

RATES OF RETURN AND THE RELATIVE APPRECIATION OF THE PERFORMANCE

MIRON VASILE CRISTIAN IOACHIM,

PH.D STUDENT, „1 DECEMBRIE 1918” UNIVERSITY OF ALBA IULIA, ROMANIA,

e-mail: cristi_mir89@yahoo.com

BURJA VASILE,

PROF. PH.D, „1 DECEMBRIE 1918” UNIVERSITY OF ALBA IULIA, ROMANIA

DOHAN CRISTINA SUSANA,

PH.D STUDENT, „1 DECEMBRIE 1918” UNIVERSITY OF ALBA IULIA, ROMANIA

Abstract

The study of performance through the rates of return represents a complementary approach to performance analysis based on absolute figures, which aims to the completion of the financial performance analyzes of entities.

Thus, one of the central objectives of our approach is to put into light some patterns of performance analysis that are as much as possible modern, comprehensive, adaptable and capable of responding to the information requirements of each category of stakeholders.

The first part of the analysis regarding the rates of return as performance assessment tools aims at presenting the current state of knowledge in this sphere. The research continues with an empirical analysis based on information from a company that activates in the Romanian energy sector where we present the successive stages proposed for the relative appreciation of the performance.

Final results have confirmed the usefulness of the profitability ratios specific for the Du Pont method in the relative analysis of the performance, but also a high dependency between the proposed rates, which in our opinion is a solid premise for an integrated approach to the concept of performance, based both on absolute figures, and also on relative figures.

Key words: rates of return, performance, Return on Assets (ROA), Return on Equity (ROE), Return on Sales (ROS).

JEL code: M40, M41

1. Introduction and context of the study

In general, we can say that economic performance, especially the financial one, is reflected in the profit and loss account. However, if we look at the figures and indicators (seen in practice as indicators for assessing the profitability in absolute value) from this component of the annual financial statements, we observe that they do not always have a high informational power and do not allow accurate comparisons in time and space.

Since our analysis is based on the annual financial statements of an entity, it is obvious that we focused on the efficiency of the use of capital and assets.

2. Research methodology

The analysis of the rates of return as an instrument for a relative assessment of performance started from studying specialize literature dealing with this topic. Thus, based on the approaches of the specialists in the field, we were able to create an original optic regarding the concept of performance analysis.

For the empirical analysis we used specific methods, based on the determination of the rates of return from the Du Pont analysis and dividing them in pairs in order to emphasize the linear correlations between them. These correlations were tested first of all using the Pearson correlation coefficient and second using the factorial decomposition and calculation of the influence of each of the factors in the dynamics of each rate.

3. Literature review

The superiority of the methods of analysis in relative value of the financial and economic profitability is brought to light by various studies [7] who use this approach to achieve a comparative analysis between two entities working in the same field. Moreover, a study published by Conrick, C. J., [3] shows that most entrepreneurs do not obtain from the companies in which they invest a profitability high enough compared to the risks that they take.

Since our analysis studies an entity operating in the energy sector, we believe that the utility of this study is a high one, given the general interest in this area. An essential foundation of this statement is the conclusion of the study presented by Stefan, I. O., [6] which shows that during the financial crisis, this field is the only one that registered a positive evolution of performance. However, there are specialized studies [5] which, using econometric modeling, show that there is no direct relationship between the rates of return and indebtedness degree (key indicator, particularly in times of financial crisis) although the analysis focused on a period and a group of companies somehow similar to the ones mentioned above.

In our opinion, among the rates with the highest informational power we can list the ones presented by Căruntu, C., and Lapadus, M. L., [2], as follows: return on assets (ROA), return on equity (ROE), return on sales (ROS) and the rates of return of the consumed resources (divided by type of expenditure or other specific items). Moreover, the Du Pont analysis is often used in other fields such as the food industry [4] as a tool for analyzing the performance of an entity, but also the factors that can contribute to the increase or decrease of performance.

Another way of detailing the analysis based on rates of return is their factorial decomposition and the determination of the influence of each factor on the type of profitability analyzed. A good example of this is provided by Bărbuță-Mișu, N., [1] who highlights the extent in which the financial leverage influences the financial return of the analyzed entities.

To see how the performance of the entities from the energy sector can be perceived through the rates of return, we conducted an empirical analysis of OMV Petrom SA for the period between 2009-2015.

4. Results and discussions

The rates of the Du Pont analysis taken into account in the study are:

$$ROA = \frac{PN}{TA} \quad (1) \quad ROE = \frac{PN}{K_{PR}} \quad (2) \quad ROS = \frac{PN}{CA} \quad (3)$$

Where:

PN – net profit;

TA – assets;

K_{PR} – shareholders' equity;

CA – turnover.

Based on the calculation of the indicators from above, we can see that all three rates of analysis use net profit as a key indicator of the profitability of the entity. Thus, based on these relationships, the rates of return taken into account in the study recorded the values presented in Table no. 1:

Table no. 1: The values of ROA, ROE and ROS registered by OMV Petrom SA between 2009-2015

Indicator	Year						
	2009	2010	2011	2012	2013	2014	2015
ROA (%)	5.12%	5.60%	10.47%	10.29%	12.44%	4.26%	-1.54%
ROE (%)	9.73%	11.11%	18.02%	16.81%	18.50%	6.98%	-2.51%
ROS (%)	10.65%	12.89%	23.05%	20.14%	26.76%	11.11%	-4.52%

Source: *Author's own processing*

One can easily see that in every year the evolution of the three indicators in the same direction. On the other hand, due to the fact that the net profit is a common element of all three rates of return, we can consider that the similar dynamics of the rates is determined by the high share of the net profit in their composition.

We note that in the period 2009-2013, an improvement of the analyzed rates of return is recorded (although there is a slight correction in 2012 compared to 2011), but the situation is alarming in the years 2014 and 2015, when we see an accelerated decrease of the rates and of the relative profitability of the analyzed company. However, based on the distribution of the correlations, we concluded that each group of two indicators form a linear correlation, this leading to the choice of the Pearson coefficient in order to verify the intensity of the correlation between the variables. The results are shown in Table no. 2:

Table no. 2: The value of the Pearson function for the linear correlations ROA-ROE, ROA-ROS and ROE-ROS

Group of indicators	The value of the Pearson function (R coefficient)
ROA – ROE	0,988
ROA – ROS	0,983
ROE – ROS	0,983

Source: Author's own processing using the soft Wessa, P. (2017), Free Statistics Software, Office for Research Development and Education, version 1.1.23-r7, URL <http://www.wessa.net/>

The values very close to 1 of the Pearson coefficients for all the three groups of indicators suggests a very strong direct correlation. Thus, the calculation relations of the three indicators (1), (2) and (3) shall take the following forms:

$$ROA = \frac{PN}{CA} * \frac{CA}{TA} = ROS * \frac{CA}{TA} \quad (4) \qquad ROE = \frac{PN}{CA} * \frac{CA}{TA} * \frac{TA}{K_{PR}} = ROA * \frac{TA}{K_{PR}} \quad (5)$$

$$ROS = \frac{PN}{K_{PR}} * \frac{K_{PR}}{CA} = ROE * \frac{K_{PR}}{CA} \quad (6)$$

In order to evidence the influence of the factors on the rates of return, a detailed analysis was conducted based on the values recorded in the past two years, namely the years 2014 and 2015. The information from which the analysis starts are presented in Table no. 3:

Table no. 3: Introducing the indicators used in the factorial analysis in 2014 and 2015

Indicator	Year 2014	Year 2015	Dynamics
Net profit (mil. lei)	1837.15	-630.64	-2467.79
Turnover (mil. lei)	16537.18	13952.5	-2584.69
Assets (mil. lei)	43174.44	40894.4	-2280.03
Fixed assets (mil. lei)	37494.2	36500.1	-994.12
Current assets (mil. lei)	5680.24	4285.74	-1394.5
Shareholder's equity (mil. lei)	26315.63	25091.2	-1224.44
ROA (%)	4.26%	-1.54%	-5.80%
ROE (%)	6.98%	-2.51%	-9.49%

ROS (%)	11.11%	-4.52%	-15.63%
----------------	--------	--------	---------

Source: *Author's own processing based on the annual financial statements of OMV Petrom SA*

A. Factorial analysis of ROA

1. The influence of ROS on the dynamics of ROA:

$$\Delta ROA(ROS) = \Delta ROS * \frac{CA_1}{TA_1} = -5,33\%$$

2. The influence of the assets turnover speed on the dynamics of:

$$\Delta ROA\left(\frac{CA}{TA}\right) = ROS_0 * \Delta \frac{CA}{TA} = -0,46\%$$

Observing the two values obtained, we conclude that the dynamics of ROA is largely due to the dynamics of ROS, something which strengthens the findings obtained from the analysis of the correlation based on the Pearson coefficient.

Due to the fact that the share of the fixed assets in the total assets is an important one in each year (it exceeds 82% in all the 7 years analyzed), we consider it appropriate to make an additional factorial decomposition of the assets turnover speed (AI) using the following model:

$$\frac{CA}{TA} = \frac{CA}{AI} * \frac{AI}{TA} \quad (7)$$

Thus, based on the presented model, we see that the speed of rotation of the total assets is also influenced by the speed of rotation of the fixed assets and by the share of the current assets in total assets.

Based on this relationship, we can determine the influence of the rotation speed of assets and of the share of fixed assets in the total assets on the dynamics of ROA.

2.1. The influence of the rotation speed of fixed assets on the dynamics of ROA:

$$\Delta ROA\left(\frac{CA}{AI}\right) = \frac{PN_0}{CA_0} * \Delta \frac{CA}{AI} * \frac{AI_1}{TA_1} = -0.58\%$$

2.2. The influence of the share of fixed assets in the total assets on the dynamics of ROA:

$$\Delta ROA\left(\frac{CA}{AI}\right) = \frac{PN_0}{CA_0} * \frac{CA_0}{AI_0} * \Delta \frac{AI}{TA} = 0.12\%$$

Thus, the analysis of these two relationships reveals that most of the dynamics of the rotational speed of the total asset is given by the speed of rotation of the fixed assets, and to a lesser extent and opposite direction by the weight of fixed assets in total assets.

B. Factorial analysis of ROE

1. The influence of ROA on the dynamics of ROE:

$$\Delta ROE(ROA) = \Delta ROA * \frac{TA_1}{K_{PR_1}} = -9.45\%$$

2. The influence of the financial leverage on the dynamics of ROE:

$$\Delta ROE \left(\frac{TA}{K_{PR}} \right) = ROA_0 * \Delta \left(\frac{TA}{K_{PR}} \right) = -0.04\%$$

The results show that both ROA and the financial leverage bring their direct influence on ROE, but these influences are of different proportions.

Regarding the financial leverage, it had a value of 1.63 in 2015 and 1.64 in 2014, removing the company from the area of excessive indebtedness. In our opinion, a level of maximum 2 (this level would be practically absolute equality between funding sources and borrowed ones) is a stable situation.

C. Factorial analysis of ROS

1. The influence of ROE on the dynamics of ROS:

$$\Delta ROS (ROE) = \Delta ROE * \frac{K_{PR_1}}{CA_1} = -17.07\%$$

2. The influence of the ratio of shareholder's equity and turnover on the dynamics of ROS:

$$\Delta ROS \left(\frac{K_{PR}}{CA} \right) = ROE_0 * \Delta \left(\frac{K_{PR}}{CA} \right) = 1.44\%$$

5. Conclusions

The analysis based on rates has been shown to be a very useful and with a high informational power for stakeholders.

The usage of the rates of the Du Pont analysis revealed a high dependency between all groups of two rates (checked based on the Pearson coefficient), this being demonstrated also by their factorial analysis. The study also showed that from the three pairs of two indicators of the Du Pont method, the most closely correlated (dependent) is found between ROA and ROE, this aspect being verified based on both the Pearson coefficient and the factorial analysis.

In our opinion, the high dependence between the rates of return, and their presentation in different situations (each rate of return being approached both as endogenous variable and as an exogenous variable) highlights, on one hand the relevance of the information drawn from such an analysis, and on the other hand its limits. Thus, we consider that the cyclical dependence generated by the three rates of return analyzed forms an image that excludes other elements from the process of assessing performance. To this end, we believe that the information obtained in the analysis of profitability based on absolute figures come to complete the analysis based on relative figures, with an additional impact in the collection of appropriate information for optimal decision making.

6. Bibliography

1. **Bărbuță-Mișu, N.**, (2014), *Financial Leverage Impact On Return On Equity For Romanian Listed Companies*, "Dunarea de Jos" University of Galati, Faculty of Economics and Business Administration, Risk in the Contemporary Economy, Proceedings Conference, pp. 271-279;
2. **Cărunțu, C., and Lăpăduși, M. L.**, (2012), *Measures To Increase The Rates Of Return Based On The Diagnosis Analysis On Factors*, Constantin Brancusi University of Targu Jiu Annals - Economy Series, Vol. 3, Issue (Month): (September), pp. 57-68;
3. **Conrick, C. J.**, (2008), *A Study of Entrepreneur and Small Businesses' Required Returns and Empirical Observation of Actual Entrepreneurial Returns Attained*, Pepperdine University, Graziadio School of Business and Management, Journal of Entrepreneurial Finance and Business Ventures, Volume 12, Issue 3, pp. 93-114;

4. **Focșan, E. I., et. al.,** (2015), *Du Pont Analysis In The Production And Preservation Of Meat*, Constatin Brancusi University of Targu Jiu Annals - Economy Series, Volume 1II, Issue (Month): (February), pp. 140-146;
5. **Mocanu, F.,** (2009), *The Influence Of Indebtedness Degree On Companies' Performances In Wholesale Trade*, Asociatia Generala a Economistilor din Romania – AGER, Theoretical and Applied Economics, Volume 05(534)(supplement), Issue (Month) May, pp. 256-260;
6. **Ștefan, I. O.** (2012), *The Evolution Of Profitability Of Romanian Enterprises From Key Areas Of Activity During The World-Wide Financial Crisis*, University of Craiova, Faculty of Economics and Business Administration, Annals of Computational Economics, Volume 3, Issue 40, pp. 177-186;
7. **Trandafir, R. A., and Mirea, M.,** (2013), *The Analysis of the Economic and Financial Performance Based On the Rates of Return in Hospitality Industry Companies On the Romanian Seaside*, Ovidius University Annals, Economic Sciences Series, Volume XIII, Issue (Month): 1 (May), pp. 1537-1542;