STUDY REGARDING THE INFLUENCE OF THE ENDOGENOUS VARIABLES ON THE CHANGE OF THE FINANCIAL PERFORMANCE OF THE ECONOMIC ENTITY

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Abstract

This paper highlights the influence of the independent variables: the Rotation of the current assets (ROTA), the Rate of return of the consumed resources from exploitation (RRCE), the Current Liquidity Rate ((RLC), and the Return on Assets (ROA) on the change of the dependent variable - the Income rate of return (RRV) at 35 companies from the manufacturing industry in Romania, listed on the Bucharest Stock Exchange, listed at the premium and standard category, during the period of time 2007-2016. The results obtained in the regression model, confirmed it's validity, there being interdependence between the change of the independent variables and the Income rate of return.

Keywords: the Income rate of return, the Rotation of the current assets, the Current Liquidity Rate

JEL classification: C1, C12, G10

1. Introduction

Most often, the financial performance of a company it's associated with the profitability (rentability), highlighted through the rate of return. The profitability measures the effects of an economic activity, ie the earnings gained by the company, reported at it's efforts, ie the costs incurred in order to obtain profit.

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The profit analysis can provide information regarding the profitability of the economic entity. The economic dictionary defines the rentability as „the ability of an economic entity to get profit, as positive difference between the receipts from its own activity (the turnover) and the cost for manufacturing and marketing (Angelescu C., 2001, pp. 378).

The rentability represents the condition of the existence of an economic entity, being the result of the management professionalism, of using the economic resources, on the background of technical and scientific progress and of the requirements of the competitive market (Cojocaru, C. C., 2000, pp. 229).

In our view, no conclusions can be drawn solely on the basis of the values recorded by the profitability indicators, as they also depend on the field in which the entity operates, on it's market position, etc, being necessary also to analyze the evolution of another indicators that influence the economic and financial situation of the company.

2. Literature review

In Buse L. opinion (2005, pp. 244), the rentability involves eficiency, ie the company's capacity to be profitable by minimizing it's costs while maximizing its revenue. According to the International Financial Reporting Standards (IFRS), the profitability can be evaluated depending on the value of the capital held by a company, but also depending on the turnover's value.

According with Barry Elliott and Jamie Elliott (2011), the profit and loss account represents an useful instrument in evaluating the capacity of the company's management to generate profit on the basis of the available resources.

The literature review identifies more indicators of expressing the profitability of a company, among which we mention: the Return on equity, the Return on assets, the Income rate of return, the Rate of return of the consumed resources from exploitation, etc.

The Return on equity (ROE) highlights an economic entity capacity to generate net profit through the equity used in his activity (Baltes, N., Dragoe, A.-G.-M., 2015, p. 37-44). The Return on equity shows the return on shareholders investment, highlighting the remuneration of it's own equity through all the activities (exploitation, funding, investments).

Gheorghe I. A. (2001, pp. 311), proposes the determination of this indicator, by reporting the net profit value to the value of the equity:

$$ROE = \frac{\text{Net Profit}}{\text{Equity}} x100 \quad (1.)$$

The value recorded by the indicator is useful mainly for investors in their decision to invest or redeem their capital towards another business (Dragotă, V., Ciobanu, A., Obreja, L., Dragotă, M., 2003).

A detailed study of the indicator can be achieved through the Du Pont model, which allows the assessment of a company's financial performance, through the decomposition of the Return on Equity in the net profit margin, turnover and the capital multiplier (Carl, B., McGowan, J., Andrew, R., Stambaugh, Z., 2011, p. 12-13, available online at: http://journals. cluteonline.com /index.php/IBER/article/view/4096.). Soliman M. argues that the variables used in the DuPont model are strongly influenced by the studied activity sector (Drd. Soliman, M., 2004, http://dx.doi.org/10.2308/ accr.2008.83.3.823, available online at: https://papers.ssrn.com/sol3/ papers.cfm?abstract_id=456700).

The Du Pont model relates the Return on assets (ROA) with the Return on equity (ROE) (Horobeţ, A., Lupu, R., Dumitrescu, S., Dumitrescu, D. G., Tintea, I., 2011, p. 85 – 100):

$$ROE = \frac{\text{Net profit}}{\text{Equity}} = \frac{\text{Net profit}}{\text{Total assets}} x \frac{\text{Total assets}}{\text{Equity}} = \text{ROA x The leverage multiplier} \quad (2.)$$

The above relationship highlights that a company's profitability, after paying all his debts, compared with the amount invested by the shareholders, it is influenced by the rentability obtained by using it's assets, as well as by the level of it's financial leverage.

The return on assets (ROA) highlights the capacity of the company's management to obtain profit through it's assets (Balteş, N., Dragoe, A.-G.-M., 2015, p. 37-44, available online at: http://economice.ulbsibiu.ro/revista. economica/archive/67303baltes&dragoe.pdf).

This indicator is determined by reporting the value of the gross profit to the total value of it's assets (Căruntu, C., Lăpăduşi M. L., 2009, p. 95-108):

$$ROA = \frac{\text{Gross profit}}{\text{Total assets}} x100 \quad (3.)$$

The Return on assets evaluates better the company's capacity to obtain profit, as it is not influenced by the high values of the capital multiplier

(Rivard, R.J., Thomas, C.R, 1997, p. 61-76, available online at: http://www.sciencedirect.com/science/article/pii/S0148619596000410).

The Du Pont model explaines the Return on assets (ROA), by linking it with the company's eficiency and profitabilty, according to below formula (Horobeț, A., Lupu, R., Dumitrescu, S., Dumitrescu, D. G., Tintea, I., 2011, p. 85 – 100):

$$ROA = \frac{\text{Net Profit}}{\text{Total assets}} = \frac{\text{Net profit}}{\text{Turnover}} \times \frac{\text{Turnover}}{\text{Total assets}}$$ = Net profit margin x The number of rotations of the total assets (4.)

The net profit margin offers information regarding the company's profitability and regarding the management capacity to reduce the costs, and the Rotation of the total assets determines the company's efficiency in managing it's assets. The Return on assets (ROA) decomposition, highlights that an increase of the level of the net profit margin, will determine an increase of the profitability, and an increase in the number of the rotations of the total assets will determine an improvement of the eficiency in using the company's assets.

The Income rate of return (RRV) highlights the revenues contribution in the increase of the self-financing capacity of the companies, being determined as ratio between the value of the net profit and the value of the turnover (Balteș, N., 2010, pp. 47):

$$RRV = \frac{\text{Net profit}}{\text{Turnover}} \times 100 \qquad (5.)$$

The change of this indicator, is influenced by a system of factors, the most common being: the change of the range of the sold products, executed works and provided services; the change of the price of the sold products, of the executed works and provided services.

The Rate of return of the consumed resources (RRRC) highlights the company's results compared with the costs that need to be paid (Robu, V., Anghel, I., Șerban, E.-C., 2014, pp. 354). The value recorded by this indicator offers precious information to the management, as it shows the efficiency with which the company's resources have been used. It is determined as ratio between the value of the gross profit and the value of the total costs:

$$RRCE = \frac{\text{Gross profit}}{\text{Total costs}} \times 100 \quad (6.)$$

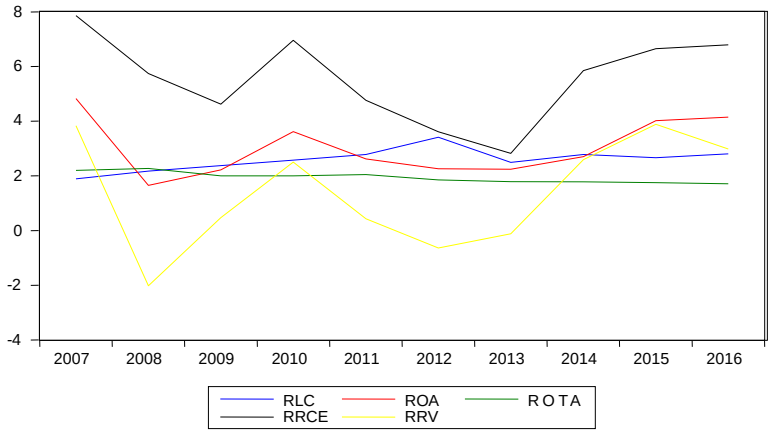
3. Data analysis and results

In order to highlight the evolution of the indicators from the model, during the period of time 2007 – 2016, there were considered the annual average values of the Income rate of return, and also the annual average values of the four independent variables. Also, in the multivariate regression, it was used the average of the indicators for the 10 studied years, for each of the 35 companies. The research involved the following steps:

- The presentation of the evolution of the dependent variable (the Income rate of return) as well as of the four independent variables, during the period of time 2007-2016;
- a descriptive analysis of the regression model variables, based on the Jarque Bera normality test, as well as based on the Kurtosis and Skewness indicators;
- Identifying the equation of the multiple regression model;
- Determining the correlation matrix between the model variables, in order to establish the existence or absence of the collinearity phenomenon between them.

The evolution of the variables included in the model, during the period of time 2007-2016, is presented in the figure no. 1.

Figure 1. The evolution of the variables included in the model, during the period of time 2007-2016 (%)



Source: Author own processing, based on the data taken from the companies annual financial statements, available on www.bvb.ro and on the companies websites

In 2007, the annual average of the Income rate of return (RRV) at the level of the 35 company's was around 4%. In 2008, with the emergence of the global economic and financial crisis, the indicator records a negative value, as a result of the losses recorded by the companies included in the research.

The shocks caused by the crisis were absorbed relatively quickly, so that in the next years, the value of the indicator increased considerably, especially in 2014 and 2015 when, on the background of the turnover growth, there can be noticed an increasing trend, the indicator value returning back to the level recorded before the crisis.

The annual average of the Rotation of the current assets (ROTA) presents a slightly decreasing trend (from 2.2 rotations in 2007 to 1.7 rotations at the end of 2016) due to the increase in the value of the current assets (mainly in the value of receivables).

In 2017, the level of the annual average of the Rate of return of the consumed resources from exploitation (RRCE) was around 8% and the trend was decreasing until 2013. In the following years, the value of the indicator is increasing, and in 2016 it reaches a level close to that one recorded before the crisis.

The annual average of the Current Liquidity Rate (RLC) generally presents an increasing trend, recording close values during the studied period of time, of about 2 in 2007, and 2,6 at the end of the studied period of time. This evolution was due to the increase of the value of the current assets and especially to the value of the receivables.

In 2007, the annual average of the Return on assets (ROA) was about 5%. In the following years (2008-2009), the value of the indicator significantly decreased, as a result of the decrease of the gross profit together with the increase of the value of the total assets. Starting with 2010, the value recorded by the indicator significantly increased until the end of 2016.

The descriptive analysis of the regression model variables is presented in the table no. 1.

Table 1. The descriptive analysis of the regression model variables

	RLC	ROA	ROTA	RRCE	RRV
Mean	2.587422	3.015573	1.940719	5.542585	1.373210
Median	1.756491	2.844623	1.723372	5.842956	2.529572

Maximum	13.17374	15.36141	5.366684	25.61217	15.06808
Minimum	0.517775	-9.676745	0.853520	-13.65916	-30.37606
Std. Dev.	2.338715	5.550768	1.017532	7.136155	8.058012
Skewness	2.838076	0.125675	1.576449	-0.023037	-1.937347
Kurtosis	13.02606	3.280507	5.634151	4.422181	8.479505
Jarque-Bera	193.5799	0.206880	24.61595	2.952721	65.68076
Probability	0.000000	0.901730	0.000005	0.228468	0.000000
Sum	90.55977	105.5450	67.92516	193.9905	48.06236
Sum Sq. Dev.	185.9660	1047.575	35.20261	1731.440	2207.673

Source: Author own processing, based on the data taken from the companies annual financial statements, available on www.bvb.ro and on the companies websites

The value of Jarque Bera test highlights that the values of the Income rate of return, of the Current Liquidity Rate and of the Assets rotation, are normally distributed at the industry level, their associated probability being lower than the relevance level of 5%. The Rate of return of the consumed resources from exploitation and the Return on assets are recording a probablity associated to the Jarque Bera test higher than the relevance level of 5%, which means that their values are not normally distributed.

The value of the Skewness indicator for the Income rate of return and for the Rate of return of the consumed resources from exploitation, highlights that they have a negative asymmetry (Skewness < 0) and a positive asymmetry for the Current assets rotation, the Current Liquidity Rate and the Return on assets (Skewness > 0). The Kurtosis indicator is higher than 3 for all the variables included in the regression model, which means that their values are following a leptocurtic distribution, most of the values being concentrated near the mean, which implies higher probabilities for extreme values than when a normal distribution is recorded.

In the table no. 2, created in the econometric software Eviews, there are presented the estimated coefficients and their associated probabilities, the standard errors, and the value of the t-Statistic test.

Table 2. The testing of the multifactorial regression model parameters

Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.580649	2.163004	-3.504686	0.0015

RLC	0.698904	0.345202	2.024626	0.0519
ROA	0.450053	0.208642	2.157058	0.0391
ROTA	1.106690	0.729163	1.517753	0.0500
RRCE	0.656834	0.148762	4.415338	0.0001

R-squared	0.809919	Mean dependent var	1.373210
Adjusted R-squared	0.784575	S.D. dependent var	8.058012
S.E. of regression	3.740038	Akaike info criterion	5.607632
Sum squared resid	419.6366	Schwarz criterion	5.829825
Log likelihood	-93.13357	Hannan-Quinn criter.	5.684333
F-statistic	31.95687	Durbin-Watson stat	1.961155
Prob(F-statistic)	0.000000		

Source: Author own processing, based on the data taken from the companies annual financial statements, available on www.bvb.ro and on the companies websites

The regression equation is:

RRV = - 7,5806 + 0,6989RLC + 0,45ROA + 1,1066ROTA + 0,6568RRCE

Since the coefficients values are significantly different from zero, it can be noticed that there is a dependence between the dependent variable - the annual average of Income rate of return and the independent variables, as follows:

- The estimated value of the Current assets rotation of 1,1066 highlights the fact that an increase with one unit of the rotation number, will determine an increase with 1,1066 units of the Income rate of return in the manufacturing industry;

- the increase with one unit of the Rate of return of the consumed resources from exploitation, will determine an increase with 0,6568 units of the Income rate of return;

- the increase with one unit of the Current Liquidity Rate will produce an increase with 0,6989 units of the Income rate of return;

- the increase with one unit of the Return on Assets, will determine an increase with 0,45 units of the Income rate of return;

At the same time, the probabilities associated to each independent variable are lower than the statistical significance level of 5%, which means that there is a correlation between the dependent variable and the independent variables.

Adjusted R-squared (0,784575) indicates a strong intensity of the relationship between the dependent variable and the four independent

variables. Therefore, 78.45% of the variance of the Income rate of return (RRV) is determined by the variation of the independent variables, the difference being caused by the variation of the residual variable (e).

The value of the Adjusted R-squared is close to the one of the multiple correlation coefficient (R-squared), which means that the developed regression model can be extended to the whole studied population (Field, A., 2005). The value of the F test is statistically significant (31,95) and the probability that the relationship identified between the studied variables is random, is null. The value of the Durbin-Watson test (1,96) indicates that the regression model is valid from the perspective of the lack of autocorrelation of the residual variable (Țichindelean, M., 2014, pp. 131).

In order to establish the existence or the lack of collinearity between the studied variables, the "r" correlation matrix of the multiple regression model was determined (table no. 3.).

Table 3. "r" matrix of correlation between variables included in the model

	RRV	RLC	ROA	ROTA	RRCE
RV	1				
RLC	0.327043	1			
ROA	0.827822	0.358156	1		
ROTAC	0.048896	-0.3469	0.068145	1	
RRCEXPL	0.825363	0.105966	0.748902	-0.07153	1

Source: Author own processing, based on the data taken from the companies annual financial statements, available on www.bvb.ro and on the companies websites

The lack of the collinearity phenomenon, respectively the independence of the studied variables is highlighted also by the correlation between them, all the values of the correlation index ("r") being subunit. At the same time, the lack of collinearity is also justified by the fact that the modulus of the determinant of the correlation matrix is 1.

4. Conclusions

As the coefficients values from the regression model are significantly different from zero, it was demonstrated that, during the period of time 2007 – 2016, at the 35 companies from the manufacturing industry in Romania, listed on the Bucharest Stock Exchange, at premium and standard category, there is a strong interdependence between the Income rate of return and the

independent variables included the model: the Current assets rotation, the Rate of return of the consumed resources from exploitation, the Current Liquidity Rate, and the Return on Assets – determined as annual averages.

The interdependence is confirmed by the value of the Adjusted R-squared coefficient, 78.45% of the variance of the Income rate of return (RRV) being determined by the variation of the independent variables.

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