Business valuation in times of crisis

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Abstract. Business valuation is very important and complex process, mainly in the current global situation. To determine the company value, we will base our calculations on an analysis of the internal environment of the company, which is affected by macroeconomic and microeconomic influences. The aim of this paper is to determine the value of a selected company using FCFF in an environment of negative and unplanned interventions in the economy. The main source for determining the value of the company is data obtained from the financial statements and annual reports of the limited liability company Pepco, s.r.o. from the period of 2013-2018. The method applied to the selected company is the discounted cash flow method, which is one of the most popular and most frequently used earnings methods. In the first years before the company became known on the Czech market, the value of the FCFF was more often than not in negative numbers. This also affected the value of the business. During next years, with the stable growth of the company, the value of the company also grew. We can expect that due to the global problem of COVID-19, the value of the company will decrease in 2020, but it will not have a very significant effect on its overall value.

Keywords: company value, cash flow, business valuation, gross domestic product, financial indicators, prediction

1 Introduction

Business valuation, or determining the value of a company, is a complex process in which various experts from various fields may participate. But why is the value of a company determined in the first place and for what purposes can it be used?

A business should know how it will continue to grow and develop. It can lead to a decision whether to offer the company up for sale, liquidation or a merger. If the owner of a company decides for merger, they should be well aware of its value, so that they know whether the merger is advantageous for then or not. To determine this value, we will base our calculations on an analysis of the internal environment of the company, which is affected by macroeconomic and microeconomic influences [1-4].

We can demonstrate this on the example of the current global situation, which is deeply affecting the global economic market. This current predicament is the disease COVID-19 (coronavirus), which has spread throughout the world. Due to the disease, many countries

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have taken certain measures that have prevented some businesses from operating. This is a very difficult situation for self-employed individuals and businesses, as their main source of income is still limited. If they do not have sufficient financial reserves, they cannot keep the company running long-term (payroll, rent, etc.). This sudden problem will force businessmen to think and decide in which direction they will lead their company [5-6].

Buus [7] argues that the simulation of company value and capital structure in the presence of taxes, risk and growth also shows that there are unique optimal levers for each combination of the aforementioned factors. For this reason, it is important to understand the influences that affect the company and determine the value of the company during the decision-making period.

At present, we have many methods available. Choosing the right method to determine the value of a business can lead to a competitive advantage. One of these methods is the discounted cash flow method, which is one of the most widely used.

The aim of this paper is to determine the value of a selected company using FCFF in an environment of negative and unplanned interventions in the economy.

2 Literature research

The purpose of a company's financial valuation is a way of expressing the company's value using a monetary amount. It is a complex process that can involve many experts from different fields of profession. The company as such may be valued as a whole, or only some of its parts can be valued [8-10].

This value can be determined in various ways. These are interesting especially for investors, owners and creditors. The subject of the valuation is therefore the market price, which is referred to as the market value [11]. According to Kislingerová and Krabec [12], the valuation of a company takes place primarily using methods based on revenue analysis, methods based on the analysis of the current market situation and methods based on the valuation of company assets.

Companies should not just drift along with external influences and events, so planning is a relatively important activity. Vochozka and Machova [13] state that if companies plan ahead, they can be better prepared for various situations and thus more easily respond to them. Vrbka, Rowland and Suler [14] also leans towards this, stating that it is necessary to take into account the macroeconomic factors that directly affect the company.

With global economic progress, planning is a prerequisite for survival, reducing the risk of future threats. Vrbka, Suler a Horak [15] also states that a company's financial plan contains all financial statements. These are, by default, the balance sheet, profit and loss statement and cash flow statement.

If the company is affected by external influences to such an extent that it reaches the so-called bottom, it is appropriate to consider the liquidation of the company. In this regard, it is possible to use liquidation methods. It tells us what proceeds can be obtained from the sale of all assets, the monetary amount of the company's liabilities and what the costs of liquidation will be. The liquidation value is determined in cases where the company can no longer continue its business activities in the future [16-18].

Behera [19] gives two basic directions today, which are among the most common methods of valuation. The first method is based on economic value added (EVA), which is linked to stock prices. However, its weakness is in future constant yields. The second of Behera's [19] methods is the discounted cash flow (DCF) method. Nyvltova and Marinic [20] also mention that these DCF models are the most used models in practice, and this is also confirmed by Aljifri and Ahomad [21].

Marik and Marikova [22] suggest that if we aim to obtain the market value of the company, then it is most appropriate to choose the DCF method. A variant of the DCF

method is, for example, the FCF model, which is cash flow available to suppliers after taking into account all operating costs, investments into inventory and equipment of the company. According to Mařík and Maříková [22], this is cash flow from operating activities exempt from the cost of capital, ie free cash flow for owners and creditors.

3 Data and methods

The main source for determining the value of the company is data obtained from the financial statements of the limited liability company Pepco, s.r.o. from the period of 2013-2018. An equally important source is the company's annual reports from the same time frame. The information obtained in this way is publicly available and this was decisive in the choice of the method used.

We distinguish three basic techniques of DCF calculation:

1. Entity method – society as a whole,
2. Equity method – the size of equity,
3. APV method – adjusted present value.

We will be dealing with the calculation in the form of Entity.

To calculate earnings before interest and tax (EBIT), we add together earnings before tax (EBT) and interest (I).

$$EBIT = EBT + I \quad (1)$$

After the subsequent operation, the final FCF value will be calculated according to the following formula:

$$FCFF = EBIT * (1 - t) + A - INV \quad (2)$$

In order to calculate the total value of a company, it is necessary to find out the average cost of capital (WACC) in advance. The formula below will be used to calculate these costs.

$$WACC = r_f + r_{LA} + r_{POD} + r_{FS} \quad (3)$$

r_f – risk-free yield rate (can be determined on the basis of the yield on long-term government bonds in the Czech Republic, which are available at www.cnb.cz); r_{LA} – surcharge for the size of the company determined on the basis of the amount of borrowed capital:

- if the value of $C > 3$ bil. CZK, then $r_{LA} = 0$,
- if the value of $C < 100$ mil. CZK, then $r_{LA} = 5\%$,
- if the value of C is inbetween these two values, then $r_{LA} = \frac{(3-C)^2}{168.2}$.

r_{POD} – business risk surcharge (determined on the basis of EBIT/assets)

- if the value of $EBIT/A < 0$, then $r_{POD} = 10\%$,
- if the value of $EBIT/A > r_d * C/A$, then $r_{POD} = 0\%$,
- if the value of $EBIT/A$ is greater than 0, but lower than $r_d * C/A$, then $r_{POD} = \left(\frac{r_d * C - EBIT}{r_d * C - 10 * A} \right)^2$.

r_{FS} – financial stability surcharge (determined on the basis of current liquidity; $L1$ = current assets/current liabilities) :

- if the value of $L1 < 1$, then $r_{FS} = 10\%$
- if the value of $L1 > \text{industry average}^7(XL)$ and at the same time $> 1,25$, then $r_{FS} = 0\%$,

- if the value of $L1>1$, but lower than XL , then $r_{FS} = \left(\frac{XL - OA}{XL - 1}\right)^2 * \frac{1}{10}$.

The total value of the company, also known as the market value of the company, is obtained by discounting the cash flows from operationally necessary assets.

$$Company\ value_1 = \sum_{t=1}^n \frac{FCFF_t}{(1 + WACC)^t} \tag{4}$$

WACC – weighted average cost of capital,
FCFF – free cash flows to firm in year *t*,
n – number of years of expected operation.

The continuing value of the analyzed company can then be determined according to the following formula:

$$PH = \frac{FCFF_{n+1}}{WACC - g} \tag{5}$$

When planning, we assume that the company will exist indefinitely. However, it is not possible to plan cash flows for this assumption. In practice, this phase deals with a two-phase method. The future period will be divided into two phases. The first phase includes the period in which we are able to determine the free cash flow prediction for each year. The second phase contains the period from the end of the first phase to infinity. We determine the total value of the company using the following formula:

$$Company\ value = \sum_{t=1}^n \frac{FCFF_t}{(1 + WACC)^t} + \frac{FCFF_{n+1}}{wacc - g} \tag{6}$$

g – expected growth rate of FCF throughout the second phase (determined on the basis of a constant growth rate based on GDP and inflation)

4 Results

The method applied to the selected company is the discounted cash flow method, which is one of the most popular and most frequently used earnings methods. This was also the reason for choosing the appropriate method for determining the value of the analyzed company.

4.1 Company value in method phase one

The first table shows the development of earnings before tax achieved over 6 years by the company Pepco s.r.o. Data from publicly available financial statements were taken to calculate EBT. All necessary data was taken from the entire period of operation of this business in the Czech Republic and are given in thous. CZK.

Table 1. EBT calculation for years 2013-2018

	2013	2014	2015	2016	2017	2018
Operating profit	-13,047	5,936	12,6915	507,972	592,490	668,762
Financial results	-3,347	-6,679	7,164	-13,464	-11,423	-8,017

Extraordinary profit or loss	2,862	-760	0	0	0	0
EBT	-13,532	-1,503	134,079	494,508	581,067	660,745

Source: Own processing.

The following table already quantifies the company's earnings before paying interest and taxes. Fluctuations over the years were influenced by many factors, especially operating costs in the first years and the increase in sales of products.

Table 2. EBIT calculation for years 2013-2018

	2013	2014	2015	2016	2017	2018
EBT	-13,532	-1,503	134,079	494,508	581,067	660,745
+ I	10	3,345	1,329	1	0	0
EBIT	-13,522	1,842	135,408	494,509	581,067	660,745

Source: Own processing.

Table 3 shows the evolution of free Cash Flow, which changes over the years as the company grows.

Table 3. FCFF calculation for years 2013-2018

	2013	2014	2015	2016	2017	2018
EBIT	-13,522	1,842	135,408	494,509	581,067	660,745
- taxes	8	29	1,155	1,982	1,587	8,911
+ depreciation	1,936	11,089	28,362	52,220	61,123	76,727
- change in working capital	n/a	-57,212	30,428	368,319	396,458	469,578
- investments	n/a	54,264	73,512	34,111	70,449	64,665
FCFF	n/a	-98,574	58,675	142,317	173,696	194,318

Source: Own processing.

Table 4 reflects the statistical and financial indicators recommended by the Ministry of Industry and Trade of the Czech Republic. Here is a quantification of the average cost of capital of Pepco s.r.o.

Table 4. Calculation of average cost of capital for years 2013-2018

	2013	2014	2015	2016	2017	2018
Risk-free interest rate	2.20%	0.67%	0.49%	0.53%	1.50%	2.01%
Surcharge for the size of the company	5%	5%	5%	3.7%	2.5%	1.4%
Surcharge for business risk	0%	0%	0%	0%	0%	10%
Financial stability surcharge	10%	10%	10%	0%	0%	0%
WACC	15.02%	15.01%	15%	3.75%	2.49%	11.37%

Source: Own processing.

The value of the company in the first phase is shown in the table below. When using the discount rate, the weighted average cost of capital (WACC) is derived, free cash flows (FCFF) are discounted to present value and then summarized.

Table 5. Calculation of the total value of the company in phase one

	2013	2014	2015	2016	2017	2018
FCFF	n/a	-98,574	58,675	142,317	173,696	194,318
WACC	15.02%	15.01%	15%	3.75%	2.49%	11.37%
Company value	n/a	-85,709	51,021	137,173	169,476	174,479
Total company value	446,440					

Source: Own processing.

4.2 Method phase two

The resulting value of free cash flows for the following period and the growth rate is determined from the expected year-on-year GDP growth and inflation. The GDP growth (2.4%) and inflation (2.6%) rates were determined using statistical data. In the final sum, the value is 5.2%. The growth rate of cash flows for the following period is therefore:

$$FCFF_{2019} = 194,318 * (1+0.052) = 204,422 \tag{7}$$

The continuing value of the company in the next year allows us to calculate the formula described in the methodological part. It is :

$$PH_{2019} = 204,422 / 6.17\% = 3,313,160 \tag{8}$$

4.3 Total company value

The total value of the company is given by the sum of the two previous results in individual steps.

$$446,440 + 3,313,160 = 3,759,600 \text{ thous. CZK} \tag{9}$$

5 Discussion

The free cash flow discount method was used to value the company. With the help of data about the company, the amount of free Cash Flow was determined during the company's operation in the Czech Republic, which was crucial for the company's valuation. In the first years before the company became known on the Czech market, the value of the FCFF was more often than not in negative numbers. This also affected the value of the business in that year. What is especially obvious and what significantly affected the application of the method is the number of periods included in the calculation phase. During these years, with the stable growth of the company, the value of the company also grew, rising to positive numbers several times. In the second phase of the method, the value of free cash flows for the following year was predicted, assuming the future values of GDP and inflation. It is obvious that the first years of calculation of the value of the company have a negative impact on the final value, because they point to the development stage of the company. Over the last 4 years, year-on-year growth has been relatively constant and the total value of the company is still increasing. The resulting value of Pepco, s.r.o. amounted to 3,759,600,000 CZK.

The FCFF method is one of the most widely used. However, its correct results depend on the appropriate setting of many indicators that are needed for the calculation. If we work with a longer time horizon and the prediction of future development, it is necessary to have

the knowledge of predicting the appropriate values. This is not only cash flows and discount factors, but also the company's future financial plan. The longer the time horizon, the higher the probability that the predicted values will differ from real ones. Furthermore, we must not forget the influence of the microeconomic and macroeconomic environment on the company, which also affects the accuracy and calculation of the current value of the company [23-24].

For the selected company, the data was sufficient to calculate the total value. However, now, in the midst of an unexpected situation, it is difficult to choose the final value. The accuracy of the result depends mainly on the amount of data available to the evaluator for the selected company and on the possibilities of predictable, stable development of a market economy.

6 Conclusion

The aim of the paper was achieved. The method of determining the value of a company using discounted free cash flows can be used. This was demonstrated through a case study on calculating the value of a randomly selected company.

Estimating the future development of society and the economy is a very difficult task, where the deviation between real and predicted values also increases in a situation of negative and unplanned interventions in the economy. The DCF model is therefore limited by the risk of not reaching the predictions on which the valuation is based. This year, from the possible effects of coronavirus, preventive measures may have an effect on the stagnation of the Czech economy. It is now difficult to quantify damage estimates, as we still do not know how quickly the coronavirus will recede and whether it will not be back on the scene when we abandon preventive measures. In the forecast for 2020, which was set at the end of last year, the value of Czech GDP growth was estimated at 2%. Gradual supplementation of data and gradual deterioration of the situation now reduces the GDP growth estimate to 1.3%. Therefore, we can expect that due to the global problem of COVID-19, the value of the company will decrease in 2020, but it will not have a very significant effect on its overall value.

Findings regarding the applicability of the method for determining the value of companies can be helpful in the decision-making of owners and potential shareholders. If the owners want to know the value of their company in this difficult situation and have up-to-date and accurate information, I recommend valuating the business once again.

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