

MAIN ANALYSIS INDICATORS OF THE INVESTMENT EFFICIENCY FROM AGRICULTURAL UNITS THROUGH ACCESSING EUROPEAN FUNDS

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Abstract: Of the many definitions found in specialized literature, the most relevant, according to many experts, is the one given by Pierre Masse, 2000, according to which investment means "replacing an immediate and safe gratification to be waived in exchange for a future hope which can be obtained and is based on the invested assets", shortly, "an uncertain expense for an uncertain future".

A more complete definition is given in the paper „Treaty of banking financial management”: „Investment is the current financial effort made for a better future, created by development and modernization, financed by giving up current and certain consumption, which is low and underperforming, in favor of a higher modern structured consumption in the future, closer to the users' choices, but probable"(Bogdan I., 2002).

Internationally and nationally, various methods of preparation of financial and economic analysis for investment projects are established and approved, but those who implement and evaluate interpret them in different ways.

The purpose of the performed and presented financial analyzes was to determine a set of measures to improve financial analysis and a correlated indicators system that, used in the financial analysis, does not allow major discrepancies between the estimated and achieved situation.

The authors have based the analysis of several methods, namely:

- a) static analysis of indicators;*
- b) dynamic analysis of indicators;*

c) cost-benefit analysis.

In the static indicators analysis, basic and specific indicators were studied. These indicators are used in the analysis of economic efficiency and sustainability investments. Dynamic analysis of economic efficiency involved studying: notion of update; updated net income; updated revenue / costs ratio; internal rate of return.

A special place is reserved for the purpose, objectives and research method. The goal is to improve analyzes and establishing indicators of economic efficiency and investment sustainability. The objectives are: static analysis of investments; establishment and improvement of analytical methods for determining the economic efficiency and sustainability of investments, as well as their advantages and disadvantages. Case studies were carried out on:

S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești, with the investment "Vegetable farm S.C. NORD INTERMED CONSULTING GROUP S.R.L. modernization, through the acquisition of agricultural machinery and grain storage silos";

*S.C. ANDIMIR TOP S.R.L. Mihălășeni, with the investment "Vegetable farm S.C. ANDIMIR TOP S.R.L. modernization, through the acquisition of agricultural machinery, commune Mihălășeni, Botoșani county." Investments were financed 55 % (S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești) and 50 % (S.C. ANDIMIR TOP S.R.L. Mihălășeni) from the European Agricultural Fund for Rural Development. Case studies conducted on account of investments made by S.C. ANDIMIRTOP S.R.L. Mihălășeni and S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești led to a series of **measures to improve the financial analysis** of economic efficiency.*

Measures to improve financial analysis aimed at reducing disparities between the actual situation and the expected situation.

Keywords: agriculture, investments, EU funds, efficiency

INTRODUCTION:

Researches were a natural necessity of the socio-economic status in which we find ourselves, the integration of Romania into the European Union (Alfonsi G. and Granjean P., 1984; Anghel I. and Dinu E., 2000; Butănescu R., 1997; Gittinger J.P., 1985).

During this period of regional economic development, the focus is on increasing the use of local resources, the multi-activity and economic diversification, the development of integrated units, subsidiarity and flexibility, reducing environmental pollution, biodiversity conservation and transition to sustainable development (Dimitriu M., 1994; Spînașe Adriana, 2011, 2013).

To achieve these objectives, businesses investments in Romania have different funding sources, including accessing funds from the European Union (Ștefan G. and all., 2006).

Regardless of the source of funding, any investment should be analyzed in terms of finance and economic viability. At international and national level, various methods of preparation of financial and economic analysis for investment projects are established and agreed upon (Tălmăciu M. and Mihai C., 2004).

Therefore, the authors set out to answer several questions, such as:

- *What are the methods of analysis for determining the efficiency and sustainability of public and private investment?*
- *What are the measures to improve the indicators determining the efficiency and sustainability of investments?*
- *What are the limits of economic efficiency indicators and how can they be improved?*
- *What is the correlation between analysis indicators, growth and viability of the investment?*

In the static analysis, basic and specific indicators were studied, used in the analysis methods of economic efficiency and sustainability of investments. Dynamic analysis of investments' economic efficiency study involved the following indicators: net present income; the updated revenue / cost ratio; internal rate of return.

MATERIALS AND METODS

This paper aims to improve analyzes and determine the economic efficiency and investments indicators. The objectives relate to the following: static analysis of investments; dynamic analysis of investments; establishing analytical methods for determining the effectiveness of investments; improving economic efficiency analysis indicators.

The case study was conducted at two companies that work in agriculture:

a) **S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești**, with the investment "Modernization of vegetable farm. through the acquisition of agricultural machinery and grain storage silos";

b) **S.C. ANDIMIR TOP S.R.L. Mihălășeni**, with the investment "Modernization of vegetable farm through acquisition of agricultural machinery, Mihălășeni, Botosani county.

The total investment was 2,279,948 lei, of which 1,139,974 lei were from a public assistance grant. Investments were financed 55 % (S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești) and 50 % (S.C. ANDIMIR TOP S.R.L. Mihălășeni) from the European Agricultural Fund for Rural Development.

In the agriculture investment process, the economic decision goes through several successive stages, depending on the level at which efficiency calculations occur on optimizing the investments resources allocation.

The first phase is focused on guiding the investment decision throughout the agriculture whole, and within it, the branches of agricultural production and socio-economic sectors. **The second stage** refers to the orientation of investment decisions at farm level, depending on production tasks from developing farm perspective. Once the investment objectives are set, we proceed to **the third stage** of decision-making, concerning investment options using a complex system of specific indicators of economic efficiency.

Based on the updating technique, a dynamic indicators system was developed. These indicators have been assimilated into the analysis methodology of feasibility studies for

investment projects: updated total expenses; updated cash flow; financial rate of return; updated investment payback period.

$$CTA = \sum_{t=1}^d I_t \frac{1}{(1+a)^t} + \sum_{t=1}^D C_t \frac{1}{(1+a)^{d+t}}, \quad (1)$$

where: C_t – operating expenses in the 't' years.

Called „the criterion of minimizing the total effort”, the CTA indicator is used to determine the updated unit costs (AFC):

$$CUA = \frac{CTA}{\sum_{t=1}^D Q_t},$$

(2)

where: Q_t – production in the 't' years.

In choosing the best project, the one with the minimum CTA and AUC will be preferred.

Cash flow is the difference between receipts and expenditure and is used to recover spent funds and make a profit to compensate for the use of funds for investment.

In the economic analysis of investment projects, cash flow is the net income. The financial analysis of the project cash flow is incumbent investor income or benefits and depreciation amount after paying taxes.

Financial rate of return (FRR) measures the ability of an investment to ensure a net profit and determines the discount rate (a) that satisfies the relation:

$$\sum_{t=1}^D P_t \frac{1}{(1+a)^{d+t}} - \sum_{t=1}^d I_t \frac{1}{(1+a)^t} - \sum_{t=1}^D C_t \frac{1}{(1+a)^{d+t}} = 0,$$

(3)

where: P_t – profit in the 't' years.

After determining the FRR, it is compared to its minimum allowed level in the economy. This level is differentiated by the financing investment mode. Therefore, for the objectives financed by loans, the RRF minimum allowable level is the interest rate on the loan capital. For the self-funded purposes, the minimum allowable RRF level is the average return of the investment rate from the sub-branch where the average return of the investment rate from the sub-branch where the investment is made. The comparison of the RRF with the minimum allowable level shows to what extent the investment objective is acceptable as a financial entity.

Date of investment recovery period reflects the ability of an investment objective to return the net invested capital. It is expressed in number of years in which net income is equal to the invested capital, both terms being determined by the update technique (**Beria P., Maltese I., 2011**), as follows:

$$\sum_{t=1}^d I_t (1 + a)^{d-t} = \sum_{t=1}^T VN_t \frac{1}{(1 + a)^t},$$

(4)

where: VN_t – net income in the 't' years; T – number of years in which $VN =$ invested capital.

RESULTS AND DISCUSSIONS

Measures to improve financial analysis and also improved financial analysis will support economists seeking to analyze investment in terms of economic efficiency. The effectiveness and sustainability of investment projects were established by conducting financial analysis, based on the following indicators: investment value; operating income; operating expenses; rate of

operations; payback time; rate of return on invested capital; cash flow coverage ratio; borrowing rates on medium and long term; net present value; available cash at the end.

Criteria for the efficiency and sustainability of investment projects are: income must be increased from one year to another; revenues must be higher than costs; net result for the year must be positive and increasing throughout the period under review; balance sheet equality (active = passive) for each covered year; monthly and annual cash flows during the implementation and post implementation should be positive and increasing; rate of operations (ERR) must be at least 10 %; payback time (Dr) should not exceed 12 years; rate of return on invested capital (RRC) must be at least 5 %; cash flow cover rate (CFCR) must be greater than or equal to 1.2; available cash at the end must be positive; net present value (NPV) must be positive; long and medium term borrowing rate (s) must not exceed 60 %. The analysis took into account a period of 5 years from the completion of the investment project. The financial analysis that was performed on the two units aimed to demonstrate the viability and economic efficiency of investment. **The financial analysis** established for the investments by S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești and S.C. ANDIMIRTOPS.R.L. Mihălășeni revealed that the companies will achieve efficient and viable investments. All the criteria of analysis were met through the calculated indicators. The total investment value of 6,628,663 lei made by S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești resulted in a payback of 10.51 years, a maximum leverage ratio of 59.89 %, a positive NPV and a positive cash available (Table 1).

As for S.C. ANDIMIR TOP S.R.L. Mihălășeni, for a total investment of 2.279.948 lei, the most important indicators expressing economic investments' efficiency were: a payback of less than 12 years, a level of debt below 60 %, a positive available cash and a positive net updated value (Table 2).

The analysis of presented data observed that, in both cases, the investment was different, but the calculated indicators' value did not have a linear connection with the investment value. An obvious difference is observed in the analysis of „operations rate” indicator, which ranged from 39.08 to 41.83 % at S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești, compared with 25.95 to 30.3 %, for S.C. ANDIMIR TOP S.R.L. Mihălășeni.

Table 1 - Indicators expressing economic efficiency and viability of investment at S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești

FINANCIAL INDICATORS							
Year		M.U.	Year 1	Year 2	Year 3	Year 4	Year 5
Nr.	Specification		Value				
1	Investment value	lei	6.628.663				
2	Operating income	lei	2.924.070	2.986.323	3.052.112	3.077.016	3.102.816
3	Operating expenses	lei	1.781.472	1.704.460	1.763.649	1.784.156	1.804.803
4	Rate of operations	%	39,08	42,92	42,22	42,02	41,83
5	Payback period	years	10,51				
6	Return on invested capital	%	16,16	18,18	18,27	18,33	18,40
7	Coverage rate in cash flow	nr.	1,8447	2,1487	2,2382	2,3312	2,4331
8	Medium and long	%	59,89	54,84	50,05	45,55	41,36

	term borrowing rate						
9	Discount rate	%	8				
10	Net updated value	lei	231.773				
11	Available cash at end of period	lei	491.509	1.135.816	1.805.760	2.499.662	3.218.249

At S.C. ANDIMIR TOP S.R.L. Mihălășeni, revenues decreased in the first year after the investment, from 5,069 thousand lei in 2009 to 4,889.7 thousand lei in 2010, after which, in 2012, total revenues were 2.8 times higher than in 2008 (Table 3).

The same situation was found at S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești (Table 4).

The decrease in activity and the recording of such loss is due to the difficult situation in which the unit was after an investment of 7884.5 thousand lei, of which 53.9% represented the company's own contribution.

Table 2 - Indicators expressing economic efficiency and viability of investment at S.C. ANDIMIR TOP S.R.L. Mihălășeni

FINANCIAL INDICATORS							
Year		M.U.	Year 1	Year 2	Year 3	Year4	Year 5
Nr.	Specification		Value				
1	Investment value	lei	2.279.948				
2	Operating income	lei	1.833.976	2.006.894	2.042.386	2.079.514	2.099.819
3	Operating expenses	lei	1.358.132	1.379.597	1.434.848	1.451.778	1.462.724
4	Rate of operations	%	25,95	31,26	29,75	30,19	30,34

5	Payback period	ani	7,71				
6	Return on invested capital	%	19,59	25,99	25,14	25,99	26,38
7	Coverage rate in cash flow	nr.	2,0771	2,8533	2,8617	3,0707	3,2404
8	Medium and long term borrowing rate	%	29,20	25,44	22,19	19,23	16,58
9	Discount rate	%	8				
10	Net updated value	lei	1.268.655				
11	Available cash at end of period	lei	787.870	1.172.718	1.545.651	1.945.236	2.361.130

Table 3 - Outcome indices at S.C. ANDIMIR TOP S.R.L. Mihălășeni - thousands lei

Indicators	2008	2009	2010	2011	2012	%/2008
Total income	4790,2	5069,0	4889,7	5304,6	13321,8	278,1
Total expenses	4694,5	5046,1	4646,2	5247,7	13240,6	282,0
Gross profit	95,7	22,9	243,5	56,9	81,2	84,8
Profit tax	15,3	3,7	39,0	9,1	13,0	85,0
Net profit	80,4	19,2	204,5	47,8	68,2	84,8

Table 4 - Outcome indices at S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești - thousands lei

Indicators	2008	2009	2010	2011	2012	%/2008
Total income	6793,7	10157,8	4374,5	7368,2	3855,8	56,8
Total expenses	6909,0	9858,4	4467,6	7090,9	3756,0	54,4
Gross profit / loss	-115,3	299,4	-93,1	277,3	99,8	33,3*
Profit tax	-	47,9	-	44,42	16,0	33,4*
Net profit / loss	-115,3	251,5	-93,1	232,9	83,8	33,3*

*2009

If this unit's case, we identified an unusual phenomenon. Compared to the situation before the investment, both total spendings and revenues record major reductions. This can not only be explained by the necessary co-financing loan, but it is also owed to several management issues. Theoretically, after an investment, a company must record growth both in terms of workload and in financial terms. This is not the case for S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești.

The company's ability to meet its short-term obligations of operating assets can be analyzed using the general liquidity ratio (Figure 1):

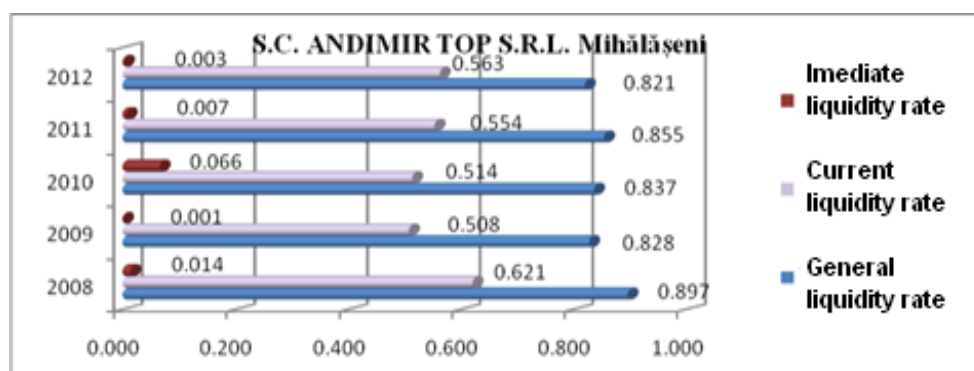


Figure 1: Evolution of liquidity rates at S.C. ANDIMIR TOP S.R.L. Mihălășeni

Most times, it is considered that the overall liquidity reflects a favorable situation for the unit if it is between 1.2 and 2, the minimum limit being 1.

Current liquidity rate is also known as the *acid test*. Its optimum value is between 0.65 and 1.

Immediate liquidity rate characterizes the company's ability to repay debts promptly, taking into account the existing availabilities. Its optimal value is between 0.2 and 0.3.

It is observed that the investment did not affect the company's liquidity rates. Liquidity ratios remained around the same values even after the investment. Although liquidity ratios were not affected by the investment and even if these indicators are not of major importance in the decision to invest, they should be taken into consideration, since they are a barometer for financiers, such as banks. Banks count on liquidity ratios because, in case of bankruptcy, they must make sure that they can recover the loan. Also, to estimate the current function, the activity of the company should also be considered, as specific agricultural companies can register large stocks during the autumn-winter periods.

In the case of S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești, we observe that, after the investment in 2009, the general liquidity ratio was within recommended limits (Figure 2):

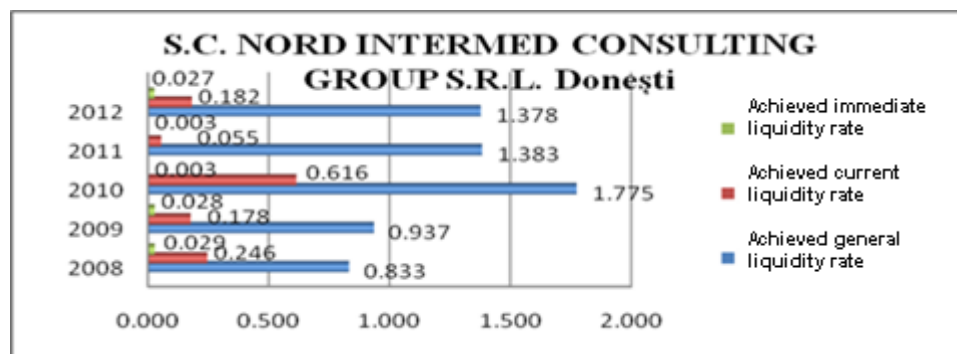


Figure 2: Evolution of liquidity rates at S.C. NORD INTERMED

CONSULTING GROUP S.R..L Dornești

If the case of a possible bankruptcy, the company can cover its short-term debts with current assets, the coverage being 1,378 times. The rates of current and immediate liquidity were below recommended limits, both before and after the investment, which highlights the influence of large stocks.

CONCLUSIONS

Analysis of key indicators on the investment efficiency in agricultural units through European funds was implemented and researched based on a case study that includes two investments made by S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești, Suceava county, with the investment "Vegetable farm modernization S.C. NORD INTERMED CONSULTING GROUP S.R.L., through the acquisition of agricultural machinery and grain storage silos" and S.C. ANDIMIR TOP S.R.L. Mihălășeni, with the investment "Vegetable farm modernization S.C. ANDIMIR TOP S.R.L. through the acquisition of agricultural machinery, Mihălășeni commune, Botoșani county".

Indicators from the two units within the financial analysis register variations of the same indicators obtained after the investment.

Case studies conducted on behalf of the investments made by the two companies **led to a number of measures to improve the financial analysis** of economic efficiency. Measures to improve financial analysis were aimed at reducing disparities between actual and forecasted situation.

To improve the financial analysis of the main efficiency indicators of investment in agricultural units through European funds, the following steps have been recommended: *preparation of a manual for setting up steps for preparing financial analysis and criteria for determining the efficiency of investments; quantifying risks; placing technical indicators of economic analysis, as control points, in financial analysis; introducing correction scales for technical and economic indicators to be taken into account as control; elimination of the flows drawing phase made on activity months and the related correction scale; establish*

methodologies for forecasting the balance sheet (with emphasis on prediction of current assets and liabilities); recalculation of the 12 years limit for the indicator recovery period, taking into account the life of the investment; recalculation of the 60 % borrowing rate indicator in the medium and long term, taking into account the situation before making the investment.

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