for risks and charges + Adjustment of financial assets held as circulating assets

Adjustments = 163.318.194 + (-12.368.428) + 11.178.065 +0= 162.127.831 lei

Net income= 379.571.465 lei

CAF_{2011} = 541.699.296 lei;

Net income in 2011 is distributed as dividend in the amount of 350.389.597.44 lei.

Thus, self-financing (Af) of 2011 is:

Af= CAF – Dividend

Af_{2011} = 541.699.296 – 350.389.597,44= 191.309.698,6 lei;

It is noted that the self-financing level of Transgaz company is very good, being higher than the value of the investment project, which would enable the company to finance the project only from its own sources, without having to resort to attracted sources.

But, in order to adopt the funding decision it must be determined the cost of equity capital and compared with the cost of other sources of financing (bank credits, bond loans, etc.).

To be able to determine the cost of equity capitals is needed to calculate the economic and rates of financial profitability. The rate of financial profitability is also known as the shareholder proper rate, and the rate of economic profitability can be named as the rate promised to shareholders. The

rate of financial profitability is usually compared with the interest offered by banks on bank deposits. Shareholders will be tempted to invest in the company as long as the financial rate of return is greater than the bank interest.
The rate of financial profitability:

$$Rf = \frac{Pn}{Kprc} \cdot 100$$

where:
Pn= Net income;
Kprc= Adjusted equity capital;

Kprc= Equity capital– Set up expenses – Development expenses– Prepayments + Incomes in advance =3.611.963.053 lei;

$$\textbf{Rf} = \frac{379.571.465}{3.611.963.053} \cdot 100 = 10{,}51\%$$

It is noted that the level of the rate of financial profitability is higher than the rate offered by the banks on deposits, the latter being an average of 7%. Thus, shareholders are more likely to invest in the company but to put money in bank deposits.

Rate of economic profitability:

$$Re = \frac{PNe}{Ki} \cdot 100;$$

where:
PNe= Net operating profit;
Ki= Invested capital;
PNe= 371.759.521,6 lei;
Ki= Kpr + Financial debts;

Financial debts = Debenture loans + Amounts owed to credit institutions + Debenture loans of more than 1 year + Amounts owed to credit institutions more than 1 year = 122.230.970 lei
Ki= 3.734.194.023 lei

$$\textbf{Re} = \frac{371.759.521{,}6}{3.734.194.023} \cdot 100 = 9{,}96\%$$

We will calculate also the average interest (d) to which is indebted the company.

$$d = \frac{Interests}{Financial\ \ debts}; \quad Rd = d(1-T)$$

Interests= 9.269.198 lei
Financial debts= 122.230.970 lei => **d= 7,583%** => **Rd=6,37%**

The correlation between Rf and Re, using the relationship of financial leverage of indebtedness, is:

$$Rf = 9{,}96\% + (9{,}956\% - 6{,}37\%) \cdot \frac{122.230.970}{3.611.963.053}$$

Rf= 10,08%

Depending on the results obtained it is determined the rate of the cost of equity capital (Rc), according to *the model of updated dividend*:

$$Rc = \frac{D_1}{P_0} + g;$$

P_0 = Transgaz share price (at March 13, 2012 the share price was of 230 lei)

$g = (1\text{-}db) \cdot Rf$

where:
db= profit distribution rate as dividends (90%)
1-db= capitalization rate (10%)

Gross dividend per share = 29,76 lei
Net dividend per share = 24,9984 lei

$$g = (1 - 0{,}9) \cdot 10{,}08\% = 0{,}1 \cdot 0{,}1008 = 0{,}01008$$

$$\textbf{Rc} = \frac{24{,}9984}{230} + 0{,}01008 = 0{,}1188 = 11{,}88\%$$

We calculate weighted average cost of capital used as the discount rate in VAN calculation:

$$CMPC = 11{,}88\% \cdot \frac{3.611.963.053}{3.734.194.023} + 6{,}37\% \cdot \frac{122.230.970}{3.734.194.023} = 0{,}1149 + 0{,}0021 = 0{,}117$$

$$CMPC = 11{,}7\%$$

Net present value of the investment, VAN is calculated as follows:

$$VAN = \sum_{i=1}^{n} \frac{CF_i}{(1+a)^i} - I \text{ ; VAN>0}$$

I= investment value;
CF= cash flow generated by the investment during the years of operation;
a= update rate;

We have predicted cash flow evolution for a period of six years, which is the optimal period for a forecast closer to reality. A longer period would have led to artificial estimations. Also, a short period of time will allow us to see how profitable is the investment.

CF= cash-flow= Net income(PN) + Amortization(A);
Investment= 10 million euro= 43,575 million lei; at a rate of 1 euro = 4,3575 lei according to the NBR exchange rate shown at March 13, 2012.

Net profit of the investment for the first year = 9.551.539, 2 lei.

We assume that the inflation rate is 3% per year, thus affecting the income generated by the investment. We will determine the cash flow for the investment project on a time horizon of six years, taking into consideration the above information.

According to the catalog of amortization of fixed assets, published in the Official Monitor, gas transmission pipelines are amortized linearly over a period of 30 years. As follows:

Annual amortization= $\frac{43.575.000}{30} = 1.452.500$ lei.

Elem	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PN	9.551.539	9.838.085	10.133.228	10.437.225	10.750.342	11.072.852
A	1.452.500	1.452.500	1.452.500	1.452.500	1.452.500	1.452.500
CF	11.004.039	11.290.585	11.585.728	11.889.725	12.202.842	12.525.352

$$VAN_{CMPC} = \frac{11.004.039{,}2}{1+0{,}117} + \frac{11.290.585{,}38}{(1+0{,}117)^2} + \frac{11.585.727{,}94}{(1+0{,}117)^3} + ... + \frac{12.525.351{,}77}{(1+0{,}117)^6} - 43.575.000$$

$$VAN_{CMPC} = 48.317.761{,}18 - 43.575.000$$

$$VAN_{CMPC} = 4.742.761{,}18 lei$$

VAN being positive, the investment is feasible.

Internal rate of profitability, RIR, is the update rate for which the net present value is equal to 0.

If RIR for an investment project is r, then for the company which gives the loan at the level of rate r, the investment does not bring anything more than a marketing placement at this rate. Therefore, RIR must be greater than the rate of the risk-free interest in the financial market, or CMPC.

$$\sum_{i=1}^{n} \frac{CF_i}{(1+RIR)^i} = I$$

Through successive attempts and by linear interpolation, it results from calculations that:

RIR = 15%, higher than the CMPC and then, the project is feasible.

4. Conclusions

The analysis shows that self-financing is the suitable funding source, with a cost of 11.7%, certainly less than the cost of bond credit or the cost of bank credit. Relatively large size of the weighted average cost of capital is due mainly to the high rate of income distribution, which is favorable in terms of future funding opportunities through the issue of shares, because financial liabilities in medium and long-term have a low weight, only 3.3% from the total of permanent capitals.

Through the results obtained, we consider that, in financial terms, the project is viable, generating enough revenues to cover operating costs, including the recovery of the initial investment. Net Present Value, Internal Rate of Profitability, record positive values, and also confirm that the investment is possible and profitable.

In addition, the project creates many economic and social benefits, which recommend it to be admited for financing, and operational and financial risks are negligible.

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