

EXTENDED MODEL FOR ANALYSIS OF RETURN OF EQUITY

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Abstract: The issue of return on equity is topical at all phases and stages of enterprise's development. Capital owners are interested in return on their investments in the enterprise's capital. Return on equity is considered in two aspects. In the first aspect it is considered as an independent object of the business analysis. Thus, the return on equity is reviewed as a resultative indicator whose formation and dynamics are influenced by a system of factors describing different sides of the enterprise's overall business. In the second aspect, return on equity is analyzed, assessed and controlled as a factor affecting both the changes that occur in the capital structure and in the return on the entire invested capital and the financial balance, respectively, imbalance, of the enterprise. The enterprise's financial balance is considered as an economic category and as a system. As a system, it is characterized and defined as a set of elements among which the respective interrelations objectively exist and occur. We believe that as elements of the system of financial balance, respectively, imbalance, of the enterprise, we can define the enterprise's return, liquidity and financial stability. This publication highlights the return on equity as an independent object of the analysis. From this point of view, we present an extended model of analysis of return on equity, which in its nature, is a symbiosis between the DuPont model for analysis of return on total assets and the model for analysis of the effect of financial leverage. This publication studies the methodology for analysis of return on equity by means of the extended model presented. The methodology for analysis of return on profit is approbated in accordance with the details about the business of an operating industrial enterprise in Bulgaria. This publication is aimed at developing a theoretically justified and practically feasible methodology for analysis of return on equity by means of the extended model of analysis. The knowledge obtained about the dynamics of return on equity and about the factors affecting such dynamics, is useful both for the internal and the external users of information knowledge about return on equity are useful for the financial management and in general for the management of every enterprise with view of optimizing the capital structure, achieving and maintaining financial balance in operating and strategic aspect. Internal users of information may use the opportunities provided by advanced information and communication technologies for analysis of both the return on equity and of the financial position and financial analysis of the enterprise. This may be done in real time at any location worldwide by using cloud technologies for business analysis. The analysis of return on equity through the extended model is made on the basis of information from the enterprise's financial statements, i.e. public reporting data. Therefore, the external users, in particular shareholders and partners, may make informed decisions for investing their funds in the enterprise and for establishing business contacts with it.

Keywords: equity, methodology, knowledge, financial statements, DuPont model

1. INTRODUCTION

The extended model for analysis of enterprise's return on equity allows to analyze, assess and control the effect of a number of important factors describing the different aspects of the enterprise's overall business on the dynamics of return on equity (owner's capital). Based on the resultative information, the financial management obtains knowledge both about the efficiency of the use of fixed tangible assets, the increased or decreased turnover rate of current assets, the efficiency of revenue, the return on total assets, the capital structure and the price of borrowings, and about their impact on the return on equity.

2. EXTENDED MODEL FOR ANALYSIS OF RETURN ON EQUITY

The extended model for analysis of the enterprise's return on asset is a peculiar symbiosis between two models for analysis.³⁶²

The first of them is the DuPont model for calculation of return on total assets. The following formula is used:

$$ROTA = \left[\left(\frac{1}{\frac{FA}{I} + \frac{CA}{I}} \right) \times \left(\frac{NP + Int}{I} \times 100 \right) \right]$$

³⁶² Chukov K., R. Ivanova, Financial and business analysis, UNWE Publishing House, C., 2014, page 257

where: $\frac{\overline{FA}}{\overline{I}}$ – fixed asset absorption ratio;

$\frac{\overline{CA}}{\overline{I}}$ – current asset workload ratio;

$\frac{NP+Int}{I} \times 100$ – return based on total amount of enterprise's revenue.

Fixed asset absorption ratio describes the efficiency of their use. It shows the average amount of fixed assets used for generation of revenue of one lev, which is recognized and accounted for as current revenue for the reporting period.

The current asset workload ratio describes the efficiency of the use of this type of enterprise's resources. It shows the average amount of current assets involved in the generation of revenue of one lev for the reporting period, which has also been recognized and accounted for as current revenue.

As the whole amount of revenue generated during the reporting period is taken into account, the average amount of fixed and current assets of the enterprise is calculated and used in order to achieve comparability of data.

Revenue-based return characterizes the efficiency of revenue. It shows the amount of the book profit and the interest expenses that correspond to revenue of one lev generated during the reporting period that is recognized and accounted for as current revenue. Revenue-based return characterizes the efficiency of revenue, provided the enterprise has not used interest-bearing borrowings for its business, i.e. it carries out its business with own capital and non-interest-bearing borrowings. This is so because the loan interest expenses are reported as current financial expenses and take part in the formation of the book profit.

The second model is the extended model for the effect of the financial leverage, which may be represented with the following formula:

$$E = K^d \times \left\{ \left[\left(\frac{1}{\frac{\overline{FA}}{\overline{I}} + \frac{\overline{CA}}{\overline{I}}} \right) \times \left(\frac{NP + Int}{I} \times 100 \right) \right] - I\% \right\}$$

where: K^d – enterprise's leverage ratio;
- internal interest rate.

The leverage ratio describes the general structure of enterprise's capital. It is calculated as a ratio of borrowings to the enterprise's own capital. It shows the amount of borrowings that corresponds to one lev of the capital invested by the owners.

The internal interest rate is calculated as a percentage ratio of loan interest expenses to the amount of borrowings. The internal interest rate is different from the loan interest rate as the whole amount of borrowings interest- and non-interest-bearing) is taken in consideration for its calculation.

Therefore, the return on equity may be calculated with the following formula:

$$ROE = ROTA + E =$$

This formula shows that the following factors affect the dynamics of return on equity:

- 1) changes in the fixed asset absorption ratio.
- 2) changes in the current asset workload ratio.
- 3) changes in return calculated on the basis of revenue.
- 4) changes in the leverage ratio.
- 5) changes in the internal interest rate.

The impact of factors may be identified in accordance with the method of subsequent substitutions.

3. APPROBATION OF THE EXTENDED MODEL

The methodology for analysis of return on capital is approbated with the input data about the business of the industrial enterprise Kant OOD, which are summarized in table 1.

In order to calculate the return on equity, we need to identify the values of factor indicators involved in the extended model for analysis. They are summarized in table 2.

Table 1. Input data (BGN'000)

Indicators	Previous year	Current year	Change
1. Average amount of capital (), including:	107500	105000	-2500
a) of equity ()	61000	59500	-1500
b) of borrowing ()	46500	45500	-1000
2. Average amount of assets (), including:	107500	105000	-2500
a) of fixed assets ()	69875	70350	475
b) of current assets	37625	34650	-2975
3. Total amount of revenue (I)	150500	173250	22750
4. Book profit (NP)	9600	9800	200
5. Interest expenses (E ⁱ)	1050	1035	-15

In accordance with the data presented in the table, we can make the following conclusions:

1) Return on total assets calculated as a percentage ratio of the sum of the book profit and the interest expenses to the average amount of assets (standard model) and the return on total assets (DuPont model) are equal. The return on total assets for the current year in comparison to the previous year has increased with 0,4121 points.

2) Return on equity calculates as a percentage ratio of the book profit to the average amount of equity (standard model) and the return on equity (extended model) are equal. In comparison to the previous year the return on equity for the current year has increased with 0,7329 points.

3) The fixed asset absorption ratio has decreased with 0,0582 BGN, which means that during the current year the efficiency of their use has become better in comparison to the previous year.

4) The current asset workload ratio has decreased with 0,0500 BGN, which means that in comparison to the previous year during the current year the turnover rate of these enterprise's funds has been accelerated.

5) The total revenue-based return has decreased with 0,8224 points, which has negative impact on the dynamics of the return on equity.

6) The enterprise's leverage ratio has increased with only 0,0024 BGN.

7) The internal interest rate marks an increase of 0,0167 points.

Table 2. Additionally calculated indicators

Indicators	Previous year	Current year	Change
1. Fixed asset absorption ratio, BGN	0,4643	0,4061	-0,0582
2. Current asset workload ratio, BGN	0,2500	0,2000	-0,0500
3. Total revenue-based return, %	7,0764	6,2540	-0,8224
4. Leverage ratio, BGN	0,7623	0,7647	0,0024
5. Internal interest rate, %	2,2581	2,2747	0,0167
6. Return on total assets, %			
a) model 1 – standard model	9,9070	10,3190	0,4121
b) model 2 – DuPon model	9,9070	10,3190	0,4121
7. Financial leverage effect, %	5,8307	6,1515	0,3208
8. Return on equity, %			
a) model 1 – standard model	15,7377	16,4706	0,7329
b) model 2 – extended model	15,7377	16,4706	0,7329

The impact of the factors used for the extended model on the dynamics of return on equity for the current year in comparison to the previous year is summarized in table 3.

On the basis of the data shown in the above table, we can make the following conclusions about the dynamics of return on equity for the current year in comparison to the previous year:

Table 3. Impact of factors

Factors affecting the dynamics of return on equity	Impact, points	
	increase	decrease
1. Changes in the leverage ratio	0,0184	-
2. Changes in the internal interest rate	-	0,0127
3. Changes in the fixed asset absorption ratio	1,5516	-
4. Changes in the current asset workload ratio	1,5703	-
5. Changes in the total revenue-based return	-	2,3948
Factors with positive impact	3,1404	-
Factors with negative impact	-	2,4075
General impact of factors	0,7329	-

1) The increase of the leverage ratio has resulted in increase of return on equity with 0,0184 points. In particular, here we can see that the use of borrowings in the enterprise's business may cause decrease in the return on equity. This fact is relevant to the effect of the financial leverage. However, the increase of the leverage ratio value is also relevant to the enterprise's financial risk. The impact of changes in the enterprise's leverage ratio is also related to the impact of changes in the internal interest rate.

2) The increase in the price of borrowings reflected by the increase of the internal interest rate has caused 0,0127 points decrease of the return on equity.

3) As a result of the increase of the efficiency of use of fixed assets expressed in the decrease of the absorption ratio, the return on equity has increased with 1,5516 points.

4) Under the effect of the increased turnover rate of the enterprise's current assets expressed in the decrease of the workload ratio, the return on equity has increased with 1,5703 points.

5) As a result of the decrease of the total revenue-based return, i.e. the deteriorated efficiency of revenue, the return on equity has decreased with 2,3948 points.

Under the general effect of the five factors, the return on equity has increased with 0,7329 points, i.e. as much as it has changed during the current year in comparison to the previous year.

The impact of factors is presented on figure 1.

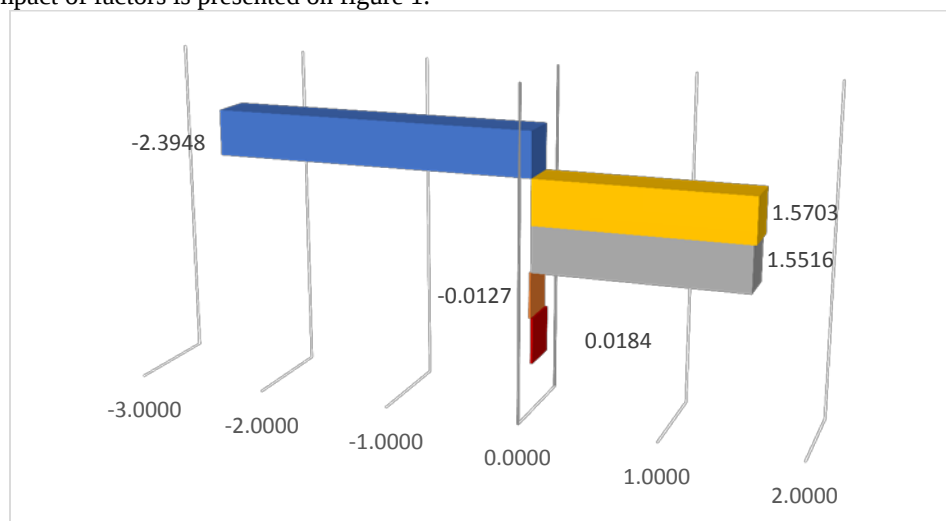


Figure 1. Impact of factors

The analysis of return on equity by means of the extended model may be further deepened in relation to the elements of the fixed and current assets of the enterprise. The efficiency of use of fixed tangible assets, and in particular of production plant, machinery and equipment, is crucial for the industrial enterprises. From this point of view, we may analyze and assess the impact of changes in the efficiency of use of fixed assets by means of their absorption ratio (investment absorption).

Furthermore, the increased or decreased absorption of different elements of the current assets is of interest for the financial management of industrial enterprises.

4. CONCLUSION

The use of extended model for analysis and assessment of return on capital in business practice provides the financial management of the enterprise with knowledge and useful information. Such knowledge is relevant to the method of capital structuring, to the amount of equity and borrowings and to their ratio, to the use of borrowings in the enterprise's business for the purposes of increasing the return on equity, to maintaining positive effect of the financial leverage, to maintaining positive differences both between return on total invested capital and its average price, and between the return on equity and its average price, increase of the efficiency of use of fixed assets and mainly of fixed tangible assets, to the acceleration of current asset turnover rate, increase of total efficiency of enterprise's revenue, etc. Obtained knowledge and collected information are useful for making operating and strategic decisions for the proper management of owners' capital.

REFERENCES

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