THE EVOLUTION OF THE SUSTAINABLE GROWTH OF COMPANIES WITHIN THE PHARMACEUTICAL INDUSTRY

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Abstract

This study aims to examine the companies within the pharmaceutical industry in terms of the PRAT model (i.e. the rate of sustainable growth of these companies). The period considered in the study is limited to six financial years, i.e. from 2009 to 2014. Following the application of this model, we found that most of the companies that were part of the research sample were not able to sustain their activities solely from their own resources. Thus, they were forced to resort to attracting external funding sources. It was found that the inflation rate and the growth rate of the gross domestic product have a significant influence on sustainable growth. Upon completion of the forecast on the future evolution of sustainable growth for the time interval 2015-2020, we noticed a decrease in the PRAT indicator. This evolution is due not only to increased borrowing but also to the declining profitability of the examined entities, indicating the impossibility of companies to use their assets efficiently so as to make a profit.

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1. Introduction

Sustainable growth is the maximum rate of growth of a company's sales with the help of equity, but without attracting external resources. Specifically, this indicator highlights the rate of a company's growth by focusing on increasing equity rather than by increasing the financial leverage (David Whitehurst, 2003, pp. 49-51). Sales require new assets to be financed, sustainable growth relying on reinvesting the resources of the company without resorting to debt. Such an approach, which relies solely on the use of internal resources, has sparked all sorts of controversy, but rapid growth automatically leads to an acute need for cash, which will entail the increase in the financial leverage; some companies, being unable to cope with debt, will face the risk of insolvency. As a result, the followers of this model of sustainable growth suggest the reinvestment of profits without the burdening of companies with debt with which they are no longer able to cope, especially in times of economic crisis (Georgiana Minculete, Nicolae Balteș, 2014, pp. 126- 127).

This research aims at identifying the financial possibilities of pharmaceutical companies to sustain their own growth, without resorting to attracting external resources. Having reached a stage of maturity, the pharmaceutical industry is a dynamic industry, a fact that is highlighted primarily by the "scientific and technological revolution" that characterizes the entire examined industry (Ruxandra Ciulu - http://www.managementmarketing.ro/pdf/articole/44.pdf).

2. Research methodology

The analysis of the major trends in sustainable growth by using the PRAT model is a complex scientific approach specifically based on empirical research. The most important techniques and procedures used in the model include documenting and the documentary analysis cited in the bibliographical references, multiple linear regression, graphics, and specific methods of financial analysis. Data analysis was conducted on a sample of 15 companies (Pfizer, Novartis, Merck, Sanofi, Roche, GSK, AstraZeneca, Johnson & Johnson, Abbott, Lilly, Tevapharm, Amgen, Takeda, Bayer, Boehringer-Ingelheim) operating globally and having a market share of approximately 40%.

The data were processed in Excel, the analyzed indicator being calculated on the basis of the annual financial reports for the time interval 2009-2014,

published on the websites: www.pfizer.com, www.novartis.com, www.merck.com, www.sanofi.com, www.roche.com, www.gsk.com, www.astrazeneca.com, www.jnj.com, www.abbott.com, www.lilly.com, www.tevapharm.com, www.amgen.com, www.takeda.com, www.bayer.com and www.boehringer-ingelheim.com. The financial position- and performance-specific indicators were calculated for each entity. From the financial perspective, growth is viewed as a means of maximizing corporate profits, but it is not always useful for existing industries. More often than not, managers do not take into account the negative effects of uncontrolled growth, which could have a devastating impact on a company, even leading to bankruptcy (Robert Higgins, 2012, pp. 123-125). The sustainable growth model used in the research is the following (Robert Higgins, 2012, pp. 123-125):

G* = P*R*A*T
Where sustainable growth (%); P = profit margin (%); R = reinvested earnings (%); A = speed of rotation of assets (no. of revolutions); T = ratio of assets to equity at the beginning of the time interval (%).

Sales call for new assets to be financed. Sustainable growth is based on reinvesting resources already existing in the company without resorting to new debt. Such an approach which relies solely on the use of internal resources has sparked all sorts of controversy. A rapid increase automatically leads to an acute need for cash, which will also increase the financial leverage, which is why some companies can no longer cope with debt and will face the risk of insolvency. Thus, the followers of this model of sustainable growth suggest the reinvestment of profits without burdening the companies with debt with which they are no longer able to cope, especially in times of economic crisis (Georgiana Minculete, Nicolae Balteş, 2014, pp. 126- 127).

Moreover, in this paper, we made a prediction about the evolution of this indicator over a longer time span (2015-2020), using the Forecast function in Excel. The model used to predict the future value of the indicator can be rewritten using the formula below (Stanley Eakins, 1999, pp. 371):

FV = PV $(1+i)^n$
Where: FV – future value; PV – current value; i – growth rate; n – number of years

In order to determine the factors influencing the evolution of the PRAT indicator, we used the multiple linear regression model. This method involves explaining the interdependency between the variables that are set within the tool to be developed. The general formula of the regression model is the following (Hill Carter, William Griffiths, Guay Lim, 2008, pp. 110):

Y = β'0 + β'X1 + β'X2 + …+ β'Xn + ε
Where: β' **-** estimated parameters of the regression function; Y - dependent variable; X1, X2 ... Xn - independent variables; ε - residual variable.

As we all know, the independent variables account only for part of the variation in the dependent variable, the remaining variation being due to the residual variable, or rather to existing errors. Thus, the regression function becomes (Mihai Ţichindelean, 2014, pp. 123)

Y'= β'0 + β'X1 + β'X2 + …+ β'Xn + ε
or
Y = Y' + ε
Where Y'– estimated amount; Y – observed value; ε – residual value; β'0, β'1, β'2 .... β'n – estimated parameters of the regression function.

3. Study on the evolution of the PRAT indicator of companies operating globally within the pharmaceutical industry

Chart 1 illustrates the evolution of growth rates within the examined entities, without resorting to attracting external resources. We also assumed that the profit reinvestment rate is constant (95%) during the entire period under review.

Figure 1: Evolution of the growth rate of the pharmaceutical companies within the global industry between 2009 and 2014 using internal resources

%
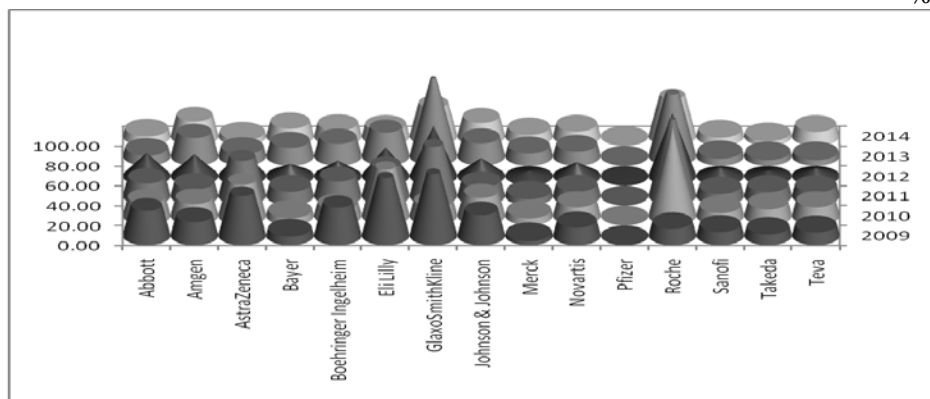
	Abbott	Amgen	AstraZeneca	Bayer	Boehringer	Eli Lilly	GlaxoSmith	Johnson & Johnson	Merck	Novartis	Pfizer	Roche	Sanofi	Takeda	Teva
2009	31.23	20.95	44.63	7.90	34.15	61.04	64.75	27.41	3.64	15.92	14.00	15.02	12.00	9.78	11.58
2010	19.19	19.39	36.87	6.52	13.88	50.56	16.39	25.04	6.41	16.48	9.00	89.72	11.19	14.51	16.43
2011	19.99	14.61	40.65	12.42	21.66	33.27	53.21	16.24	5.76	12.59	11.00	77.75	10.50	12.19	11.91
2012	23.10	21.69	25.38	12.09	15.38	28.70	50.35	18.06	5.24	13.86	17.00	63.37	8.53	5.59	8.12
2013	9.13	25.33	10.20	16.32	19.93	30.12	79.36	20.27	11.03	12.75	26.00	64.50	6.41	5.25	5.21
2014	8.59	22.18	5.05	15.72	13.76	12.87	34.43	20.94	10.00	13.11	11.00	42.65	7.51	4.27	12.82

Source: Data processed by the author based on annual financial statements, available on the websites of the examined companies

The chart above indicates that GlaxoSmithKline and Roche are the companies that have managed to maintain an upward trend during most of the time interval under investigation, a maximum being reached in 2013, when these companies were able to finance 50% of their activities from their own resources. This indicates a high level of capitalization, entities being able to sustain their activities mostly from their own resources. The remaining examined companies recorded levels of the indicator below 50%, which shows that they are not as well capitalized as the entities mentioned above. In 2014, all the entities examined recorded values of the indicator below 50%, reflecting a higher level of indebtedness than in the previous time intervals.

To analyze the evolution of PRAT (the dependent variable) based on the main factors influencing its trajectory, i.e. inflation and the growth rate of the gross domestic product aggregated at global level (the independent variables), we

used the multiple linear regression model for the time interval 2009-2014, as follows:

PRAT = β'0 + β'INF + β'CR+ ε

Where: β' – estimated parameters of the regression function; INF – inflation; CR – growth rate of gross domestic product; ε – residual variable.
Table 1 highlights the results obtained by using the regression model.

Table 1: Detailed information of the multiple linear regression model

R	R²	Adjusted R²	Standard error of estimated variable	R² Change	F Change
0.828	0.685	0.475	2.3768	0.041	0.393

Source: our own calculations made in SPSS based on the data published on the websites of the examined companies, OECD and UNCTAD

The results obtained by using the regression model indicate the consistency of the regression model, the value of 0.828 of the multiple correlation coefficient illustrating the positive sense of the link between the observed values and the predicted values of the PRAT indicator. The intensity of the relationship expressed by the regression equation is given by indicator R^2, 68.5% of the PRAT variation being determined by the variation of independent variables as well as by inflation and the growth rate of the gross domestic product. The remaining variation of 31.5% is due to the residual variable (error). Thus, as a result of the estimation of the regression coefficients by using the method of least squares, we obtained a final regression model as shown in Table 2. The function looks as follows:

PRAT = 86.929 – 0.634INF + 0.475CR

Table 2: Specific information on the estimated parameters of the regression model

| Variables	β'	Standard error	Student's T-test	Sig.
Constant	86.929	26.940	3.227	0.048
INF	-0.634	0.263	-2.411	0.095
CR	0.475	0.758	0.627	0.575

Source: own calculations made in SPSS based on the data published on the
websites of the examined companies, OECD and UNCTAD

The sign of the estimated parameters highlights the sense in which the independent variables–inflation and the growth rate of the gross domestic product–influence the dependent variable, i.e. the financial sustainable growth. Thus, the PRAT indicator is positively influenced by the growth rate of the gross internal product and negatively by inflation. As a result, a change by one unit in the growth rate of the gross domestic product entails a positive change in the financial sustainable growth by 0.475 units. Moreover, rising prices, mainly for the raw material required to manufacture medicines, has a negative impact on sustainable growth. A change by one unit in the inflation leads to a decrease by 0.634 units in the PRAT indicator. The lower the values of the standard error, the more accurate the model. In our case, the prediction accuracy of the estimated parameters is average since the standard error values are relatively low. The student's T-test highlights the influence of the independent variables on the dependent variable, inflation having the greatest influence on the variation of the PRAT indicator (negative influence).

To have a better perspective on the future possibilities of the examined companies to sustain their activities solely by means of their own resources, we made predictions up to 2020, using the Forecast function in Excel. Thus, Chart 2 shows the evolution of the PRAT average for the time interval 2015-2020. The results obtained indicate a slighter possibility of the companies to sustain their activities from their own resources, as well as a lack of idle money, high indebtedness and insolvency risk.

Figure 2: Average growth of pharmaceutical companies within the global industry between 2015 and 2020 based on own sources

%
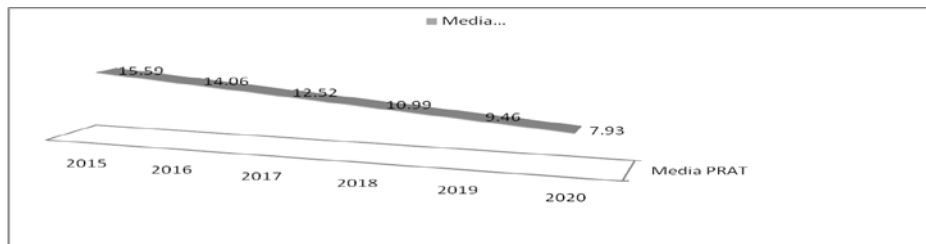
Source: Data processed by the author based on the annual financial
statements, available on the websites of the examined companies

There is a decrease in the average of the PRAT indicator from 15.59% in 2015
to 7.93% in 2020, due to increased borrowing in the global pharmaceutical
industry. Moreover, the decrease in the profitability of the examined
companies in the future periods indicates the impossibility of companies to use
their assets efficiently in order to make a profit. Thus, the possibility of the
companies belonging to the global pharmaceutical industry to sustain their
activities solely from their own resources diminishes considerably in the
future periods. This is due to the fall in the share that equity has within the
permanent capital (Nicolae Balteş, Diana Vasiu, 2015, pp. 104), specifically
due to lower solvency.

4. Conclusions

After applying the PRAT model, it was found that most entities that were part
of the research sample cannot sustain their activities solely from their own
resources. Thus, they are forced to resort to attracting external funding sources
in order to carry out their operations. GlaxoSmithKline and Roche are the only
entities that have maintained an upward trend of sustainable growth
throughout almost all of the period under investigation. The maximum level of
sustainable growth was reached in 2013, when these companies were able to
finance more than 50% of their activities from their own resources. The other
examined companies are not as well capitalized as these, being forced to resort
to a higher share of external resources. Furthermore, following this research,
we found that the inflation rate and the growth rate of the gross domestic
product have a significant influence on the sustainable growth existing in the
pharmaceutical industry. The findings of the forecast showed a downward

trend of the PRAT indicator between 2015 and 2020, as a result of the following:

- increased indebtedness;
- the low profitability of the examined companies;
- the inability of companies to use their assets efficiently in order to make a profit.

5. References

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