

SOLVENCY, INDEBTEDNESS, RATES OF RETURN AND INVESTMENT IMPACT ON ECONOMIC AND TECHNICAL ANALYSIS INDICATORS (CASE STUDY)

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ABSTRACT. The purpose of the performed and presented financial analyzes, in the case of the two units, does not allow major discrepancies between the estimated and achieved situation. The authors have based the research on the technical-economic and financial analysis of investments, which sets economic efficiency and investments viability and assumes forecast of revenue, expenses, profit and loss account, balance sheet and cash flow: a) static analysis of indicators; b) dynamic analysis of indicators, c) cost-benefit analysis. Analysis of economic efficiency and sustainability of investments aims at both static indicators of investment analysis and dynamic analysis of economic efficiency. The goal of research was to improve analyzes and economic indicators for assessing the effectiveness and sustainability of investments and the objectives targeted technical and economic analysis, solvency and viability of investments and the impact of the investment on key indicators of economic and financial technical analysis. Case studies, carried out at S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești, Suceava county and S.C.

ANDIMIR TOP S.R.L. Mihălășeni, Botoșani county, led to a series of measures to improve the financial analysis of economic efficiency and sustainability of investments.

Key words: Agriculture; Investments; EU funds; Efficiency.

REZUMAT. Solvabilitatea, gradul de îndatorare, ratele de rentabilitate și impactul investiției asupra indicatorilor de analiză tehnico-economică (Studiu de caz). Scopul analizelor tehnico-economice și financiare, realizate în cazul celor două societăți comerciale, a fost de a elimina unele discrepante majore în situația estimată și cea realizată. Autorii au avut ca bază de plecare analiza tehnico-economică și financiară a investițiilor, prin care se stabilește eficiența economică și viabilitatea investițiilor și presupune prognoza veniturilor, a cheltuielilor, a contului de profit și pierdere, a bilanțului și a fluxurilor de numerar: a) analiza statică a indicatorilor; b) analiza dinamică a indicatorilor; c) analiza cost-beneficiu. Analiza eficienței economice și a viabilității investițiilor

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vizează atât indicatorii statici ai investițiilor, cât și analiza dinamică a eficienței investițiilor. Scopul urmărit a fost îmbunătățirea analizelor și a indicatorilor de stabilire a eficienței economice și a viabilității investițiilor, iar obiectivele au vizat analiza tehnico-economică, a solvabilității și viabilității investițiilor și impactul investiției asupra principalilor indicatori de analiză tehnico-economică și financiară. Studiile de caz, realizate la societățile comerciale S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești, jud. Suceava și S.C. ANDIMIR TOP S.R.L. Mihălășeni, jud. Botoșani, au determinat o serie de măsuri de îmbunătățire a analizei financiare privind eficiența economică și viabilitatea investițiilor.

Cuvinte cheie: agricultură; investiții; fonduri europene; eficiență.

INTRODUCTION

Researches! were a natural necessity of socio-economic status in which we find ourselves, the integration of Romania into the European Union (Alfonsi and Granjan, 1984; Anghel and Dinu, 2000; Butănescu, 1997; Dimitriu, 1994; Gittinger, 1985; Ștefan *et al.*, 2006).

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, subsidiarity and flexibility, reducing environmental pollution, biodiversity conservation and transition to sustainable development (Ișfănescu *et al.*, 2002; Romănu and Vasilescu, 1996; Spînache, 2011, 2013; Tălmăciu and Mihai, 2004).

To achieve these objectives, investment by businesses in Romania have different funding sources, including accessing funds from the European Union.

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. 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?

Economic efficiency and sustainability of investments aim at analyzing static indicators and dynamic economic efficiency.

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 METHODS

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

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

b) S.C. ANDIMIR TOP S.R.L. Mihălășeni, with the investment "Vegetable farm modernization S.C. ANDIMIR TOP S.R.L., through acquisition of agricultural machinery", Mihălășeni commune, 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.

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 stage 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.

RESULTS AND DISCUSSION

Solvency is the ability of the enterprise to meet its payment obligations when due. Solvency can be expressed by the following indicators: economic solvency ratio and overall solvency ratio.

Economic solvency ratio expresses the coverage level from own capital of long-term obligations, including the obligations to shareholders.

Minimum values of the solvency ratio are estimated to properly vary between 0.3 and 0.5 (*Fig. 1*).

Overall solvency ratio indicates the extent in which total debts are covered by total assets. The higher the value is compared to 1, the better the overall financial situation is. S.C. ANDIMIR TOP S.R.L. Mihălășeni recorded an overall solvency ratio within the standard limits.

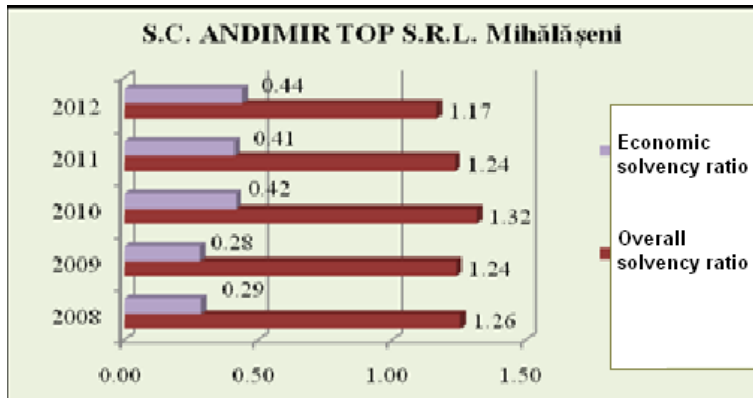


Figure 1 – Evolution of solvency rates at S.C. ANDIMIR TOP S.R.L. Mihălășeni, Botoșani county

Economic solvency ratios are within the standard values only after the investment has been done. We observe that liquidity ratios throughout the analyzed period were below the limit and solvency ratios are within the standard.

As **general solvency ratio** is higher than 1, we can appreciate that the company can cover all debts by its assets.

Economic solvency ratios show that S.C. ANDIMIR TOP S.R.L. Mihălășeni can cover its long-term debts and the debts to associates by equity.

S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești obtained in 2008-2012 an overall solvency ratio higher than 1, the company being able to cover total debt by total assets (Fig. 2).

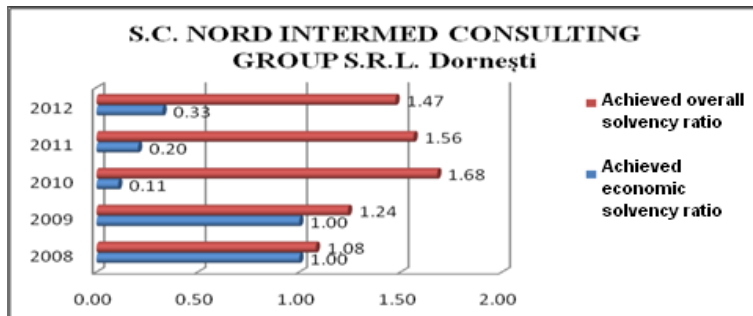


Figure 2 – Evolution of solvency rates at S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești, Suceava county

A difference from S.C. ANDIMIR TOP S.R.L. Mihălășeni is that economic solvency ratio decreases greatly in 2010. This is due

to the contracted loan (3,096,899 lei), required for co-investment. In the period after the investment, the

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company is unable to cover its long-term debts from equity.

Total debt ratio expresses the extent to which the company can

develop much better using borrowed funds. The rate of debts must be less than or equal to 1 (Fig. 3).

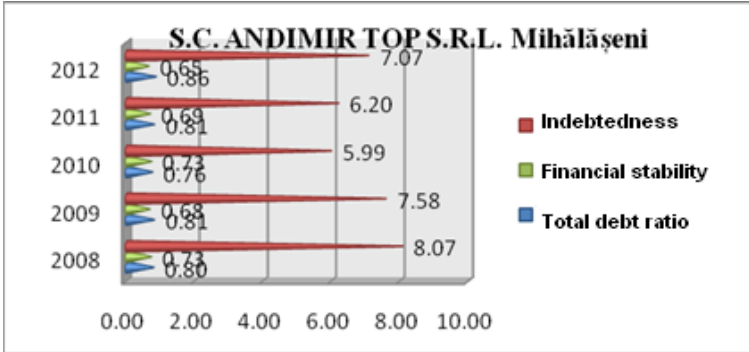


Figure 3 – Evolution of leverage levels at S.C. ANDIMIR TOP S.R.L. Mihălășeni

Thus, it can be concluded that the company is heavily relying on borrowed funds, so its interest expenses can pose problems in terms of reduced profitability.

Indebtedness measures the volume of external financing in relation to the funding of their own.

As general solvency ratio is higher than 1, we can appreciate that the company can cover all debts by its

assets. **Economic solvency ratios** show that S.C. ANDIMIR TOP S.R.L. Mihălășeni can cover its long-term debts and the debts to associates by equity.

S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești obtained in 2008-2012 an overall solvency ratio higher than 1, the company being able to cover total debt by total assets (Fig. 4).

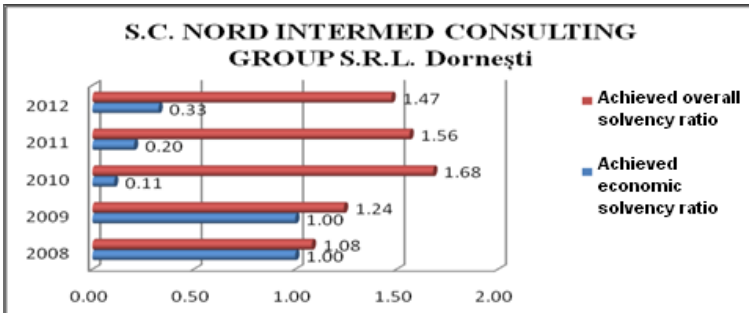


Figure 4 – Evolution of solvency rates at S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești

A difference from S.C. ANDIMIR TOP S.R.L. Mihălășeni is that economic solvency ratio decreases greatly in 2010. This is due to the contracted loan (3,096,899 lei), required for co-investment.

In the period after the investment, the company is unable to cover its long-term debts from equity.

Total debt ratio expresses the extent to which the company can develop much better using borrowed funds. The rate of debts must be less than or equal to 1 (Fig. 5).

Financial stability indicates the share of long-term debts in the invested capital, specifically showing the funding method of the permanent capital.

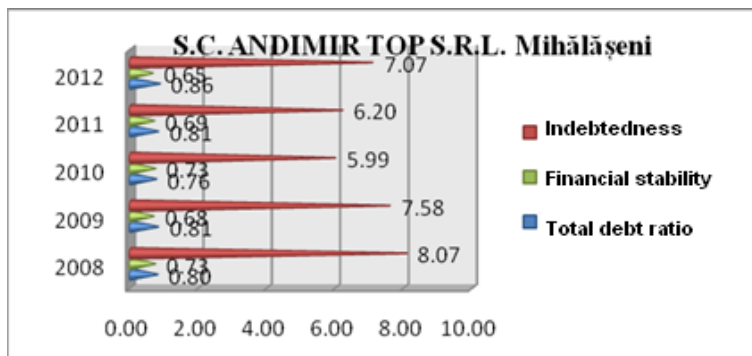


Figure 5 – Evolution of leverage levels at S.C. ANDIMIR TOP S.R.L. Mihălășeni

The rate of total debts is the equivalent indicator of the medium and long term borrowing rate, calculated in the financial analysis. Debt rate was calculated as an absolute value and long-term borrowing rate was calculated as a percentage.

In the financial analysis, the medium and long term borrowing rate is an investment selection criteria. To be accepted for financing, the financial analysis of investment should have a borrowing rate on medium and long term of maximum 60%.

In the financial analyzes performed for both investments, the medium and long term borrowing rate

was higher than 60%.

In the period of 2008-2012, S.C. ANDIMIRTOP S.R.L. Mihălășeni recorded a total debt ratio between 0.76 and 0.86, which is a very high total debt rate, compared to the acceptable limit of 0.6.

Even if a financial analysis demonstrates efficiency and viability of the investment, indicators of technical and economic analysis of the company must be considered, such as: solvency ratios, liquidity ratios and debt levels existing before the investment. They are an important control point for correctly predicting the future situation.

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Dornești recorded, before the investment, between 2008 and 2009, total debt ratios of 0.92 and 0.81.

After the investment, this indicator falls to 0.60 in 2010 (Fig. 6):

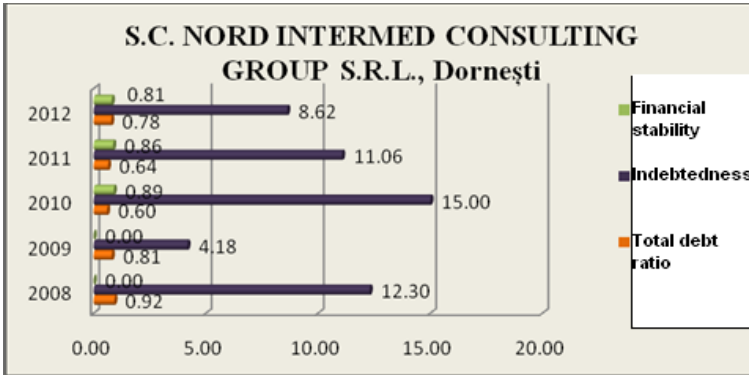


Figure 6 – Evolution of leverage levels at S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești

This decrease is due to high value assets that entered the company’s property (6,628,663 lei).

An unexpected situation at S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești is that, although the investment was made in 2009, total debts ratio increases from one year to another. The growth of this indicator is easy to understand in the first two years after the investment, but in this case it also increases in the third year after the investment. This occurs at all the companies that were analyzed.

The two analyzed companies finance their investments from long-term loans, which led to high indebtedness levels and ratios. The investment loans taken by the two companies have generated interest, which disrupted the financial activity. It is estimated that not always an investment made on loans is profitable.

Rates of return are synthetic indicators, through which the profitability situation or enterprise's ability to produce profits is assessed.

The most significant rates of return are: economic rate of return, the rate of financial return and the commercial rate.

Based on the assets worth 7,403,844 lei, S.C. ANDIMIR TOP S.R.L. Mihălășeni recorded a gross profit of 243,500 lei in 2010, when the economic return was 3.42%, lower than the inflation rate, which was 6.09%, according to the National Statistics Institute.

Dynamically, economic rates of return at S.C. ANDIMIR TOP S.R.L. Mihălășeni decreased even more, because of a rather large difference between asset growth index and gross profit growth index.

In 2011 and 2012 the company made a profit of between 0.80 and 1.14 lei at 100 lei investment. Low

economic rates of return highlight management errors, as existing assets were not used effectively.

Return on equity recorded by S.C. ANDIMIR TOP S.R.L. Mihălășeni in 2010 was 19.42% and in the coming years, due to higher debt, decreased to 3.73%. Instead, the **commercial rate** was below the inflation rate in all three years of analysis.

In 2010, for 100 lei turnover, the registered net profit was 4.99 lei, which is 5.9 times lower than the estimate. During 2010 - 2012, S.C. ANDIMIR TOP S.R.L. Mihălășeni had rates of return which highlighted inefficient use of capital and assets.

To improve the rates of return at S.C. ANDIMIR TOP S.R.L. Mihălășeni, fixed costs first and then variable expenses have to be reduced. It was shown that the growth rate of profit in the period after the investment is not much different from that before the investment.

The same unsatisfactory situation was found at S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești. Economic rates of return values are close to zero. In this case, it turns out that the assets are not efficiently used and that with assets worth 100 lei, a gross profit of between 0 and 3 lei is obtained. Meanwhile, the financial rate of return has registered a satisfactory level of 30.62% in 2011, respectively, for 100 lei equity, a net profit of 30.62 lei was

achieved. Financial rate of return was higher than the rate of return on assets in 2011 and 2012, which confirms the existence of financial leverage.

During 2010 - 2012, the commercial return rate had values close to those of economic efficiency, between 0% and 3.18%.

The question is: "**Do all agricultural companies record low rates of return after an investment ?**"

The answer to this question is, however, subject to further research. The reason is poor management that has not fixed this issue over a period of three consecutive years.

Using case studies, an analysis was made on the impact of investment on economic and technical analysis indicators, before and after the investment (*Table 1*).

The investment of 2,279,948 lei, by S.C. ANDIMIR TOP S.R.L. Mihălășeni, **resulted in an average turnover increase in 2010 - 2012 of 68%**.

The determined impact by the investment is visible through other economic and technical analysis indicators that underwent the following changes during the period 2010 - 2012 .

We observe that an increase in workload, as a result of the investment, as measured by increased turnover by 68%, does not bring positive changes in all indicators.

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Table 1 - The impact of investment on economic and technical analysis indicators at S.C. ANDIMIR TOP S.R.L. Mihălășeni

No.	Indicators	M.U.	Existing value before the investment - year 2008	Existing value after the investment (average 2010-2012)	% compared to 2008
1	Turnover	lei	4119096	6921317	168,0
2	Operating revenue	lei	4744222	7751110	163,4
3	Operating expenses	lei	4545714	7301941	160,6
4	Total income	lei	4790179	7838664	163,6
5	Total expenses	lei	4694492	7711513	164,3
6	Gross profit	lei	95687	127150	132,9
7	Net profit	lei	77236	94297	122,1
8	General liquidity rate	-	0,897	0,837	
9	Current liquidity rate	-	0,621	0,543	
10	Immediate liquidity rate	-	0,014	0,025	
11	Economic solvency rate	-	0,29	0,42	
12	General solvency rate	-	1,26	1,24	
13	Total debts rate	-	0,80	0,81	
14	Indebtedness	-	8,07	6,42	
15	Financial stability	-	0,73	0,69	
16	Economic rate of return	%	1,72	1,63	
17	Return on equity	%	14,03	9,61	
18	Commercial return rate	%	1,88	2,13	
19	Working capital	lei	-893843	-1208850	135,2
20	Working capital need	lei	-199086	-283866	142,6
21	Net treasury	lei	-694757	-924984	133,1

Investment by S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești, worth 7,884,454 lei, **determined a decrease of the average turnover for the period 2010-2012 by 42%**. The determined impact by the investment is visible through other economic and technical analysis indicators that underwent the

following changes during the period 2010 - 2012 (*Table 2*).

In the period after the investment, S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești registered a decrease in workload. Compared to S.C. ANDIMIR TOP S.R.L. Mihălășeni, indicators change in reverse. This is

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determined by the value of the investment, which is 3.45 times greater than for S.C. ANDIMIR TOP S.R.L. Mihălășeni.

Table 2 - The impact of investment on economic and technical analysis indicators at S.C. NORD INTERMED CONSULTING GROUP S.R.L. Dornești

No.	Indicators	M.U.	Existing value before the investment - year 2008	Existing value after the investment (average 2010-2012)	% compared to 2008
1	Turnover	lei	6579624	3793704	57,7
2	Operating revenue	lei	6792530	5191452	76,4
3	Operating expenses	lei	6894444	4872578	70,7
4	Total income	lei	6793656	5199497	76,5
5	Total expenses	lei	6908990	5104850	73,9
6	Gross profit	lei	-115334	94647	-
7	Net profit	lei	-131027	48733	-
8	General liquidity rate	-	0,833	1,512	181,5
9	Current liquidity rate	-	0,246	0,284	115,4
10	Immediate liquidity rate	-	0,029	0,019	65,5
11	Economic solvency rate	-	1,00	0,213	213,0
12	General solvency rate	-	1,08	1,57	145,4
13	Total debts rate	-	0,92	0,673	73,2
14	Indebtedness	-	12,30	11,56	94,0
15	Financial stability	-	-	0,853	-
16	Economic rate of return	%	-	1,11	-
17	Return on equity	%	-	14,15	-
18	Commercial return rate	%	-	2,15	-
19	Working capital	lei	-373084	-14472250	3879,0
20	Working capital need	lei	-438270	1318213	-
21	Net treasury	lei	65186	-2765455	-

CONCLUSIONS

The financial analysis 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, 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 and sustainability of investments. Measures to improve financial analysis were aimed at reducing disparities between actual and forecasted situation.

REFERENCES

- Alfonsi G., Granjean P., 1984** - Pratique de gestion et d'analyse financières. Edit. Les Editions d'Organisations, Paris.
- Anghel I., Dinu E., 2000** - Strategia și analiza economico-financiară - studii de caz (Strategy and economic - financial analysis - Case studies). Edit. ASE, București.
- Butănescu R., 1997** - Investiții-analiză, proces, decizie (Investments - analysis, process, decision). Edit. Univ. "Lucian Blaga", Sibiu.
- Dimitriu M., 1994** - Studiu de fezabilitate privind eficiența investițiilor elaborat pe calculator (Feasibility study on the efficiency of investments by computer). Edit. ASE, București.
- Gittinger J.P., 1985** - Analyse économique des projets agricoles. Economica, Paris.
- Ișfănescu A., Robu V., Hristea Ana Maria., Vasilescu Camelia, 2002** - Analiza economico-financiară (Economic and financial analysis). Edit. Cartea Universală, București.
- Romănu I., Vasilescu I., 1996** - Managementul investițiilor (Management of investments). Edit. Teora, București.
- Spînache Adriana, 2011** - The influence of working capital on rentability at S.C. agraria com S.R.L. Sălcioara, Vaslui country. Lucr. științ. UȘAMV Iași, Vol. 54/2, seria Agronomie, Iași.
- Spînache Adriana, 2013** - Financial analysis - method of investment assessment. Lucr. științ. UȘAMV Iași, vol. 56/1, seria Agronomie, Iași.
- Ștefan G., Dinu A.T., Pânzaru R.L., 2006** - Economie și politici agroalimentare (Economy and agri-food policies). Edit. Alfa, Iași.
- Tălmăciu M., Mihai C., 2004** - Politica de dezvoltare rurală durabilă a Uniunii Europene – o nouă abordare (Sustainable rural development policy of the European Union – a new approach). Anale științ. Univ. "Alexandru Ioan Cuza", Iași.