

Application of synthesis of several methods in stock valuation

Aplicación de síntesis de varios métodos en valuación de existencias

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Abstract:

Stock analysis is a complex and relevant topic in modern theory of financial management. In our time, many different stock analysis methods have been developed based on various theories. The article proposes the use of best practices of stock analysis using a method that combines principles developed by American investors Benjamin Graham and Joel Greenblatt. The proposed method is based on the theory of value investing, which remains stable and efficient investment strategy in our days.

The main purpose of this article is to provide essential points of assessing the quality of companies and explain the decision making process behind the stock investments. The article presents data and excerpts from researches confirming the effectiveness of the principles taken as a basis. A description of the proposed method is presented, as well as the rationale of the used ratios. After familiarization with the proposed method, an analysis of several companies of various sectors was done in order to implement the theory in practice and determine the best company for the possible purchase of its stocks.

Keywords: Investment strategy, Stock analysis, Value investing, Margin of safety

Extracto:

El análisis de la reserva es un tema complejo y relevante en la teoría moderna de la gestión financiera. En nuestro tiempo, muchos métodos de análisis de la reserva diferentes se han desarrollado basados en varias teorías. El artículo propone el uso de las mejores prácticas del análisis de la reserva usando un método que combina principios desarrollados por los inversionistas americanos Benjamin Graham y Joel Greenblatt. El método propuesto está basado en la teoría de inversión en valor, que permanece la estrategia de inversión estable y eficiente en nuestros días.

El objetivo principal de este artículo es proporcionar puntos esenciales de tasar la calidad de compañías y explicar el proceso de toma de decisiones detrás de las inversiones de la reserva. El artículo presenta

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datos y extractos de investigaciones que confirman la eficacia de los principios tomados como una base. Una descripción del método propuesto se presenta, así como la razón fundamental de las proporciones usadas. Después de la familiarización con el método propuesto, un análisis de varias compañías de varios sectores se hizo a fin de poner en práctica la teoría en la práctica y determinar la mejor compañía para la compra posible de sus reservas.

Palabras clave: Estrategia de inversión, análisis de la Reserva, Inversión en valor, Margen de seguridad

1. Introduction

In their own nature stocks are fractional ownership of companies. So when investors participate in the stock markets they need to be aware of that basic principle. Decisions of purchasing stocks must be made on the basis of comparison of prices and perceived values. Investors should not buy stocks or any other securities based on their emotions but rather on their analysis and judgment.

In achieving positive financial results in the stock market, an individual or institutional investor needs to know what to look for when valuating and choosing one or another stock. A correctly conducted analysis in the formation of the investment portfolio is the key to future high returns on the securities market. We can state that the selection of the best companies in the stock market indexes guarantees an investor a return above the market averages in any chosen stock index.

For achieving results higher than averages we should look for best practices of best researchers, theorists and professionals in this field.

This study seeks to analyze different methods in stock valuation of famous investors. In addition the study provides facts and discuss researchers that both confirm that the principles of stock selection underlying suggested synthesis are working.

The rest of the paper is organized as follows. Section 2 describes the literature review and theoretical materials Section 3 presents the results and discussion Section 4 concludes this paper with conclusions that were made.

2. Methodology

Benjamin Graham is the founder of the theory of value investing, this idea is reflected in many of his works. It is known that Benjamin Graham achieved results significantly exceeding the average market annual yield of the S&P500 stock market index. The effectiveness of his methods is also confirmed by the results of his disciples, students who adhered to the same approach for making investment decisions and avoiding risks by applying the principles defined as Margin of safety. Data of the performances of the disciples of Benjamin Graham are presented in Table 1.

Table 1
Benjamin Graham disciples annual average returns

Investment fund managers	Activity period	Average annual return	
1	Walter Schloss	1956-1968	21.30%
2	Warren Buffett	1957-1969	23.80%
3	Tom Knapp	1968-1983	20%
4	Bill Ruane	1970-1983	19.35%
5	Charles Munger	1962-1975	17.05%
6	Rick Guerin	1965-1983	32.90%
7	Stan Perlmeter	1966-1983	23%

It can be argued that above results was achieved a long time ago and it is impossible to achieve similar results in modern time, however, there are many disciples of Benjamin's Graham approach to stock analysis and one of them is Michael Burry. He is well known for shorting subprime-mortgage bonds in 2008 financial crisis, but it should be noted that Michael Burry follows value investing approach and the principle of Margin of safety described in Benjamin Graham and David Dodd's book "Security analysis". The fund that he managed – Scion Capital had achieved the result of 242% from 2000 to 2005, during the time when the broad stock market index had fallen by 6.8%.

Another investment manager who is also a value investor – Joel Greenblatt, is also of our interest. He developed his own approach of making investment decisions based on the use of a formula, the effectiveness of which he tested in his own study, which lasted for 17 years. Over that period, the return on his investments significantly exceeded the return of the S&P500 stock index average. During that period of time, every year Joel Greenblatt selected thirty companies with the best ratios, according to the formula he developed. Later, after one year was passed, he sold individual shares of one company, repeating the process again by purchasing of some new shares. The results of Joel Greenblatt's investment portfolio are presented in Table 2.

Table 2
Comparative result of the effectiveness of the investment
stock portfolio using the Greenblatt's Formula

Year	Greenblatt's Formula	S&P500
1988	27.1%	16.6%
1989	44.6%	31.7%
1990	1.7%	-3.1%
1991	70.6%	30.5%
1992	32.4%	7.6%
1993	17.2%	10.1%
1994	22.0%	1.3%
1995	34.0%	37.6%
1996	17.3%	23.0%
1997	40.4%	33.4%
1998	25.5%	28.6%
1999	53.0%	21.0%
2000	7.9%	-9.1%
2001	69.6%	-11.9%
2002	-4.0%	-22.1%
2003	79.9%	28.7%
2004	19.3%	10.9%
Average annual yield	30.8%	12.4%

Source: calculated by the authors

In this article, the author proposes a combination of the Greenblatt's Formula and the principle of the Margin of safety in analysis and selection of stocks.

Joel Greenblatt believes that the main ratio in business valuating is return on capital. Return on capital shows the profitability of the company in relation to its assets. It tells us how much of funds in fixed assets of the company was required to provide in order to generate a profit. Thus, the higher the profitability of capital, the more effectively the company uses its own assets and the less assets are needed to generate a profit.

Instead of using other profitability ratios such as return on assets, which shows a percentage of funds invested in the company that had been returned as a profit, or return on equity, which shows a percentage of profit company makes for funds invested in the business, in the calculation of profitability of capital, Joel Greenblatt proposes to use operating profit instead of the company's net profit, or as it is also called – Earnings before interest and taxes (hereafter - EBIT), since different companies in different industries have different debt charges and tax rates, the use of EBIT allows us to compare companies from different sectors as well as in different countries. Instead of the traditional capital shown in the company's balance sheet, Joel Greenblatt proposes to use a sum of net working capital and net fixed assets of the company, since these two indicators most correctly reflect the necessary capital to support the performance of a company. Return on capital formula:

$$\text{Return on capital} = \frac{\text{EBIT}}{\text{Net working capital} + \text{Net fixed assets}}, \quad (1)$$

where Net working capital = Current assets – Current liabilities;

Net fixed assets = Total assets – Current assets – Intangible assets – Goodwill.

The second ratio that is part of the Greenblatt's Formula is the earnings yield. The purpose of the ratio is to find out how much a business earns relative to the purchase price of that business. Earnings yield formula:

$$\text{Earnings yield} = \frac{\text{EBIT}}{\text{Enterprise value}}, \quad (2)$$

where Enterprise value = Market capitalization + Net debt;

Net debt = Short term debt + Long term debt – Cash and cash equivalents.

Greenblatt's Formula is based on ranking of above ratios. Greenblatt's Formula can be presented in the following form:

$$\text{Greenblatt's Formula} = \text{Rank of return on capital} + \text{Rank of earnings yield} \quad (3)$$

The process of stock analysis can be separated on next steps:

at the beginning, a group of shares is taken, which may be a specific stock market index or the total number of all public companies in a country;

then there is a calculation of the two ratios;

the last step is to assign a rank to each of the two ratios of each company in the whole selection of stocks, thereafter, the rank of the two ratios is summed up in order to determine the final result for an individual stock.

Afterwards the companies with the best overall rank are selected. Thus, the selection of the most profitable companies at the possible lowest prices is guaranteed.

Joel Greenblatt uses his formula in the U.S. stock market, however the use of the formula can be implemented in other stock markets. This statement confirms the logic of superior characteristics of such companies, which have superior return on capital and earnings yield as well as studies that were made in different countries. For example, in the work of Oscar Gustavsson the Greenblatt's Formula was used to compare its results with the results of OMXS30 Sweden stock market index. In the period started in 2007 and ended in 2016 the average annual return of OMXS30 was 5.22% while the return of portfolio of stocks selected by applying the Greenblatt's Formula was 21.25%.

Another example of implementing the Greenblatt's Formula was done in the work of Denis Davydov, Jarno Tikkanen and Janne Äijö in Finland. In their work the performance of stock portfolio using Greenblatt's Formula was compared to most common stock market index of Finland – OMXH CAP GI. The research showed that from 1991 to 2013 average annual return of stock portfolio based on Greenblatt's Formula was 19.3%, while OMXH CAP GI was only 13.6%.

Therefore, the principles underlying the method of selecting companies based on their return on capital and earnings yield can demonstrate satisfactory results regardless of selected country.

It can be added, that underlying principles of stock selection using Greenblatt's Formula correlate with Warren Buffett's principles. In selecting stocks Warren Buffett seeks not only for companies earning above-average returns but also for stock prices that are below enough to justify the purchase of stocks and thus to guarantee the Margin of safety. If one company constantly earns 15% on its capital and another company earns only 10% it can be stated that the first company will have faster and higher growth of stock price than a company that demonstrates inferior results.

It should be noted that the use of this formula does not take into account the existence of debt of companies and its impact on business performance. Therefore, the authors of this article propose the addition to the Greenblatt's Formula in the form of adding additional ratios that will reflect the debt burden and its impact on the financial results of the company. For that role, it is proposed to use the principle of Margin of safety defined by Benjamin Graham.

When analyzing the creditworthiness of companies, Benjamin Graham primarily suggests focusing on the interest coverage ratio, because during times of crisis or economic recession, or just in recession of ordinary business cycle of a company, many companies with extensive debt can experience serious difficulties in meeting debt charges. Interest coverage ratio formula:

$$\text{Interest coverage ratio} = \frac{\text{EBIT}}{\text{Interest expense}} \quad (4)$$

The second criterion characterizing the financial stability of the company is the fact that the value of assets in the company is significantly higher than the total debt. Here we can use the ratio of equity to total debt, however, it is worth noting that the reflected value of assets in the balance sheet does not always reflect the real price or the price that will be obtained in a liquidation of a company, moreover, this method does not reflect the real value of the company in accordance to the going concern principle. The best option would be to use the market value of shares to the total debt of a company, despite all the shortcomings of the market capitalization of different companies, such as overestimation or underestimation of the value of shares. The formula of stock value to debt ratio:

$$\text{Stock value to debt ratio} = \frac{\text{Market capitalization}}{\text{Total debt}} \quad (5)$$

Thus, to assess the creditworthiness of a company, Benjamin Graham proposes to use the two above ratios. Using other ratios for credit analysis is not necessary, instead, an investor should require higher level of interest coverage and higher level of coverage of the total debt by the market value of a company and not invest in those companies that demonstrate a low level of Margin of safety. These two calculations define the Margin of safety of a company. The main purpose of Margin of safety lies in disposing of the need of estimating future profits since investor cannot know what exactly future profits will be.

It can be concluded that in general form, value investing can be defined with the next two main steps: 1) finding quality companies and 2) buying them at "reasonable prices". Value investing can be defined in simple equation:

$$\text{Value investing} = \text{Quality} + \text{Cheapness} \quad (6)$$

Investors should not look for cheap companies but rather for quality companies available at reasonable prices.

Having defined Joel Greenblatt's approach of analyzing stocks and method of determining level of the creditworthiness of companies based on Benjamin Graham's Margin of safety, it becomes apparent that a combination of these two approaches and their application in analyzing stocks can provide a meaningful understanding of the performance of companies and accordingly it becomes possible to determine the best companies for the purpose of investing in them.

3. Empirical Results

We will use the proposed synthesis of the methods in the analysis of American companies in various industries (Table 3). The data for each table was taken from U.S. Securities and exchange commission.

Table 3
Analysis of four companies

	31/12/19	31/12/19	31/12/19	31/12/19
	Delta Airlines	General Motors	AT&T	IBM
EBIT	\$6,618,000,000	\$5,481,000,000	\$27,955,000,000	\$9,247,000,000
Net working capital	\$(11,955,000,000)	\$(9,913,000,000)	\$(14,150,000,000)	\$719,000,000
Net fixed assets	\$41,339,000,000	\$147,708,000,000	\$329,869,000,000	\$40,309,000,000
Return on capital	22.52%	3.98%	8.85%	22.54%
Rank of return on capital	2	4	3	1
Market capitalization	\$38,187,440,000	\$52,118,400,000	\$286,026,520,000	\$119,662,000,000
Net debt	\$46,292,000,000	\$163,011,000,000	\$337,605,000,000	\$123,030,000,000
Earnings yield	7.83%	2.55%	4.48%	3.81%
Rank of earnings yield	1	4	2	3
Aggregate rank	3	8	5	4
Interest expense	\$301,000,000	\$782,000,000	\$8,422,000,000	\$1,344,000,000
Interest coverage ratio	21.99	7.01	3.32	6.88
Total debt	\$49,174,000,000	\$182,080,000,000	\$349,735,000,000	\$131,202,000,000
Stock value to debt ratio	0.78	0.29	0.82	0.91

Source: calculated by the authors

And add historical data of the best company from the selection above in order to confirm the superiority of selected company and its stability in previous years (Table 4):

Table 4
Historical performance of Delta Airlines

	Delta Airlines		
	31/12/19	31/12/18	31/12/17
EBIT	\$6,618,000,000	\$5,264,000,000	\$5,966,000,000
Net working capital	\$(11,955,000,000)	\$(12,238,000,000)	\$(10,729,000,000)
Net fixed assets	\$41,339,000,000	\$39,315,000,000	\$30,807,000,000
Return on capital	22.52%	19.44%	29.71%
Market capitalization	\$38,187,440,000	\$34,674,380,000	\$40,320,000,000
Net debt	\$46,292,000,000	\$45,014,000,000	\$37,568,000,000
Earnings yield	7.83%	6.61%	7.66%
Interest expense	\$301,000,000	\$311,000,000	\$396,000,000
Interest coverage ratio	21.99	16.93	15.07
Total debt	\$49,174,000,000	\$46,579,000,000	\$39,382,000,000
Stock value to debt ratio	0.78	0.74	1.02

Source: calculated by the authors

4. Discussion

Based on the Table 3, we see that according to the Greenblatt's Formula, the rank of companies in descending order was as follows: Delta Airlines, IBM, AT&T, General Motors. It is worth noting that despite the fact that IBM has the best result of return on capital, the aggregate rank of this company is inferior to Delta Airlines due to the relatively low earnings yield, which means overvaluation of IBM. The opposite situation is observed with AT&T, it is a rather undervalued company in terms of earnings yield, but AT&T's return on capital is not high, which is why the aggregate rank of the company was only 5.

In analysis of creditworthiness of selected companies, Delta Airlines also demonstrated the best result. From a financial point of view, the company is more than stable, exceeding interest payments by 22 times.

Afterwards, it is important to check the previous results before making final conclusion of investing in the company. When checking previous years of the company's performance we want to see gradual increasing of key ratios and internal stability of the company which means that key ratios did not fall and stayed on the steady levels.

In our case, in last three years Delta Airlines demonstrated stable and high results of key ratios (Table 4): 1) Return on capital was notably high, despite the fact that from 2017 return on capital decreased, the fall in 2018 and subsequent growth in 2019 represent stable and superb results of that ratio; 2) Earnings yield remained high and we see the stable growth of that ratio, which is an attractive sign; 3) Despite the growth of total debt, the interest coverage ratio of Delta Airlines demonstrates the stable growth, which means that the company effectively uses its debt; 4) Stock value to debt ratio is quite low, however the same is true about other companies in our first selection. The fact is that the low level of stock value to debt ratio indicates that the company's stocks are undervalued, which makes the position of debt in that ratio more substantial than the market capitalization.

Based on the foregoing, from our data the best investment decision would be to buy Delta Airlines shares. It is worth adding that for making investment decisions, we can use either companies of investor's interest with a limited selection of several companies, as presented earlier in Table 3, or we can use selection of companies of different indices (such as S&P500, Wilshire 5000, Dow Jones Industrial Average and many others) which is a more preferred option.

The idea of achieving results higher than the stock market averages is connected with buying stocks that are relatively cheap in relation to their value. It contradicts the Efficient-market hypothesis, which states that the price reflects all information that is available and thus, the price is always equal to the value. However, leading investors and researches of value investing, as well as our study, demonstrate that it is possible to find undervalued companies and as a result outperform the stock market averages. Implementing analysis similar to ours in order to find best companies can provide satisfactory results.

5. Conclusions

Finally, it may be concluded that the proposed method of stock valuating in this article represents the investment strategy that seeks for above average companies with high return on capital and relative low purchase price of stocks. In addition to that, the method evaluates creditworthiness of analyzed companies in order to avoid selection of companies with high debt burden which may cause the difficulties in meeting debt charges in times of economic recession or in recession of ordinary business cycle of a company. Also the method seeks whether the company is undervalued or overvalued. It should be added, that proposed method does not guarantee the positive performance in the short time horizon because it depends on the current market situation of a country and future external and internal factors. However, based on the research and performance of Joel Greenblatt and Benjamin Graham and his disciples, the proposed method has a very high probability of success in the long time horizon.

In closing, we want to quote Joel Greenblatt's quote: "...the best strategy for most people is not only one that makes sense, but also one they can also stick with."

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