

APPLICATION OF FREE CASH FLOW TO EQUITY MODEL IN VALUING MAHINDRA GROUP COMPANIES: AN EMPIRICAL STUDY

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Abstract

The paper aims at applying the free cash flow to equity model in estimating the value of equity of the NIFTY Mahindra Group Index companies. It also serves to estimate a degree of under or overvaluation of these companies by comparing estimated value with the market price of the stocks. A sample consists of six companies covered in NIFTY Mahindra Group Index. Values of equity shares of these companies were estimated by applying free cash flow to equity model over a forecast period of five years ranging from 2019 to 2023. After the forecast period, the terminal value was found out by using the constant growth model. The values per share of sample companies were estimated as on March 31, 2018, and they were compared with market prices of these companies for the corresponding period. The results of the study revealed that five out of six companies were undervalued relative to the market price. Mahindra CIE Automotive Ltd was found to be highly undervalued across the sample representing 94.83% of undervaluation.

Key words : Cash Flow, Equity, Value perShare NIFTY

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Introduction

Valuation of an asset is the most important area in the field of finance. All strategic finance decisions are evaluated in terms of their likely impact on the value of the stock of the company. Companies would like to invest their resources in those projects that generate wealth for the stockholders. This wealth could be measured as the present value of future cash flows that will be available to equity shareholders. According to Fernandez (2017), valuations of listed companies are used to compare the value with the share price to decide whether to hold buy or sell the shares. Valuation also helps in deciding whether to continue the business, sell, merge, grow or buy other companies (Fernandez, 2017). Valuation is also critical when making strategic decisions pertaining to product lines, business lines to be served or abandoned (Fernandez, 2017).

In the simplest form value of an asset could be written as the maximum price that could be paid to acquire it. While estimating a merger and acquisition deal, usually an acquiring firm estimates the value of a target company by discounting the cash flows to be realized from an acquiring firm and discount it with an appropriate discount rate that reflects the risk of these cash flows. To estimate the value of an asset or a business, we need to estimate three parameters, cash flows, growth in cash flows, and risk associated with these cash flows. The cash flows expected from an asset or business could either be measured as a free cash flow to the firm or free cash flows to equity.

In this study, an attempt has been made to apply free cash flow to equity model in estimating the value of equity of NIFTY Mahindra Group Index Companies. The free cash flow to equity model is one of the variants of discounted cash flow methods. As the name suggests, in free cash flow to equity model, the focus is on measuring the free cash flows that would be available to equity shareholder after meeting all investment requirements (investment in fixed assets as well as in working capital) and debt payments. This method helps in estimating the value of equity directly by exclusively focusing on equity cash flow. These equity cash flows are then discounted by the cost of equity capital to work out the present value of equity. The paper is structured as follows: the second section offers a literature review; the third section outlines the research methodology, the fourth section offers results and discussion.

Literature Review

Penman and Sougiannis (1997) documented that the equity valuation method based on accrual earnings and book values were superior to dividend discounted and discounted cash flow models. They further showed that discounted cash flow techniques, involving operating income in the terminal value computation are akin to residual income techniques used in accounting.

Fernandez (2007) examined whether all ten discounted cash flow methods arrive at the same value. The ten methods used by him were- free cash flow; equity cash flow; capital cash flow; adjusted present value; business's risk-adjusted free cash flow and equity cash flow; risk-free rate-adjusted free cash flow and equity cash flow; economic profit; and economic value added. He found that all ten methods gave the same value.

Steiger (2008) attempted to analyze the validity of the valuation of a company using the Discounted Cash Flow Method. He found that the discounted cash flow method is a reliable tool in valuing company provided enough precaution is placed on underlying assumptions. He further, concluded that it is advisable to combine discounted cash flow method with other methods viz, trading multiples or transaction analysis to ascertain a realistic estimate of the company value.

Gardner, Mcgowan, and Moeller (2009) applied the Free Cash Flow to Equity model suggested by Damodaran (2006) to estimate the value of the Coca-cola company. They arrived at the value of the Coca-cola company by dividing the expected cash flow available to equity shareholders by the difference between the required rate of return on equity and growth rate of earnings.

Bhandari and Adams (2017) attempted to review the definition, measurement, and use of free cash flow in financial reporting and analysis. They opined that free cash flow should be measured as the surplus cash available for distribution to stockholders after providing for capital expenditure required for sustaining existing operations and other non-discretionary cash flows.

Fernandez (2017) asserted that it is useful to apply cash flow (equity cash flow, firm cash flow or capital cash flow) as a single figure while valuing a company.

Research methodology

Research objectives

- To estimate the value of equity of NIFTY Mahindra Group Index companies as on March 31, 2018, using free cash flow to equity model
- To estimate the value per share of these companies as on March 31, 2018.
- To measure the degree of under or overvaluation of shares of these companies.

Sample

Out of seven companies comprising NIFTY Mahindra Group index, six were chosen for the study. Only one company- Mahindra Logistic Ltd- was left out due to insufficient data available for applying free cash flow to equity model.

Data

The historical data for the last six years ranging from March 31, 2013, to March 31, 2018, was considered as the key inputs for applying free cash flow to equity model. The inputs required for applying the free cash flow equity model were estimated based on this historical data.

Results and Discussion

Computation of Value of Equity

According to Damodaran (2008), the value of equity could be estimated using the following equation.

$$\text{Value of Equity} = \sum_{t=1}^{\infty} \frac{\text{Net Income}_{\text{Current}} (1 + g_{\text{Net Income}})^t (1 - \text{Equity Reinvestment rate})^t}{e^{(1+k)t}}$$

In the above equation, the time period t is ranging from 1 to infinity. In reality, it would not be possible for anyone to estimate the inputs required for valuing equity for an infinite time period. Hence, in practice, usually, we consider an explicit forecast period over which, these free cash flows to equity are estimated and discounted back with the cost of equity to find their present values. Along with this, we also find the terminal value, also referred to as horizon value and add its discounted value to the present value of free cash flow to equity worked out during the explicit forecast period.

Value of Equity = Present value of free cash flows to equity during the explicit forecast period + present value of terminal value.

According to Damodaran (no date), the terminal value of equity can be computed as:

$$\text{Terminal value of Equity}_n = \frac{\text{Cash Flow to equity}_{n+1}}{\text{Cost of Equity}_{n+1} - g_n}$$

It is a common practice to use a five-year period as explicit forecast period. Following this practice, we also estimate the free cash flow to equity for the next five years starting from March 31, 2019, to March 31, 2023. All inputs required for applying the valuation model were estimated for the same five-year period.

Computation of Net income in time period t

In order to estimate the growth rate in earnings applicable to the forecast period 2019-2023 for sample companies, an average of growth rates applicable to period 2013 to 2018 was taken. The growth rate for the respective year from 2013 to 2018 was worked out as the product of retention ratio and return on equity.

Growth rate in earnings = Retention ratio × Return on Equity.

These growth rates were then averaged during the same period and the average growth rate so arrived, was then applied to forecast period 2019 to 2023 in respect of sample companies.

Computation of Equity Reinvestment rate

Damodaran (2008) recommended the following method to work out the equity reinvestment rate.

$$\text{ERR} = \frac{\text{Capital Expenditure} - \text{Depreciation} + \text{Working Capital} - (\text{New Debt Issued} - \text{Debt repaid})}{\text{Net Income}}$$

Using the above method, the Equity Reinvestment Rate (ERR) was worked out for the historical six-year period from 2013 to 2018. We then found a cumulative average

growth rate over this period, which was then applied uniformly throughout the forecast period 2019 to 2023.

Computation of cost of equity (k_e)

The cost of equity capital was estimated as per the Capital Asset Pricing Model.

Cost of Equity = Risk-free rate + Equity beta \times Market risk premium Fernandez et al (2018) estimated the average risk-free rate and average market risk premium for India at 6.8% and 7.9% respectively, in the year 2018. Following this, we uniformly applied these rates while estimating the cost of equity for the sample companies over the forecast period 2019 to 2023. The beta values of sample companies for the forecast period were simply found out by taking the average of beta values of these companies during the period 2013 to 2018.

Computation of Free Cash Flow to Equity

According to Damodaran (2008), free cash flow to equity can be computed as given below.

Free Cash Flow to Equity (FCFE) = Net Income – Reinvestment Needs – (Debt Repaid – New Debt Issued)

Damodaran (2008) defines reinvestment need as the sum of investment in long term assets and short-term assets. The investment in long term assets is measured as the difference between capital expenditures and depreciation. The investments in short term assets are worked out by computing the change in non-cash working capital (Damodaran, 2008).

Table 1 shows the computations of free cash flow to equity during the forecast period. In order to estimate the terminal value, we assumed the same growth rate in earnings and cost of equity as were for the forecast period.

Table 1: Computation of Free Cash Flow to Equity

Year	CompanyName	PAT	1-ERR	FCFE
2019	Mahindra & Mahindra Financial Services Ltd.	9864.19	1.0239	10099.95
2020	Mahindra & Mahindra Financial Services Ltd.	10909.80	1.0239	11170.54
2021	Mahindra & Mahindra Financial Services Ltd.	12066.24	1.0239	12354.62
2022	Mahindra & Mahindra Financial Services Ltd.	13345.26	1.0239	13664.21
2023	Mahindra & Mahindra Financial Services Ltd.	14759.85	1.0239	15112.61
2019	Mahindra & Mahindra Ltd.	49662.87	1.01404	50360.14
2020	Mahindra & Mahindra Ltd.	56620.64	1.01404	57415.59
2021	Mahindra & Mahindra Ltd.	64553.19	1.01404	65459.52
2022	Mahindra & Mahindra Ltd.	73597.09	1.01404	74630.39
2023	Mahindra & Mahindra Ltd.	83908.04	1.01404	85086.11
2019	Mahindra C I E Automotive Ltd.	710.39	0.910654	646.9234
2020	Mahindra C I E Automotive Ltd.	728.23	0.910654	663.1612
2021	Mahindra C I E Automotive Ltd.	746.50	0.910654	679.8065
2022	Mahindra C I E Automotive Ltd.	765.24	0.910654	696.8697
2023	Mahindra C I E Automotive Ltd.	784.45	0.910654	714.3611
2019	Mahindra Holidays & Resorts India Ltd.	1472.18	0.9928	1461.583
2020	Mahindra Holidays & Resorts India Ltd.	1613.07	0.9928	1601.456
2021	Mahindra Holidays & Resorts India Ltd.	1767.44	0.9928	1754.716
2022	Mahindra Holidays & Resorts India Ltd.	1936.59	0.9928	1922.642
2023	Mahindra Holidays & Resorts India Ltd.	2121.92	0.9928	2106.639
2019	Mahindra Lifespace Developers Ltd.	557.02	2.97547	1657.385
2020	Mahindra Lifespace Developers Ltd.	584.09	2.97547	1737.934
2021	Mahindra Lifespace Developers Ltd.	612.47	2.97547	1822.398
2022	Mahindra Lifespace Developers Ltd.	642.24	2.97547	1910.966
2023	Mahindra Lifespace Developers Ltd.	673.45	2.97547	2003.839
2019	Swaraj Engines Ltd.	837.53	3.18384	2666.548
2020	Swaraj Engines Ltd.	875.72	3.18384	2788.142
2021	Swaraj Engines Ltd.	915.65	3.18384	2915.281
2022	Swaraj Engines Ltd.	957.40	3.18384	3048.218
2023	Swaraj Engines Ltd.	1001.06	3.18384	3187.217
2019	Tech Mahindra Ltd.	46399.88	1.03523	48034.55
2020	Tech Mahindra Ltd.	53833.14	1.03523	55729.68
2021	Tech Mahindra Ltd.	62457.21	1.03523	64657.58
2022	Tech Mahindra Ltd.	72462.85	1.03523	75015.72
2023	Tech Mahindra Ltd.	84071.40	1.03523	87033.24

Source: Author

PAT= Profit after Tax, ERR= Equity Reinvestment Rate, FCFE= Free Cash Flow to Equity

Table 2 shows the computations of the present value of free cash flow to equity during the forecast period, terminal value, present of terminal value, and value of equity.

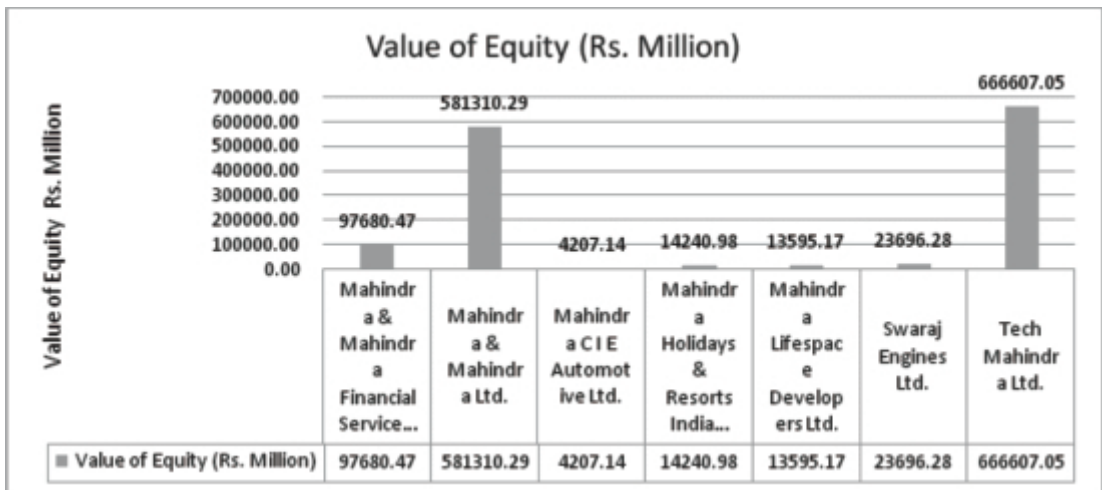
Table 2: Computation of Value of Equity

Year	CompanyName	Present Value of equity in period t	Terminal Value	Present Value of terminal value	Value of Equity
2019	Mahindra & Mahindra Financial Services Ltd.	8799.47			
2020	Mahindra & Mahindra Financial Services Ltd.	8479.09			
2021	Mahindra & Mahindra Financial Services Ltd.	8170.38			
2022	Mahindra & Mahindra Financial Services Ltd.	7872.90			
2023	Mahindra & Mahindra Financial Services Ltd.	7586.25	113096.5	56772.38	97680.47
2019	Mahindra & Mahindra Ltd.	44179.82			
2020	Mahindra & Mahindra Ltd.	44187.96			
2021	Mahindra & Mahindra Ltd.	44196.10			
2022	Mahindra & Mahindra Ltd.	44204.24			
2023	Mahindra & Mahindra Ltd.	44212.39	693449.6	360329.8	581310.3
2019	Mahindra C I E Automotive Ltd.	554.47			
2020	Mahindra C I E Automotive Ltd.	487.15			
2021	Mahindra C I E Automotive Ltd.	428.01			
2022	Mahindra C I E Automotive Ltd.	376.05			
2023	Mahindra C I E Automotive Ltd.	330.39	4391.529	2031.078	4207.14
2019	Mahindra Holidays & Resorts India Ltd.	1279.55			
2020	Mahindra Holidays & Resorts India Ltd.	1227.40			
2021	Mahindra Holidays & Resorts India Ltd.	1177.37			
2022	Mahindra Holidays & Resorts India Ltd.	1129.38			
2023	Mahindra Holidays & Resorts India Ltd.	1083.34	16225.44	8343.947	14240.98
2019	Mahindra Lifespace Developers Ltd.	1448.97			
2020	Mahindra Lifespace Developers Ltd.	1328.32			
2021	Mahindra Lifespace Developers Ltd.	1217.72			
2022	Mahindra Lifespace Developers Ltd.	1116.33			
2023	Mahindra Lifespace Developers Ltd.	1023.38	14608.03	7460.454	13595.17
2019	Swaraj Engines Ltd.	2355.63			
2020	Swaraj Engines Ltd.	2175.85			
2021	Swaraj Engines Ltd.	2009.80			
2022	Swaraj Engines Ltd.	1856.42			
2023	Swaraj Engines Ltd.	1714.74	25248.49	13583.84	23696.28
2019	Tech Mahindra Ltd.	42642.03			
2020	Tech Mahindra Ltd.	43919.26			
2021	Tech Mahindra Ltd.	45234.74			
2022	Tech Mahindra Ltd.	46589.62			
2023	Tech Mahindra Ltd.	47985.08	798481.3	440236.3	666607

Source: Author

Figure 1 depicts the value of equity of sample companies estimated by using free cash flow to equity model as on March 31, 2018. As can be seen, Tech Mahindra Ltd. was estimated to have the highest value of equity Rs. 666607.05 million, followed by Mahindra & Mahindra Ltd with the value of Rs. 581310.29 million; and Mahindra & Mahindra Financial Services Ltd with the value of Rs. 97680.47 million. The lowest value was estimated for Mahindra CIE Automotive Ltd with the amount of Rs. 4207.14 million.

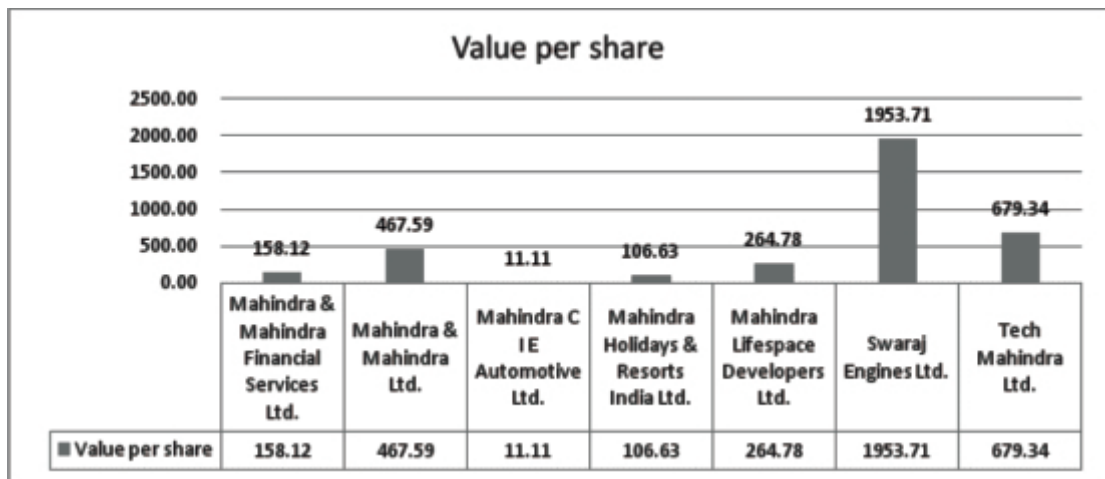
Figure 1: Value of Equity



Source: Author's Calculation

In order to estimate the value of equity per share, the value of equity was divided by the number of equity shares outstanding as of December 2018. Figure 2 shows the value of equity per share for the sample companies.

Figure 2: Value per Share



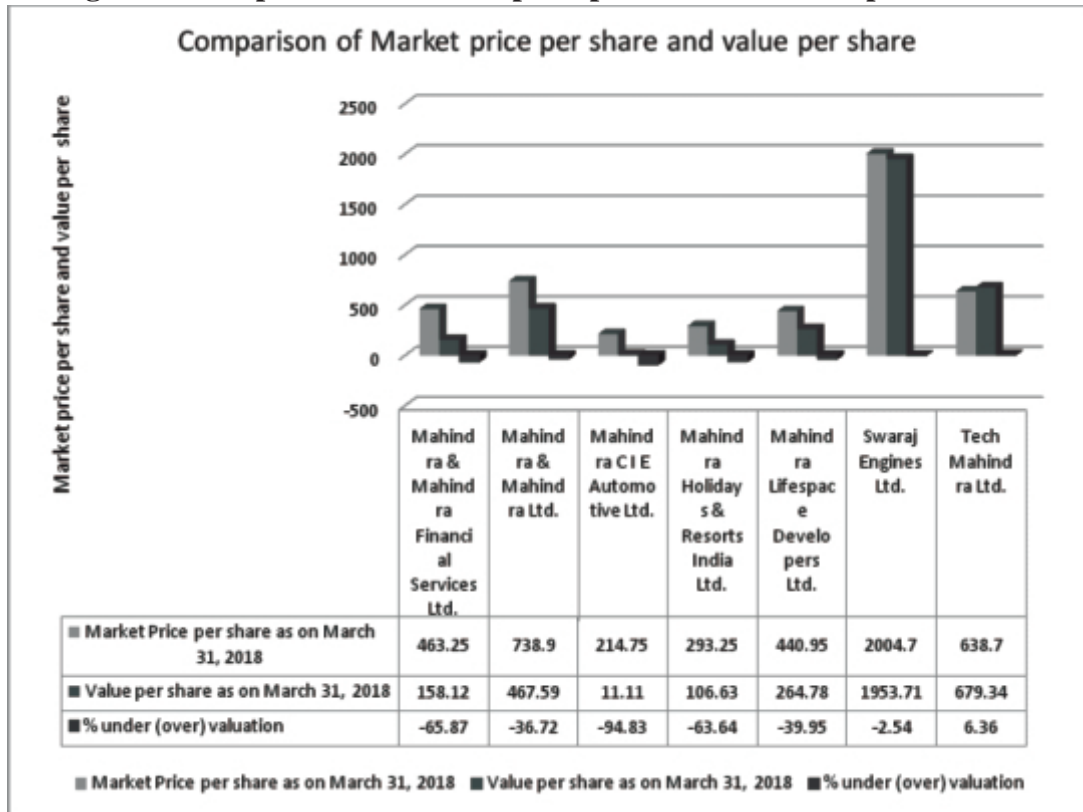
Source: Author's Calculation

As can be seen, Swaraj Engines Ltd was estimated to have the value per share of Rs. 1953.71; Tech Mahindra, Rs. 679.34; Mahindra & Mahindra Ltd Rs. 467.59; Mahindra Lifespace Developers Ltd, Rs. 264.78; Mahindra and Mahindra Financial Services Ltd, Rs. 158.12; Mahindra Holidays & Resorts India Ltd, Rs. 106.63; and Mahindra CIE Automotive Ltd, Rs. 11.11.

Comparison of Market Price Per Share, Value Per Share

Figure 3 shows the comparison of market price per share, value per share and degree of under or overvaluation. As can be seen, six out of seven companies seem to be undervalued. Mahindra CIE Automotive Ltd was highly undervalued representing 94.83 of undervaluation. Mahindra and Mahindra Financial Services Ltd was the second highly undervalued company with 65.87% undervaluation relative to the market price. Swaraj Engine Ltd was slightly undervalued representing merely 2.54% of undervaluation. Tech Mahindra was the only company that was found to be overvalued with 6.36% overvaluation in relation to the market price.

Figure 3: Comparison of Market price per share and value per share



Source: Author's Calculation

Conclusion

In this study, an attempt was made to ascertain the value of equity of six companies included in NIFTY Mahindra Group Index by using free cash flow to equity model. The key inputs required for applying free cash flow to equity model were estimated by using the methodology suggested by Damodaran. The results of the study revealed that five out of six companies were undervalued relative to the market price. Mahindra CIE Automotive Ltd was found to be highly undervalued across the sample representing 94.83% of undervaluation. On the contrary, the slightest undervaluation was found in case of Swaraj Engine Ltd with 2.54%. Coming to overvaluation, Tech Mahindra was the only company which was found to be overvalued by 6.36%.

In this study, only one discounted cash flow method was applied to estimate the value of equity of the sample companies. Although, there are many variants of discounted cash flow method viz, free cash flow to the firm, capital cash flow and so on. The estimation of the value of an asset is highly sensitive to the underlying assumptions. With the change in underlying assumptions, the value of an asset changes drastically. In that sense, in this study, the estimated value may be not the most accurate one considering the inherent limitations of underlying assumptions. To arrive at the most accurate estimate of the value of an asset, it is better to apply several methods and then average out the valuation figures so arrived.

References:

- Bhandari, S & Adams, T. (2017). On the definition, measurement, and use of the free cash flow concept in financial reporting and analysis: a review and recommendations, *Journal of Accounting and Finance*, 17(1), 11-19
- Damodaran, A. (2008). Growth and value: past growth, predicted growth and fundamental growth, accessed on March 23, 2019, retrieved from <http://people.stern.nyu.edu/adamodar/pdfiles/papers/growthorigins.pdf>
- Damodaran, A. (no date). Closure in valuation: estimating a terminal value, accessed on April 5, 2019, retrieved from <http://people.stern.nyu.edu/adamodar/pdfiles/papers/termvalue.pdf>
- Fernández, P. (2007). Valuing companies by cash flow discounting: ten methods and nine theories, *Managerial Finance*, 33(11), 853-876,
- Fernandez, P. (2017). Cash flow is a fact: net income is just an opinion, Accessed on March 20, 2019, retrieved from <https://ssrn.com/abstract=330540>
- Fernandez, P. (2017). Company valuation methods, accessed on April 13, 2019, retrieved <https://ssrn.com/abstract=274973>
- Fernandez, P., Pershin, V. & Acín, I. (2018). Market risk premium and risk-free rate

used for 59 countries in 2018: a survey accessed on March 26, 2019, retrieved from <https://ssrn.com/abstract=3155709>

- Gardner, J., McGowan, C., & Moeller, S. (2009). Applying the free cash flow to equity valuation model to Coca-Cola, proceedings of the Academy of Accounting and Financial Studies, 14(1), 11-15
- Penman, S. & Sougiannis, T. (1997). A comparison of dividend, cash flow, and earnings approaches to equity valuation, accessed on March 20, 2019, retrieved from SSRN: <https://ssrn.com/abstract=15043>
- Steiger, F. (2008). The validity of company valuation using discounted cash flow methods accessed on March 20, 2019, retrieved from <https://arxiv.org/ftp/arxiv/papers/1003/1003.4881.pdf>