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VALUATION OF FUNDAMENTAL ANALYSIS RELIABILITY IN STOCK PRICING: THEORETICAL APPROACH

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Abstract. Fundamental analysis together with technical analysis is used by investors as a main tool allowing pricing stocks and making investment decisions. Recent studies show that under the conditions of today financial market and irrational investors acting, the results of fundamental analysis not always reflect real market prices. However, applicability of fundamental analysis is still very wide. After brief introduction of fundamental analysis key points, authors of the paper aim to find out, whether the efficient applicability of fundamental analysis is reasonably doubt. In order to solve the problem of fundamental analysis reliability, efficient market hypothesis supporters critique against fundamental analysis is provided and overview key points of its unreliability. Authors conclude that despite all reasonable arguments against fundamental analysis, the application of this tool could be successful in stock pricing in order to make long-term investment decisions.

Keywords: fundamental analysis, stock pricing, stock valuation, financial markets irrationality, efficient market hypothesis.

JEL classification: G12, G14.

1. Introduction

As a rule, making an investment decisions involves avalysis of different factors and results in valuation of specific reasons to invest in a particular security. Of course, these reasons vary widely and their dispersion makes difficult for analysis. However, fundamental analysis is one of the main tools which could help investors in portfolio formation. It could be especially valuable and useful for stock pricing in relatively new markets such as NASDAQ OMX Baltic, where the historical data is not sufficient for usage of technical analysis. The experience of successful and famous fundamental analysts as Warren Buffett, Peter Lynch, David Dreman, Philip Fisher, Benjamin Graham, etc. iliustrates that fundamental analysis really works.

On the other hand, fundamental analysis faces some critics from many investors and academics. The *aim of the paper* is to provide unbiased point of view based on analysis of sighntific literature and practical insights. The following *research tasks* have been set up to achieve the aim:

– to present briefly key points of fundamental analysis,

– to clasify the reasons for its critics and

– to examine if this stock pricing tool could be reliable under the conditions of modern financial market.

The *objective of the paper* is reliability of fundamental analysis for stock pricing. In the paper authors make an attempt to generalize the results of practical and academic insights and to check the assumption about reliability of fundamental analysis by using the *methods* of literature analysis, comparison of theoretical insights, networking, benchmarking, analogy and generalization.

The authors of the paper contribute to the development of the research of fundamental analysis and analysis of efficient market hypothesis by providing complex theoretical generalization of fundamental analysis estimates, its critics and practical implication based on applying the fundamentals of efficient market theory and taking into account the insights of its limitations from the behavioral finance point of view.

The results of the theoretical research are presented in the below going sections and the conclusions summarize the basic finding of the paper,

which could be used for expanded practical research in different financial markets.

2. Fundamental analysis as a stock pricing tool

Fundamental analysis is one of the main instruments used for portfolio pormation for many decades. Differently from so-called "technicians" who are interested only in recording stock prices, fundamentalists primary concern about how much stocks are really worth (Bettman, Sault and Welch 2006). The „value" approach to fundamental analysis was introduced by Benjamin Graham and David Dodd in their classic book *Security Analysis*, first published in 1934. This approach is still very popular among investors such as Warren Buffett who is one of the most successful long-term investors in the world today. Fundamental analysis is also used to identify stocks with potential to increase in value over time due to increasing earnings. This approach is also known as growth investing (Graham and Dodd 2009).

Although technical analysis is used by many investors, fundamental analysis is far more prevalent. During fundamental analysis investors forecast future changes in GDP, changes sales, other performance indicators both for industries and for firms. The main objective of this analysis for investor is to identify the attractive stocks with potential to grow during the investment holding period (so called undervalued stocks).

Analysts and investors use two alternative ways of performing the fundamental analysis: "Top-down" and "Bottom-up" forecasting approaches (see Table 1).

Table 1. Forecasting approaches used in fundamental analysis (source: compiled by authors)

Forecasting approach	Seguesnce of forecasting
"top-down"	Investors are first involved in making the analysis and forecast of the economy, then for industries, and finally for companies. The industry forecasts are based on the forecasts for the economy and a company's forecasts are based on the forecasts for both its industry and the economy.
"bottom-up"	Investors start with the analysis and forecast for companies, then made analysis and forecasts for industries and for the economy.
Combined (or mixed)	Analysis and forecasts are made for the economy using "top-down" approach and then using "bottom-up" approach continuing with the forecasts for individual companies

In practice "top down" approach prevail in analysis and forecasting because logically for forecasting of the companies performance the changes in macroeconomic environment must be analyzed first otherwise the inconsistent assumptions could be drawn. But despite of the different approaches to the sequence of the analysis the content of it is based on the E-I-C analysis (E-I-C analysis stages are summarized in Table 2).

Publicly disclosed and audited financial statements of the company such as: Balance Sheet, Profit/ loss Statement, Cash Flow Statement and Statement of Profit Distribution form the base for the company analysis (so called fundamental analysis). As a rule, for the analysis the period not less than 3 years is used. By examining annual, quarterly reports of the company and taking into consideration such factors as earnings, dividends, sales, cash flows, debts and ect., fundamental analysts find out whether analysed stocks are undervalued or have possibility to grow.

Table 2. E-I-C analysis stages (source: compiled by authors)

E-I-C stages	Analysis content
E - Economic (macroeconomic) analysis	Macroeconomic situation in the particular country and its potential influence on the profitability of stocks.
I - Industry analysis	Situation in the particular industry/ economic sector and its potential influence on the profitability of stocks.
C - Company analysis	Financial analysis of the individual companies from the shareholder approach.

Ratio analysis as a part of fundamental analysis is useful when converting raw financial statement information into a form that makes easy to compare firms of different sizes. The analysis includes the examination of the main financial ratios such as: profitability ratios, liquidity ratios, debt ratios, asset – utilization ratios and market value ratios (Levišauskaitė 2010).

Market value ratios provide an investor with a shortest way to understand how attractive particular stock is in the market. Looking for long-term investment decisions investors have to concider not only the current market situation, but also to assess the potential of the firm to generate earnings in the future. Thus, only using the other groups of financial ratios investor can receive "a full picture" of the financial condition of the firm and when continue with stock valuation.

Valuation theory is based on the assumption that investors are rational, wealth maximizing individuals and that stock market prices reflect the

fundamental value. The distinction between fundamental and speculative value of stock is very important. Fundamental value expresses the value of an equity investment that is held over the long term, as opposed to the value that can be realized by short term during speculative trading.

Stock valuation process includes 3 basic stages (see Figure 1). As the practice shows, during each stage of stock evaluation investors' decisions could be influenced by different cognitive and emotional biases. This results in irrational behaviour, incorrect assumptions and useless or even dangerous decisions. So, fundamental analysis depends on the analyst's personality, mood and is not always unbiased, that is why it gets a lot of critics from behaviour finance suppoters.

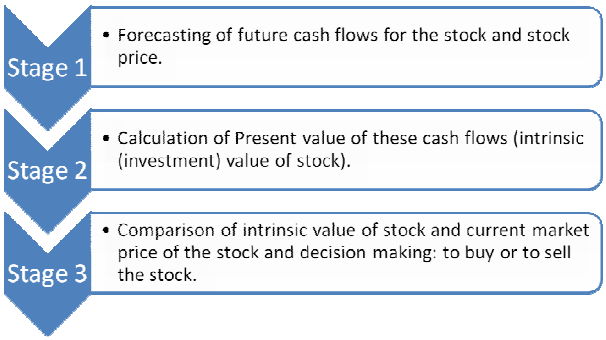

Fig. 1. Stock valuation process (source: compiled by authors)

If all investors are rational and able to distance themselves from the emotional investment decisions, fundamental analysis indisputably would reflect the market situation. If all investors' expectations are the same, the stock market price would change only after the appearance of quarterly financial statements or information. So, investors could earn only by looking for search for other investors missed the fundamental analysis of the relevant facts in order to find undervalued shares.In the next section of the paper authors provide classification of basic reason and explain the main disadvantages of fundamental analysis.

3. Critics of fundamental analysis

There are two opposing views about the efficiency of fundamental analysis. The Wall streeters have felt that fundamental analysis is becoming more powerful and skilful at the time. People in academic community have argued that fund managers and their fundamental analysts can do no better at picking stocks than a rank amateur (Malkiel 1999).

Moreover, Burton G. Malkiel, author of *A Random Walk Down Wall Street*, one of the most respected publication, noted that the market prices stocks so efficiently that a blindfolded chimpanzee throwing darts at the Wall Street Journal can select a portfolio that performs as well as those managed by the experts. According to him, there are 3 potential shortages of fundamental analysis (see Table 3).

Table 3. Potential shortages of fundamental analysis (source: compiled by authors)

Nr.	Potential shortages of fundamental analysis
1.	Information and analysis may be incorrect
2.	Security analyst's estimate of "value may be faulty"
3.	Market may not correct its mistake and the stock price might not converge to its estimated value

Even more, researcher noticed that security analysts sometimes are not unable to translate correct facts into accurate estimates of earnings for several years into the future. According to Malkiel (1999), even if the security analyst's estimates of growth are correct, this information may already be reflected accurately by the market, and any difference between a security's price and value may result simply from an incorrect estimate of value. The final problem is unpredictability: even if investor uses correct information and estimates the stock value correctly, the stock might still go down in proice. In other words, an undervalued company's stock price can stay at approximately the same level or decrease.

Furthermore, Malkiel (1999) believed that actually stock markets are just representing human emotional interpretations of all that is known. This attitude is called the efficient market theory and will be analysed further.

Fundamental analysis is mostly criticized by the efficient market theory supporters. According to the efficient market theory, all three possible forms of efficiency ("weak," the "semi-strong" and the "strong)" espouse the general idea that except for long-run trends, future stock prices are difficult (or even impossible) to predict (Fama 1997). The weak form attacks the underpinnings of technical analysis, and the semi-strong and strong forms argue against many of the beliefs held by those using fundamental analysis.

Efficient market theory suggests that by using all available and relevant information all market participants arrive at "rational expectations" of future security returns and these forecasts become fully reflected in the price that are observed in financial market (Shostak 1997). This means that analysis of past data is usefulness because the information that this analysis reveals is already contained in asset prices. Consequently, if past data contains no information for the prediction of future

prices, then it follows that there is no point in paying attention to fundamental analysis (Clarke Jandik and Mandelker, 2011). A simple policy of random buying and holding will do the trick. The same conclusion was made by Benjamin Graham, who claimed that, if we could assume that the price of each of the leading issues already reflects the expectable developments of the next year or two, then a random selection should work out as well as one confined to those with the best near-term outlook" (Graham and Dodd 2009).

Furthermore, proponents of this theory arguing that it is possible to outwit the market only if human emotions are not a factor of market fluctuations and activities of group intelligence could really affect the market.

It is important to note, that the efficient market theory rests on several fragile assumptions (Fama 1991):

– perfect pricing exists;
– news travels instantaneously;
– the enormous difficulty of translating known information about a stock into an estimation of true value.

However, the efficient market theory does not state that stock prices move aimlessly, erratically and are insensitive to changes in fundamental information. On the contrary, the reason why prices move in a random walk is just the opposite: the market is so efficient – prices move so quickly when new information does arise – that no one can consistently buy or sell quickly enough to benefit. And real news develops randomly, that is, unpredictably (Malkiel 1999).

By analysing the history of the financial markets we could find a sufficient number of evidences that stocks sometimes do not sell on the basis of anyone's estimate of value – purchasers are often swept up in waves of frenzy. Price "bubles" and other market anomalies confirm that sometimes stock intristic value is not reflected in its price (Fox 2009). There are also other factors that could help to explain why fundamental analysts have a difficulty in predicting the future price of company's stocks.

Firstly, the influence of random events is not taken into account. Fundamental analysts ignore the influence of random events such as oil spills, product defects being exposed, acts of government and etc. However, these factors usually affect the stock price over the short and medium term, while fundamental analysis focuses on a long-term investments (Graham and Dodd 2009).

Secondly, there are an infinite number of factors that can affect earnings of the company and its stock price over time. As it was mentioned previously, financial analysis includes the analysis of data and information provided in financial statements. Moreover, footnotes and supplementary schedules might also be included into financial analysis (Whisenant, 1998). Also, individually factors related with a particular company such as management of the company, financial conditions, business strategies and factors effecting general economy are the object of fundamental analysts. Consequently, it is difficult to collect and evaluate various statistics of the company, all economic, political and social factors that influence the value of the company's stocks.

Thirdly, the production of doubtful reported earnings through "creative" accounting procedures by companies also makes a negative impact to the usefulness of fundamental analysis. Therefore, even if the analyst has an amazing ability to bring all information together to make reasonable investment decisions, he must assume that the data he analyses is true. Of course, choices in accounting practise or measurement systems exit, but only in part, because of financial reporting regulation. Unfortunately, the history of financial markets is full of examples of lies, fraud and manipulation. David Dreman, a legendary fund manager, after the financial crises deplored the purchases of financial companies made before the credit crunch. According to him, buying stocks with low P/E ratios can make sense only if the earnings – the "E" – are real. He also noted that the E was much worse than anyone thought and the banks themselves had no idea of how bad the E was.

Fundamental analysts use price-to-earnings ratio (also known as the P/E ratio) to figure out how much the market is willing to pay for a company's earnings. The essence of stock's P/E ratio is no show how attractive the stock is for the investor. His ratio is calculated by taking stock price per share and dividing it by company's earnings per share (EPS is calculated by taking a company's net earning and diving by the number of outstanding shares of stock that the company has). Also the P/E ratio can be calculated by dividing the company's total market cap by the company's earnings. The higher the P/E ratio, the more a market is willing to pay for each dollar (or other currency) of annual earnings. But investors depending on their investment strategy can make different decisions even if they use the same correctly calculated ratios. For "greed" investors sometimes the highest P/E ratios are to low and they make the decision not to buy. Another group of investors could be satisfied by much lower P/E, so thay buy stoks with not so attractive for others ratio.

On the other hand, even if the data is correct, the evaluation of factors may be faulty due to the incompetence of many of the analysts themselves – they apply correct data incorrectly. As fundamental analysis requires specific knowledge, it is more suitable for the skilled investor. When Warren Buffett was asked how he became so successful in investing, the answer was that he reads hundreds and hundreds of annual reports every year (Oberoi 2013). To collect useful and with stock market valuation process corresponding information at the time of information overload is a challenge and it is even a bigger challenge to analyse that information and make correct findings. In order to do this as precisely as it is only possible, investors should have specific knowledge about the investments into securities and even practice how to apply the knowledge valuating stocks. Of course, institutional investors overcome this challenge much easier than individual investors. It is not a random sample when a person without specific knowledge about investment, without knowing anything about stock valuation techniques, forecast fluctuations of stock prices, comes into market in order to get money from investing. However, instead of reaching this goal he faces losses. Also, individual investors who studied the technique of fundamental analysis carefully, but without practical experience of using this tool, are not in a better position. Practical application of this tool for a long time period can help to avoid mistakes in stock market valuation process. Therefore, the competence of using fundamental analysis which comes through careful studies and useful practical experience is necessary condition in order to earn money from investing into stocks of the company.

The last argument against fundamental analysis is simply a matter of practicability. When Benjamin Graham, senior author of *Security Analysis,* ceased to advocate a careful use of the techniques described in his text for security analysts in selecting individual stock investments, he stated that in the light of the enormous amount of research being carried on, he has doubts whether in most cases such extensive efforts will generate sufficiently superior selections to justify their cost (Graham 1976). Later he suggested the use of one or two simple criteria for the investor's entire portfolio, focusing on results of the group rather than on individual securities. Therefore, even if we assume that data and information provided in financial statements is correct, in order to find undervalued stocks of the company uncountable hours of work to analyse such an amount of information are needed and the question of practicability obviously arise.

Despite all critics fundamental analysis faces, let's consider some examples of stock pricing according to Efficient Market Hypothesis in order to prove the reliability or irreliability of fundamental analysis as a stock pricing tool.

4. Evidence of irreliability of fundamental analysis = critics of Efficient Market Hypothesis

The Efficient Market Hypothesis suggests that "if the flow of information is unimpeded and information is immediately reflected in stock prices, then tomorrow's price change will reflect only tomorrow's news and will be independent of the price changes today" (Malkiel 2003). This statement implies that any information or knowledge that was gained previous to the current day is irrelevant to the current price change, because the historical knowledge is already included into the historical prices. Many economists and behavioural specialists of the twenty- first century have criticised this notion by saying, that stock prices are at least partially predictable as they are influenced not only by the current information and events, but also by the psychological and behavioural elements of stock buyers and sellers, past information about the changes in stock prices and fundamental analysis of companies financial statements. In this part of the article we will introduce different views on this matter suggested by economists and behaviour specialists.

The most enduring critiques of the Efficient Market Hypothesis revolve around the preferences and behavior of market participants. These critics of the EMH argue that investors are often irrational and predictable. Behavioral studies of market participants proved that individuals tend to be risk averse in the face of gains and risk seeking in the face of losses and that can lead to some irrational financial decisions. Market participants predictability can also be proven by the so called "bandwagon effect". This effect describes the situation in the market when market participants are drawn to a certain stocks because they see the increase in the price of those stocks. This effect can allow stock market analyst speculating the increase or a decrease in demand for a certain stock. Another pattern that market participants follow is an under reaction to the new information. The full impact of an important announcement is only grasped over a period of time, so the time period before information reaches its full effect can be left for speculation. After analyzing these simple notions we can partially predict the behavior of market participants and imply that their behavior is not always rational.

The EMH also implies that past information and events cannot be used to predict future prices in any meaningful way as they are only historical data. Min Deng in his book "Death of The Efficient Market Hypotheses" states, that "research has also demonstrated that, normally, a 5-year-long stock price historical sequence with the transaction day as the time interval contains all the patterns of the stock price movement" (Deng 2007). Many statisticians agree that stock price patterns exist and after difficult scientific research can be found in historical stock price data. Min Deng also states that such patterns as long-term reversal pattern or short-term momentum pattern can be found in "all the historical data sequences of any one single stock market all over the world" (Deng 2007). Investors can use the existing patterns as a tool in portfolio management. But it is necessary to mention that stock patterns can be distorted by the investors themselves. If stock traders follow the same pattern they can commonly drive a stock price higher or lower than the stock fundamentals dictate. So, the existence of stock price patterns proves that stock prices can be at least partially predicted but this does not mean that these patterns should be used as the main tool in portfolio management as they are only theoretical.

Certain fundamental valuation metrics can also be used to predict the future price of stocks. Fundamental analysis can help investors to select undervalued or spot overvalued stocks in their portfolio or in the market. Such fundamental values as earnings or dividends can be used an indicator of stock price changes. It is commonly known that investors make their decisions in order to make profit. They make profit due to positive changes in stock prices (capital gains) or due to the dividends paid. So, the increase in dividends paid would increase the interest in a certain stock and dividend decrease would do the opposite. In the case of comparing two sellable stocks with other factors considered as being equal, rational investor would buy the stocks with higher dividends. Furthermore, such ratios as debt to equity ratio or return or equity ratio can also indicate weather investors are going to be willing to buy certain stocks or not. So, it is possible to conclude that fundamental analysis could be valued as a third possible tool to predict stock prices.

Stock price predictability as every other Efficient Market Hypothesis critique has its supporters and skeptics. The leading proponent of Efficient Markets Hypothesis Burton G. Malkiel argues that "the strongest evidence suggesting that markets are generally quite efficient is that professional investors do not beat the market. If prices were often irrational and if market returns were as predictable as some critics of the efficient market hypothesis believe, than surely actively managed investment funds should easily be able to outdistance a passive index that simply buys and holds the market portfolio" (Deng 2007). But as it was previously discussed, there are some cases when professional investor outperform the market, so this allow to argue that stock market unpredictability is no longer a rule without exceptions.

In practise when fundamental analysis is used in isolation, it has a number of serious drawbacks:

- There are an infinite number of factors that can affect the earnings of a company, and its stock price, over time. These can include economic, political and social factors, in addition to the various company statistics mentioned above.
- Evaluation should be done with data for at least of 6 months.
- Due to creative accounting, reported earnings can be dubious.
- It is difficult to give appropriate weightings to the influence factors and to overview and take into concideration all of them.
- The results obtained are only valid for a limited period of time after the performance of the analysis as situation changes all the time. Forecasts are often downgraded - hence the saying "if you are going to forecast, forecast often".
- The rules change to suit the game (in different countries and even segments of the market the same results not always lead to the same decisions).
- It assumes that the analyst is competent. In fact, the best analysts in stock brokers' offices end up on the sales desk or in portfolio management where the salaries are much higher.
- A fundamental analyst assumes that other fundamental analysts will form the same view about the company and buy the stock, thus restoring its value and returning the trader or investor a capital gain. In practice, an undervalued company's stock price can stay at approximately the same level (or decline) for years!
- It assumes that news travels instantly - but will everyone act on it instantly?
- It ignores the influence of random events such as oil spills, product defects being exposed, acts of God and so on.
- It assumes that there is no monopolistic power over markets.
- Even when fundamental analysis reveals an undervalued company or a stock with high growth prospects, it does not tell us any-

thing about the timing of the purchase of the stock. In other words, we may have discovered a grossly undervalued stock whose price has been falling for some time, and may well continue falling!
- Fundamental analysis sounds plausible – even scientific!
- Fundamental analysis has appeal, as traders and investors feel more secure knowing why a stock should rise.

5. Conclusions

Fundamental analysis is the corner stone in investing. With the subject of investment being very broad and having a number of different strategies in mind, the use of fundamentals becomes inevitable.

The biggest part of fundamental analysis is delving into the 'financial statement'. Also known as quantitative analysis this involves looking at the revenue, expenses, assets, liabilities and other financial aspects of a company. This information is important both for the investor and analyst to get an insight into the future performance of the company. The economic well being becomes more important as opposed to the movement of prices.

The various fundamental factors can be grouped into two categories - quantitative and qualitative. As the practice shows, both categories are interlinked. Neither is better than other. In the example of Coca cola analysts may look at its stock's annual dividend payout, earning per share etc, but the qualitative factor, brand name is equally (or even more) important to attract investors (Sushant 2010).

Buying a stock based on the fact that a stock is fundamentally undervalued, alone, is the trading and investment equivalent of driving at high speed on the wrong side of a major highway, heading into the oncoming traffic and screaming "I'll be fine, I'll be fine - I am driving a safe car"!

One way to get the best of the fundamental and technical analysis worlds is to use a hybrid approach. Fundamental analysis can be used to identify 'value' stocks, for example, however the decision to buy them is only made when an appropriate technical signal is given. Of course, you have to somehow conduct, or obtain, accurate and current fundamental analyses of a wide range of stocks (Costa 2003).

The biggest criticism of fundamental analysis comes from proponents of Technical analyses and believers of "Efficient market hypothesis". For the technical analyst everything depends on the price of stock in a company. According to efficient market hypothesis content, it is impossible to produce market beating returns in for stocks either through fundamental or technical analysis (Sushant, 2010).

There are two common arguments against fundamental analysis. The first comes from those who follow the efficient market hypothesis and believe that stock prices already reflect all that is know. As a result they believe it is impossible to outsmart the market and identify mispriced stocks using publicly available information. This would be true if human emotions were not a factor in market fluctuations and group intelligence allowed to take effect (Brown 2011).

The second argument against fundamental analysis is simply a matter of practically. Accord-Bill Flekenstein-famous fundamental analyst gives a prime example of the vague conclusions that even the best in the business often arrive at: "How that will play out exactly, how long it will take and what the road map along the way might look like is difficult to say, due to the many permutations of how events might interact."

So, having all arguments against fundamental analysis which were presented in this paper, the question about usefulness of this tool necessarily arise in mind. However, the successful stock market valuation practice of famous investors mentioned in this article and others allow assuming that this tool has its power in predicting future price of the company's stocks in a long-term period.

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