The Analysis of Profitability and Risk for Romanian Companies. Case Study: The Pharmaceutical Industry

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Abstract: - In this paper, a study regarding the return and the risk of four Romanian companies that run in the pharmaceutical industry was carried out. The study aimed the period 2007 – 2010, including two years of growth for Romanian economy and two years of downturn. The goal was to follow the way the economic crises influences the profitability and the risk of these companies. For this, three rates of return were studied: return on assets, return on equity and return on sales and two indicators for appreciating the risk: degree of operating leverage and degree of financial leverage. The study made showed that the economic crises did not visibly influenced the measures of return, that between these rates there isn’t always a direct correlation and that the two degrees of leverage have a lot of limits and restrictions when applying.

Key-Words: - return on assets, return on equity, return on sales, degree of operating leverage, degree of financial leverage, operating risk, financial risk

1 Introduction

The issues of profitability have always been a current concern, both among researchers and practitioners. Companies can set different goals, but profitability remains a key element, required to ensure market survival.

The profitability analysis should be made in the context of risk. Between these two variables must be a very strong direct relationship. A high level of risk must lead as well to the possibility of getting similar gains as otherwise the entrepreneurs wouldn’t invest any more in that business. The existence of discrepancies between these two variables (low risk combined with a high return and vice versa) should be quickly corrected by the market, through its mechanisms.

This way, the risk establishes a certain ratio between size and expected level of profitability. For this reason, a manager will not seek a business with no risk, but obtaining an optimal correlation between risk and return. Managers who want to earn big yields in a short period of time will thus be forced to take on high levels of risk.

Risks affecting profitability are many and diverse. Among these risks, the operating risk stands which is closely related to the company's core business. The occurrence of this type of risk is determined by the general economic conditions in which the firm runs and can be caused both by external and internal factors.

The operational risks include, in fact, several types of risk and may affect in different ways the companies, depending on their fragility. Some operational risks arise in the national economy and affect all the firms, usually with different intensities. Other risks may only affect companies in a particular industry, while others may affect only a specific company. Also, the risks may originate both within firms (internal risks) and outside (external risks).

Another risk that an enterprise may face is the financial risk. This is caused by borrowed capital and is influenced by factors such as financial structure of the company, its financial situation, market interest rates, inflation, etc.

Unlike the operational risk which leads to the reduction of the operating profit, the financial risk has more serious consequences, threatening the very survival of the company. In fact, the materialization of the operational risk is likely to cause the occurrence of financial risk, whereas a reduction in operating profit will make difficult to pay both the interest rates and the installments on loans. If a temporary reduction in profitability has no negative effects on a longer time horizon, the impossibility of paying the debts to creditors may have immediate serious consequences, both financial and non-
financial. In addition to the penalties incurred, the firm may not be able to contract new loans in the future or will be forced to pay higher interest rates.

The economic crises can be counted among the external risk factors. These generate an unstable business climate throughout the economy, severely affecting the profitability of all firms and can lead to bankruptcy of many companies. Economic crises can have various effects and their influence can be transmitted by a variety of ways: cutting the sale price, lower sales, increased credit costs, difficult access to credit, inflation, etc. At the microeconomic level, all these leads to a decrease in profit margins and to a relative grow in fixed costs (both operating and financial), which generate an increase in operating and financial risk.

In this article, a study regarding the return of Romanian companies for the period 2007-2010 is carried out. The purpose of the study is pointing out how the risk caused by the global economic crisis affects the profitability of the firms analyzed. For this purpose, three rates of return were studied: return on assets, return on equity and return on sales. Also, to point out the risk, there were calculated the degree of operating leverage and the degree of financial leverage. The study was conducted on four companies operating in the Romanian pharmaceutical industry and all of them are listed on the Bucharest Stock Exchange: Antibiotice (ATB), Biofarm (BIO), Centrofarm (Centro) and Zentiva (ZEN). The data to be used were extracted from the annual financial statements of these companies.

2 Literature Review

The specialized literature is particularly concerned with the profitability and risk issues.

The necessity for risk management is well seen by Francois-Serge L’Habitant and Olivier Tinguely. They appreciate that “the need for management of financial risk has increased in the wake of two major economic events: the progressive opening of national economies to the world market since World War II and the breakdown of the Bretton Woods fixed exchange rates system in the early 1970s. Since then, companies have been increasingly exposed to several kinds of risk and various financial crises”. They recognize the economic crises as a major factor of the risks a firm faces and that “companies must take risks to stay in business and to gain competitive advantage. What is important for them is to identify and handle risks correctly. This ability can actually become a source of profit. Conversely, an unidentified, mismanaged, misunderstood, unintended or incorrectly priced risk may adversely affect the company's profit.”.[5]

Richard Lord and William Beraneck conducted a study on the relationship between operating characteristics and operating risk. The two authors found that "four elements are identified as influencing operating risk: (1) unit operating margin, (2) the complement of the firm’s average tax rate, (3) the covariability of unit output with market returns, and (4) firm size". In a study on the electric utility, airline and automotive industries, the researchers concluded that operating risk is negatively related to operating margin, firm size and the average income tax rate and positively related to demand data covariance of output with market returns, but the last relation is not significant. [6]

John Groth has made an analysis regarding the operating cycle and its main features, meaning risk, return and opportunities. Thus, managed properly, “the operating risk [...] is the origin of economic returns from operations. Managed ineffectively, it is the source of economic losses and, in the extreme, ruin. Because of its great significance, it is imperative that managers understand the cycle and related key relationships”. He considered that the operational cycle is of great importance for managers, because, properly done, it can produce results in a short time. He also identifies the sources for increasing business value from an improved management of the operating cycle: “greater levels of economic returns from operations; a reduction in operating risk; less capital invested and at lower risk; lower cost of capital; and increased tax benefits”. [3]

Alexa Michael considers that the financial risk is composed of three categories: market risk, credit risk and financing/liquidity risk. “Market risks are losses that can occur when there are changes to market prices or rates. This usually means movements in interest rates or foreign exchange rates, but it can include fluctuations in the cost of basic commodities. Credit risks occur when customers fail to pay for goods or services supplied on credit. [...] Financing risk covers an organisations ability to obtain the funding it needs - for example, access to sufficient credit from its bank.”. [7]

3 Concepts and Methodology

In this study, three rates of return were analyzed, i.e. return on assets, return on equity and return on sales. Also, the degree of operating leverage and the degree of financial leverage were calculated. The relations for calculating these five indicators are as follows:
Return on assets (ROA) = Operating result / Invested capital;
Return on equity (ROE) = Net profit / Equity;
Return on sales (ROS) = Operating result / Turnover;
Degree of operating leverage (DOL) = $\Delta$% Operating result / $\Delta$% Turnover;
Degree of financial leverage (DFL) = $\Delta$% Net profit / $\Delta$% Operating result,
where $\Delta$% means the percentage change occurred in two consecutive years.

The rates of return were calculated for the four years studied, while the degrees of leverage, due to the calculation method, were determined only for the period 2008 - 2010. It is expected for the analysis to show a deterioration in the level of these indicators over the last two years, 2009 and 2010, when the economic crisis stroke Romania.

### 4 Results and Discussions

In table 1 the return on assets is calculated for the period 2007-2010, for the four companies studied.

<table>
<thead>
<tr>
<th>ROA</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATB</td>
<td>13.67%</td>
<td>7.79%</td>
<td>8.11%</td>
<td>9.06%</td>
</tr>
<tr>
<td>BIO</td>
<td>10.03%</td>
<td>11.13%</td>
<td>10.09%</td>
<td>11.63%</td>
</tr>
<tr>
<td>CENTRO</td>
<td>14.03%</td>
<td>65.98%</td>
<td>58.56%</td>
<td>3.15%</td>
</tr>
<tr>
<td>ZEN</td>
<td>3.54%</td>
<td>7.91%</td>
<td>3.65%</td>
<td>18.57%</td>
</tr>
</tbody>
</table>

For ATB, there is a drastic reduction in ROA from 13.67% in 2007 to 7.79% in 2008. In subsequent years, the rate had a slight increase, reaching 9.06% in 2010. It is noted that ROA is not affected by the global economic crisis, as the fall occurs in 2008, before the crisis, and during the crisis the rate increased every year.

For BIO, the level of this rate is relatively stable, showing lower annual fluctuations which are not caused by the economic crisis.

CENTRO presents an atypical situation. In 2008, it posts a very high increase, from 14.03% to 65.98%. The increase is due to capital reduction (with more than 50%) and to operating profit growth (over 100%). The level in 2008 is not realistic, since the company posts net loss, which reduces the equity. In 2009, the invested capital and the operating profit fell, resulting in a decrease in the rate of return on assets, but its level is still very high (58.56%). In 2010, the invested capital of CENTRO increased slightly, but the operating profit decreased greatly (over 90%), which led to a ROA of 3.15%. It can be said that the company presents an unusual situation for ROA, both in level and as dynamic, but not being able to say in what extent the evolution is determined by the global economic crisis.

ZEN has a large fluctuation of ROA, as it increases in 2008, then becomes negative in 2009 and increase to a maximum of the period under review in 2010. In this case too we can not establish a direct correlation of ROA evolution with the economic crisis.

For the return on equity, the data are presented in the following table.

<table>
<thead>
<tr>
<th>ROE</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATB</td>
<td>12.76%</td>
<td>4.16%</td>
<td>4.81%</td>
<td>4.68%</td>
</tr>
<tr>
<td>BIO</td>
<td>8.96%</td>
<td>-16.46%</td>
<td>14.45%</td>
<td>9.90%</td>
</tr>
<tr>
<td>CENTRO</td>
<td>-1.69%</td>
<td>-34.00%</td>
<td>-74.70%</td>
<td>1.58%</td>
</tr>
<tr>
<td>ZEN</td>
<td>1.63%</td>
<td>8.13%</td>
<td>-1.02%</td>
<td>16.93%</td>
</tr>
</tbody>
</table>

As expected, the volatility of this rate is much higher than for ROA. In the case of ATB, the maximum level is achieved in 2007 (12.76%), then it drops to about 4% in coming years without being influenced visibly by the economic crisis.

For BIO, there is a negative level (-16.46%) in 2008, while the other years had positive results. The maximum level is reached in 2009 (14.45%).

CENTRO has, in this case too, the largest variations. In the first three years, only negative values are obtained (-1.69% in 2007, -34% in 2008 and -74.70% in 2009), then in 2010, the level is positive (1.58%), but is still quite low. This variation is primarily due to the net result, which was negative in 2008 and 2009. The equity has fluctuated as well, dropping a lot in 2008 and 2009 (approximately 45%), then increased slightly in 2010. We note for this company, a completely different situation as compared to ROA. Thus, the minimum levels of ROE are obtained in 2008 and 2009 (when the maximum values for ROA were obtained), which shows, surprisingly, a negative correlation between these two rates of return.

ZEN posted the maximum level of ROE in 2010 (16.03%) and the minimum one in 2009 (-1.02%). For this company, the growths alternate with decreases, and a pattern of evolution can’t be established. However, by making a comparison with ROA, it appears that the two rates are correlated in evolution, which is economically justified.

Overall, it is estimated that the return on equity, regarded as a remuneration for shareholders, was relatively low, so that these firms brought a small profit for shareholders.
To analyze the return on sales, we used the data from the table below.

<table>
<thead>
<tr>
<th></th>
<th>ROS 2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATB</td>
<td>18.34%</td>
<td>11.74%</td>
<td>11.91%</td>
<td>12.54%</td>
</tr>
<tr>
<td>BIO</td>
<td>24.59%</td>
<td>22.35%</td>
<td>20.43%</td>
<td>20.58%</td>
</tr>
<tr>
<td>CENTRO</td>
<td>13.79%</td>
<td>18.52%</td>
<td>8.92%</td>
<td>0.52%</td>
</tr>
<tr>
<td>ZEN</td>
<td>4.76%</td>
<td>10.33%</td>
<td>-5.84%</td>
<td>24.24%</td>
</tr>
</tbody>
</table>

ATB has a maximum value of 18.34% in 2007, and then ROS decreased to 11.74% the following year. In 2009, the rate increased slightly, reaching 12.54% in 2010. In the case of ATB, there is a close correlation of the three types of rates of return, which is an advantage in terms of predictability.

In the case of BIO, ROS is relatively stable, reaching the maximum value in 2007 (24.59%) and the minimum one in 2009 (20.43%). We notice a high level of this rate of return and a low fluctuation, including during the economic crisis, which shows a good performance obtained in sales management.

CENTRO has higher ROS levels in the first two years, after that the rate of return falls to 8.92% in 2009 and to 0.52% in 2010, possibly as a result of economic crisis. The level of the last year is very small and means an occurrence of the operational risk, and the company is very close of posting a negative unit result.

The biggest variation in ROS is encountered in the case of ZEN. In 2007, the level of 4.76% is considered quite low, as the company has problems in ensuring a fair return on sales. In 2010, the ROS level increased to 10.33%, but dropped in 2009 to 5.84%. This is the only negative value of ROS reached in the period, for all the four companies studied. In exchange, in 2010, ROS reaches 24.24%, representing the peak for ZEN. In the case of this firm we notice there is a close correlation between all the three types of rates of return, which indicates that the operational activity has a great impact on the results of the company.

For the analysis of the operational risk, we calculated the degree of operating leverage which is presented in Table. 4.

<table>
<thead>
<tr>
<th></th>
<th>DOL 2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATB</td>
<td>6.70</td>
<td>1.78</td>
<td>1.54</td>
</tr>
<tr>
<td>BIO</td>
<td>-1.15</td>
<td>-1.87</td>
<td>1.04</td>
</tr>
<tr>
<td>CENTRO</td>
<td>1.83</td>
<td>-0.91</td>
<td>-9.35</td>
</tr>
<tr>
<td>ZEN</td>
<td>11.43</td>
<td>7.44</td>
<td>-14.93</td>
</tr>
</tbody>
</table>

The degree of operating leverage measures the operational risk relying on changes in the operating result against the changes of sales. A higher volatility may result in large increases in operating profit, if sales grow, but also in big losses if they decline.

For ATB, DOL is 6.70 in 2008 (fairly high, which means a higher operational risk), but falls pretty much in the coming years, reaching 1.78 in 2009 and 1.54 in 2010. Values in last two years mean a low operational risk. It should be noted that the operating profit and net profit increased over the past two years, but they did not reach the maximum values encountered in 2007.

For BIO, there are negative values of DOL in 2008 and 2009. For these years, DOL has no economic significance, as the operating profit falls while turnover increases. Even if the percentages of variation of these two indicators are not large, the evolution in reverse makes loosing the economic significance for DOL. In this case, in order to assess the operational risk, we should discuss in detail each variable comprising the coefficient. Thus, both in 2008 and 2009 turnover increased, but operating profit decreased, resulting in the opposite evolution of the two variables and in negative levels for DOL. But sales growth is not very high, while decrease in operating income is not high. Also, ROS is still high (over 20%), meaning that operational risk did not occurred. The contrary evolution of the two variables can be this way attributed to the company's marketing decisions, which, in order to grow the sales, slightly fell the profit margin. In 2010, the coefficient is positive (1.04), but is quite low, which means a reduced operational risk. Overall, looking at both DOL and rates of return, we can say that BIO hasn’t a high operational risk in any of the years analyzed.

For CENTRO, DOL is 1.83 in 2008, which, according to theory, means a low operational risk. This assumption is not confirmed, however, because the turnover is growing in the following period, while the sales profit drops very much (-34% in 2009 and -94% in 2010). This situation, which persists for two consecutive years, clearly shows that CENTRO is affected by the operational risk and is closely to get loss in 2010.

ZEN has the highest values of DOL, both positive and negative. In 2008 and 2009 positive, but high values are obtained which in theory means a higher volatility of the operating profit to changes occurred in turnover and therefore a high risk. In 2008, turnover increased by 12%, while operating profit increased by 144%. In 2009, turnover decreased by 20% and operating result is negative.
This confirms the high operational risk faced by ZEN, resulted in a rather large loss in 2009. In 2010, sales increased by 47% and operating result becomes positive, reaching even a very high value (ROS is equal to 24.24%). In these circumstances, DOL is negative (-9.35). For this company, it is found that sales and results have a high volatility, periods of growth alternate with those of declining, operating results are not directly correlated with turnover, which means the presence of a high operational risk.

The level of degree of financial leverage for the four companies analyzed is shown in Table 5.

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATB</td>
<td>1.70</td>
<td>3.90</td>
<td>0.31</td>
</tr>
<tr>
<td>BIO</td>
<td>50.66</td>
<td>33.37</td>
<td>-1.13</td>
</tr>
<tr>
<td>CENTRO</td>
<td>7.88</td>
<td>-0.70</td>
<td>1.10</td>
</tr>
<tr>
<td>ZEN</td>
<td>3.08</td>
<td>0.77</td>
<td>2.93</td>
</tr>
</tbody>
</table>

For ATB, DFL values are not high, ranging between a minimum of 0.31 in 2010 and a maximum of 3.90 in 2008. This means a reduced financial risk, which is complying with reality. For this company, the evolution of the net profit correlates quite well with the evolution of the operating result, resulting in a high dependency relationship between the two indicators and a low financial risk. The only problem for this company is the year 2009, when both operating profit and net profit fall (with very high percentages). The company still posted a positive net result, which is a favorable aspect.

In the case of BIO, DFL is extremely high in 2008 and 2009 (50.66 and 33.37) and negative in 2010 (-1.13). In 2008, the operating profit slightly decreased (below 5%), but the net profit is negative. In 2009, operating profit decreased by 5%, while net profit is positive, being greater than the operating profit. These developments led to high values of DFL, which show a high financial risk posed by this company. In 2010, operating profit increases, but net profit falls, resulting in negative value of DFL. We conclude therefore that BIO has a high volatility of net profit and its variation is not directly correlated with changes in operating profit, resulting in a reduced significance of DFL.

CENTRO has a level of DFL of 7.88 in 2008, obtained in the circumstances of increasing the net loss by over 10 times and of increasing the operating profit by 128%. In this case, the degree of financial leverage has no significance, considering the variation in opposite directions of the two variables. However, one can say that financial risk has materialized, because the net loss increased greatly while the operating profit increased. In 2009, DFL is -0.70. This year, the net loss grows and the operating profit diminished. The situation is worse than in 2008, even if the company significantly increases sales. In 2010, DFL is 1.10, obtained after the operating profit dropped with 94% and the net result turned positive. This year the financial risk seems to be reduced, but the low levels of profitability shows actually a further occurrence of the financial risk and even of the operational one.

ZEN shows low values of the degree of financial leverage, but the volatilities of the variables are quite high. In 2008, DFL is 3.08. Operating profit increased by 144%, while net income increased by 444%. Variations are quite large, which may suggest a great financial risk. In 2009, the operating result turns negative, as well as the net income, but the latter decreases much less than the operating profit. DFL becomes 0.77, but it means already an occurrence of the financial risk. In 2010, operating result is positive and has a high value, just as the net result. For this year, DFL is 2.93. It is noted that for ZEN, DFL values do not have economic significance, as the positive results alternate with the negative ones. However, there is a change in the same direction for the operating result and for the financial result, which can be considered a positive aspect for the company. A problem for company is the high volatility of the indicators and even the appearance of losses in some cases, what may be regarded as a high risk.

5 Conclusion

The complexity of the economic environment (internal and external) makes impossible to know all the causes and factors influencing the economic phenomena and processes carried out at micro or macroeconomic level that influence a company's business. For this reason, the operational risk and the financial risk can not be removed from a business, as they represent the price paid by investors to obtain a positive result.

This study aimed to analyze the profitability obtained by the four Romanian companies listed on the stock exchange, running in the pharmaceutical industry. Also, another objective was to capture how the economic crisis that affected Romania in 2009-2010 influenced the results of these companies, through the occurrence of the operational and the financial risk.

Following the study, a few conclusions could be drawn:
Profitability of companies fluctuated in the period, but we could not find a direct link with the economic crisis;
- For two companies (ATB and ZEN) the evolution of the three rates of return is directly correlated, suggesting a close relation of dependence between them;
- Levels of rates of return are either overly large or overly small (case of CENTRO);
- Degrees of leverage are quite volatile due to high volatility of the constituent variables;
- In some years and for some companies, the degrees of leverage have extremely high values, usually negative;
- Use of degree of operating leverage in assessing the operational risk, as well as the use of degree of financial leverage in assessing the financial risk must be made with caution;
- Degrees of leverage are useful in risk assessment only in cases of stable development of constituent variables, otherwise they lose this capacity;
- Degrees of leverage indicate the possibility of the risk to occur in the future. If the risk is already materialized, they can not credibly assess the chances of risk to occur in the future;
- Romanian business environment is very complex and often leads to surprising developments and values for some economical and financial indicators;
- The management of Romanian companies have difficulty in conceiving the policies and strategies, given the difficulty in predicting variables, both internal and external;
- Some correlations valid in theory are not valid in practice too, as these cases prove to be numerous rather than exceptions for the Romanian economy;
- Failure to validate the assumptions in practice makes it difficult or impossible to apply models and theories for the Romanian companies.

The period of analysis was partially overlapped with the global economic crisis and the paper revealed the way in which it affects the financial indicators of firms studied. This way, we could see the evolution of the main profitability and risk measures from the time prior to crises up to the economic crisis.

We appreciate that this study is useful for theorists, as it highlights the links between the rates of return and the degrees of leverage, and thus emphasizing the limits of the latter. It is also useful for a large category of stakeholders in the market (managers, creditors, shareholders, potential investors), as the paper shows the profitability of some representative companies running in the Romanian pharmaceutical industry.

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