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IVO SPERANDA

University of Dubrovnik - Department of Economics and Business Economics, Croatia

A NEW PERSPECTIVE ON VALUATING OF COMMON STOCKS

Abstract:

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The hypothesis of this paper states the value of a firm and value of a corresponding stock are tightly connected. So, the „right“value of a company directly leads to the „right“ value of a related stock. The research topic is to find out i.e. to establish how and in what extent new appraisal approach Compounded Cash Flow method (CCF method) effects the value of a stock.

The CCF method is theoretically well founded, applicable in practice and it serves for valuating any business. By this method the company's value can be estimated (valuated) at the certain part of time and compared to the current stock price on the stock market, and the additional advantage of this method is risk elimination of misevaluating for the certain extend incomes is not very high. The aim of this paper is to point out the importance of combining several appraisal methods in establishing the “right” value of a stock i.e. establishing if a stock currently is over or under valuated on the market.

It's to be concluded that this paper approaches the stock evaluation as an ideal segment of a firm. The quality of firm's business and its potentials are often strong indicators of the stock value in long term. Combined with the usual methods CCF method provides a more precise firm evaluation, i.e. more precise stock evaluation.

Keywords:

Keywords: stock value, firm value, Discounted Cash Flow, Compounded Cash Flow

JEL Classification: D04, G11, G12

1 Introduction

The basic idea of this paper is that it is possible to determine the level of overvaluation or undervaluation of a stock on the market. This thesis implies the assumption of “the cynical market”, in this case, the stock market, which knows the price of each stock, but not its value. To determine the level of overvaluation or undervaluation, this paper starts from a certain hypothesis: buying stocks means buying the firm, the results of the firm’s business will adequately influence the price of the stock. Both realized and planned business results are imperative when investing in stocks.

There is a time discrepancy between the release of business results of a firm and its effect on the price. The reason for that is market psychology and something that W. Buffett calls “institutional imperative”¹. To this mimicking phenomenon add a widely-spread manager’s greed phenomenon. While the stock owners suffered great loss, managers, brokers, journalists-promoters, who caused the stock market crash, earned a lot of money. Many of them have, directly or indirectly, persuaded people to invest and buy stocks, while they have themselves made opposite moves on the market.

The paper presupposes a strong connection between the value of a firm and the value of that firm’s stock. Four types of value are considered: Book Value (BV), Market Value (MV), Discounted Cash Flow (DCF) and Compounded Cash Flow (CCF)². By connecting DCF, CCF, and BV, in relation to the current MV, it is possible to relativize the dealing price of a stock. T. Piketty’s thought supports the prior statement. He believes that a lot is arbitrary and uncertain with the price that financial markets determine for the firm’s intangibles at a certain moment.³

The goal of this paper is to define a reliable method for determining a possible discrepancy between the realistic price of a stock and its price on the stock market at a particular moment and to provide practical assistance or at least try to approximately determine the true value of a stock, i.e. to understand the “wisdom” behind stock trading.

The purpose of the paper is to reduce the risk when investing in stocks and to determine the level of overvaluation or undervaluation of a stock. The basic hypothesis is to determine the true value of a stock by determining and connecting multiple types of the value of a firm, implicit and stocks. It is appropriate to mention an interesting observation by Warren Buffett, from the interview to Yahoo-Finance in January 2015, (W. Buffett Says Mr. Market is A „Drunken Psycho“) where he said: *“This imaginary person out there -- Mr. Market -- he’s kind of a drunken psycho. Some days he gets very enthused, some days*

¹ Hagstrom, R.G. (2008) p.126

² Designation of the CCF model (Compounded Cash Flow) is determined by the analogy of the DCF (Discounted Cash Flow)

³ Piketty, T.(2013) p.60

he gets very depressed. And when he gets really enthused, you sell to him and if he gets depressed you buy from him. There's no moral taint attached to that."⁴

2 How to Determine the Value of a Firm?

It is not possible to give a clear and an unambiguous answer to this simple question. The reason for that is there are at least two types of problems, or two types of valuation approach: who does the valuation and what methods are used. The prior type refers to the valuation aspects and preferences, and the latter is connected to the prior and refers to different, often opposite, methods of valuation.

Issues related to the firm's valuation are important if the assumption is that one stock represents an ideal, very small and important part of the entire firm. Subsequently, the value of the firm is reflected on the value of a stock. So, if the value of the firm is determined, so is the value of a single stock of that firm. If we also know the value of that stock on the stock market it is possible to determine the discrepancy between information.⁵

Firm valuation in international business has been one of the crucial issues of microeconomic financial analysis for few decades. It doesn't only imply valuating certain firms but different investments as well. Considering frequent usage of this term it is necessary to clearly define it. The statement in B. Graham's capital work "The Intelligent Investor" – *An investment operation is one which, upon thorough analysis, promises safety of principal and an adequate return* - would be the most appropriate one.⁶

There are three most commonly used firm valuation methods and each is based on a specific problem approach.⁷

The book value method (BV) is considered to be the easiest to apply, and it's based on the balance sheet of a being estimated with the additional asset modification and liquidation costs (asset selling costs, collecting claims, obligations towards employees, suppliers, amortization correction, etc.). Shortly, the assessor checks and adjusts balance sheets according to the instructions of the International Accounting Standards. Firms with greater assets (factories, hotels, etc.) are better protected with the use of this method, i.e. they are more valuable than the firms whose assets are intangible. After the assessment and revision of all accounting elements, the assessor subtracts all liabilities from total assets of the firm and comes to the book value.

⁴ Buffett, W., (2015) W. Buffett Says Mr. Market is A „Drunken Psycho“- Yahoo Finance

⁵ See more details on this topic at: Cuthbertson, K. & Nitzsche, D. (2008) pp.126-145

⁶ Graham, B. (2006) p.27

⁷ See more on this topic at: Pike, R. & Neale, B. (1993) pp.158-170

Total assets-Total liabilities=Net value of the firm (1)

The value of the firm calculated by this method is often the lowest value of the firm. The advantages of this method are simplicity, speed, and transparency. It is based on balance sheet data and is suitable for the recently started firms in their early stage of development. The disadvantage is its static quality because the assessment is done on a certain date and it does not consider prior business or the business potential of that firm. In other words, firm's assets are assessed, but not the business and potential effects of that business.

Market or valuing by indicators method is popular due to its simplicity. To get the real value, multiply the price and earnings ratio (P/E) with the earnings of the entire firm. This method is based on the assumption that it is possible to find a firm with stocks rating on the stock market which is similar to the firm which is being assessed, and determine the adequate multiple for the specific firm, having in mind the differences between the compared firm and the assessed firm. The advantages of this method are simplicity, speed, simplicity of the presentation of the results and the fact that the results reflect the current state of the market. Unfortunately, the disadvantages surpass the advantages. The critical issue is the oversimplification and neglect of key business indicators of every firm (sources and generators of income, expense and profit) so the value obtained by this method (regardless of the type of the multiple) is highly approximated and often gives the wrong value of the assessment, and makes room for data manipulation.

*Discounted Cash Flow valuation method (DCF)*⁸ is the basic valuation method. It takes into account the discontinued future values of the expected cash flow, and the basic relation is:

$$DCF = \sum_{t=1}^n CF_t \left[\frac{1}{(1+k)} \right]^t \quad (2)$$

DCF = Discontinued Cash Flow

CF_t = Cash Flow in the year t

k = Discount rate

n = Number of periods

⁸ See more at Sharpe, W.F, et.al.(1995) pp.568-570

Unlike the market or valuating by indicator method, DCF method is based on firm's fundamental business. During the valuation process it is necessary to consider the basic characteristics of the firm and to understand the type of business involved. Finally, this method mainly values business and not only the assets.

*Compounded Cash Flow valuation method (CCF)*⁹ is the value of the firm obtained from the sum of the past and corrected CFs of the income, gross profit, and similar categories (Which of possible categories (net, gross profit, FCF, EBIT, NOPAT, etc.) will the assessor consider depends on a particular case, but it must be thoroughly explained) in period "n" and balanced at the end of that particular period at the rate of its own Internal Rate of Return (IRR). The suggested IRR is the average balance rate, but it should be expanded into the True Rate of Return (TRR). The mathematical expression of this model is:

$$CCF = \sum_{t=1}^n CF_t (1+k)^{n-t} \quad (3)$$

CCF=Compounded Cash Flow

CF_t=Cash Flow in the year t

k=Internal Rate of Return

n=Number of periods

The advantage of this method is that it considers the business of a firm balanced in past periods, unlike the opposite DCF method which represents the sum of discounted future business promises. It is clear that this method is "regressively dynamic" and represents in its approach an opposition to the DCF method which is why it is its corrective¹⁰. DCF (Discounted Cash Flow) is a method of valuation that considers calculations of the discontinued future values of the expected cash flows. CCF (Compound Cash Flow) is a method that considers the balanced values of cash flows.

2 Different Firm Valuating Approach

Valuation concept i.e. different methodology approach to firm valuation which this works suggests and describes in short, is based on the DCF valuation concept, simultaneously aiming at eliminating the disadvantages of the method, firstly the possibility of manipulating with entry information for valuation (income, expenditure, profit and similar)

⁹ For details consult: Speranda, I. (2012) pp.803-824

¹⁰ Speranda, I. & Piplica, D.(2016) pp.327-338

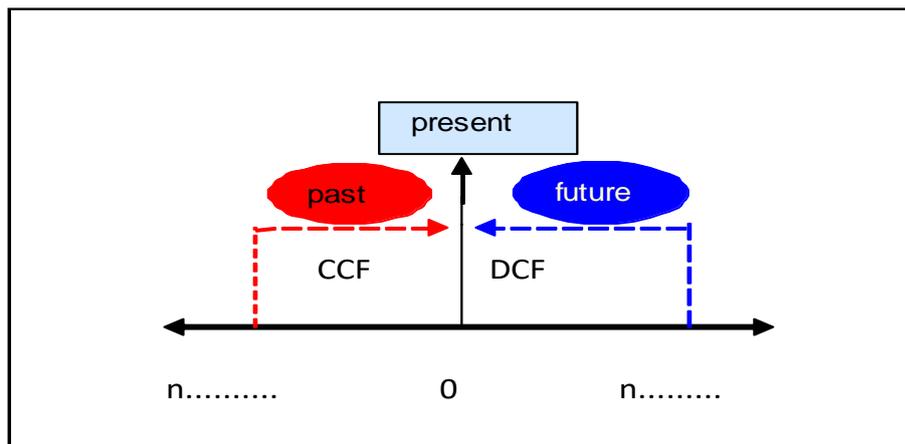
and manipulating with arbitrary (regardless to skillfully disguised complicated math formulas) determination of discounted rate. Observing well known CAPM model, is evident that the costs of owner's equity or discounted rate are composed of rate of return to *risk free* (although such literally doesn't exist) asset which itself is composed of inflation rate and real rate of return. In AAA credit rating countries (USA, Great Britain, France), T-Bonds have risk-free rate of return. In other countries with lower credit rating BB (Brazil, Bulgaria, Croatia and similar), T-bonds have Country Risk Premium which must be considered as well. (Estimations by S&P) Abbreviation $E(R)$ as a result of CAPM¹¹ calculating stands for extra return; it is actually the rate that certain investor demands in order to invest into stocks and not in T-bonds, enlarged for systematic risk (β) of firm's economic sector. Finally, there is α representing the risk measure (volatility) of certain firm. So, future profits, resulting from the cost / income difference and based on firm's business plans for the next 5, 10 years (being the plans made by the very management of the firm) are discounted by the rate (gained by the previously described procedure). The investor is now buying firm's value, along with presumptive future profits on which the valuation was based.

The basic concept of the new approach (method):

- Usage of historically (relatively) reliable information from the firm's financial documents in certain past period of time ($n= 5, 10, 15\dots$ years).
- Income and similar categories from the financial statements are discounted to present value at the rate equal to internal rate of return (IRR) of the firm realized in the observed period of time.
- All information previously deflated by using official inflation rates (provided by the Croatian National Bank, Croatian Bureau of Statistics or similar sources).
- *Business as usual* is a starting point, and so called *residual value* is not taken into account.

The relation between CCF and rather notorious DCF method can be illustrated as in figure 1.

¹¹ Some critical observation see at: Fernandez, P., (2015) CAPM: The Model and 307 Comments about It

Figure 1: Illustration of the DCF and CCF Methods

Source: Speranda, I. - Piplica, D. (2016), p.329.

It is completely clear that the concept is based on actual, logical and easily available information, making this model reliable in terms of evaluation.

Mathematical expression of the proposed model is¹²:

$$CCF = \sum_{t=1}^n CF_t (1+k)^{n-t} \quad (4)$$

Where:

CCF = compounded cash flows

CF_t = cash flow in the year t

k = internal rate of return, i.e. real rate of return

n = number of periods

In this model, CCF equals the firm's value obtained as a sum of historical, revised cash flow income, gross income and similar categories in „n“ periods and compounded at the IRR in final observed period. Appraisal's choice of category (profit, gross profit, FCF, EBIT, NOPAT...) differs from case to case provided that thorough explanation about

¹² Designation of the CCF model (Compounded Cash Flow) is determined by the analogy of the DCF (Discounted Cash Flow)

chosen category is given. Proposed average compound rate is IRR (Internal Rate of return) which should be spread to so-called TRR (True Rate of Return) as it contains calculated reinvestment rate.

When determining IRR, the problem of multiple internal rate of return might appear. There are many approaches and possibilities of resolving such a problem.¹³

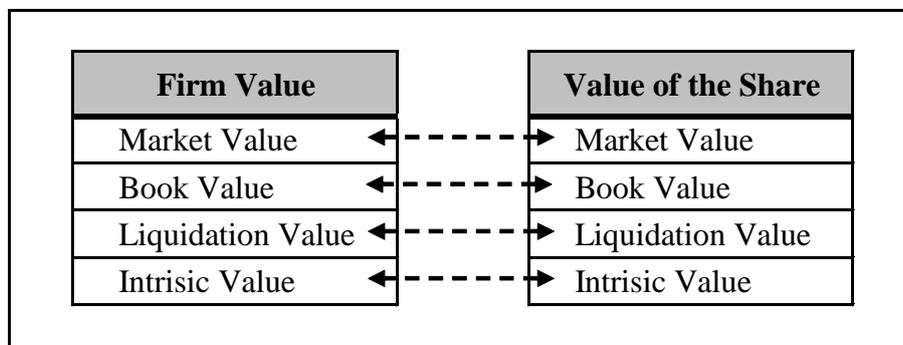
4 Defensive Investor

A defensive investor is, by definition, an investor who is interested in a safe and careless yield.¹⁴

This simple definition that emphasizes safety and risk elimination best describes the conservative approach to investment on the stock market, also advocated by the authors of this paper. The logical conclusion from this definition is that the investment is preceded by a thorough fundamental analysis that considers the past, the present and the future of a stock and that implies the study of the firm’s business and the analysis of the future and of the past business¹⁵.

The link between the economic-financial performances of the firm and the performances of the stock is defined in next table.

Figure 2: Relationship between Firm and Stock Value



Source: Author’s own illustration

It is evident that the suggested relationship intends a business analyst for the analysis and valuation, and not a market or macroeconomics analyst.

¹³ For more on that topic see at: Cuthbertson, K. & Nitzsche, D.(2008) pp.89-97; also see: Hazen, G.B. (2003) pp.31-51;

¹⁴ Graham, B. (2006), p.206

¹⁵ See more on this topic at: Jain, P.C. (2010) pp.25-35; 281-282

Figure 2 implies that certain stock values can be calculated through the valuation of certain values of the firm. So, the question is: if the key types of value are valued, how to know which one is “the right one”? How to come to a reliable value which will, after the comparison to the spot price of a stock on a stock market, give the information of overvalue or undervalue of a stock?

Composite indicator $[C(hm)]^{16}$ indicator has a deciding role in the answers to the questions in the prior paragraph, and it can be mathematically calculated like this:

$$C(hm) = \frac{N}{\left[MV \left(\frac{1}{BV} + \frac{1}{DCF} + \frac{1}{CCF} \right) \right]} \quad (5)$$

Where:

N= number of values in set

MV= market value

BV= book value

DCF= value calculated by DCF method

CCF= value calculated by CCF method

It is evident that the indicator is based on the harmonic mean of the relation of the value calculation: BV, MV, DCF, and CCF. In other words, the indicator indicates the average (harmonic) mean of the relationship of market value and the values provided by the other methods of valuation. In any case the indicator of overvalue or undervalue of the firm and of the stock is provided. Interpretation of the indicator $[C(hm)]$:

Indicator is always >0

If it is <1 the stock is overvalued

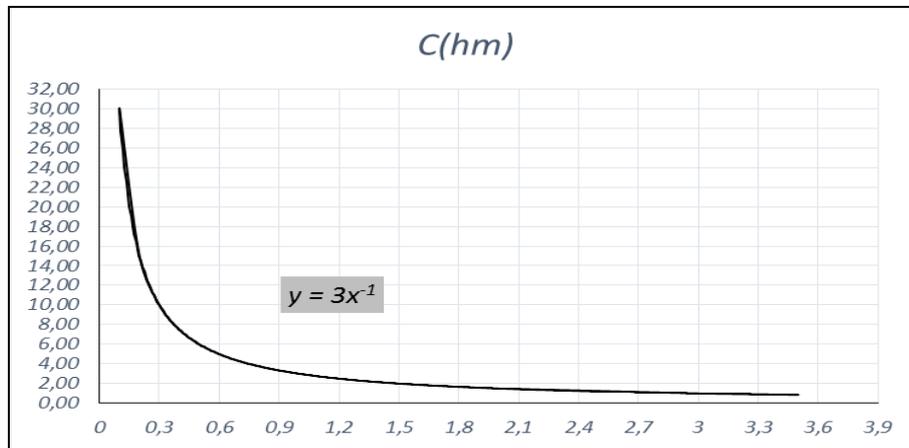
If it is >1 the stock is undervalued

If it is $=1$ the stock has “the right value”

¹⁶ In fact $C(hm)$ is adjusted harmonic mean. See details at: Sincich, T. (1996) pp.85-95 or at: www.statisticshowto.com/harmonic-mean/

The values of the indicator are always in the range from 0 to ∞ because of the statistic and mathematic nature of the indicator (negative numbers cannot be inserted and it cannot be divided by 0).

Figure 3: [C(hm)] Interpretation



Source: Author's own calculation

This graph shows the mathematical explication $C(hm)$ of the indicator in the form of the function $y=3x^{-1}$ where the dependent variable $C(hm)$ is the value, and independent reciprocal value of the arithmetic mean is the value of the reciprocal values of the element.

5 Conclusion

This paper defines and explains the new method and the related indicator which can help the evaluation of the relation of the value of a particular stock and its current market value. That represents a concrete instruction whether to buy or sell a stock, and that significantly decreases the investment risk (although it is impossible to eliminate it). For that reason, the conclusion is that $[C(hm)]$ indicator significantly contributes to the reliable valuation of the “upside potential” principle and the “downside risk” principle, as an intrinsic feature of every analysed stock. Furthermore, the suggested indicator can be redefined and supplement with the values that an analyst believes have to be added.

This confirms the hypothesis from the introduction that it is possible to determine the true value of the stock by establishing more than one value of the firm, and implicitly, the value of the stock. Combining these values will give the true value of the stock. Finally, the set goal of this paper, to define the reliable method for determining the relation between the price and the value, has been reached, fulfilling the purpose of this paper.

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