

## Chapter 4

# Challenges in Valuation by Using Discounted Free Cash Flow Method

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### **ABSTRACT**

*It is generally believed that, in determining the real value of a company, the best results are obtained by using the Discounted FCF method. The overall value of the firm itself or the value of equity is determined by discounting the “appropriate” cash flows by “appropriate” discount rates. We basically need to determine three major parameters: free cash flows, cost of capital, and the terminal value. All these three parameters have sub-parameters within themselves. Because all these parameters and their sub-parameters are to be future values, many factors like the riskiness of the firm in question, its leverage ratio, whether it is a profitable firm, newly-established or public company will not only influence the calculation of these parameters/sub-parameters but will also make it more difficult for the analyst. This chapter explains what variables are needed for company valuation, how they are determined, and what problems may be faced in calculating these values. Finally, authors propose solutions to all the problems analysts will likely face.*

### **INTRODUCTION**

Many business valuation models and methods from very simple to highly complex ones are used in finance literature and practice. Discounted Free Cash Flow Method (Discounted FCF Method) is one among them, which is mentioned under income-based approach. According to income-based valuation approach, the value of a business is equal to the present value of the future cash flows of the company discounted at the appropriate rate of return. In the income-based valuation approach, the value of the company depends on the cash flows that the company can create and the risk level of these cash flows.

DOI: 10.4018/978-1-7998-1086-5.ch004

## ***Challenges in Valuation by Using Discounted Free Cash Flow Method***

The discounted cash flow method is one of the most widely used methods by both the experts and investors who are interested in the company valuation. Taking into account the future cash flows, the risk level of these cash flows and the risk level of the company are the main reasons for the common use of this method. However, the fundamental variables of the method; the free cash flows that the company will create in the future, company's cost of capital and its terminal value are highly sensitive to assumptions. This sensitivity can also prevent realistic results in determining the value we aim to determine.

Therefore, although this method is considered as one of the best methods, it is important to examine this method with many challenges and to offer solutions to these problems. This chapter explains the cash flow analysis and discusses the problems facing the analyst while applying this method and tries to give solutions to these problems.

In this work, the details of the Discounted Cash Flow Valuation methodology are discussed. Although different approaches include various discounted cash flow models, three valuation model are examined in this chapter; namely Dividend Discount Model, Free Cash Flow to Equity (FCFE) and Free Cash Flow to Firm (FCFF). Author of this document attempted to see the problems and concepts related with the subject from the eyes of a valuation analyst. While the Dividend Discount Model is also mentioned in the chapter, the main concentration of the chapter will be on FCFE and FCFF valuation models. Three sub-subjects taken into account are the fundamental variables of the Discounted FCF model; "Free Cash Flow", "Cost of Capital (Appropriate Discount Rate)" and "Terminal Value". The estimation methodology, problems and solutions related to these variables have been explained under following headlines.

### **Discounted Free Cash Flow (FCF) Method**

In this method, first the future cash flows are estimated and then discounted by the "appropriate rate of return" to find the firm or the equity value. Therefore, according to this method the value of a business or the value of the equity of the business is the present value of the expected cash flows over its expected life.

$$Value = \frac{E(FCF)_1}{(1+k)} + \frac{E(FCF)_2}{(1+k)^2} + \frac{E(FCF)_3}{(1+k)^3} + \dots + \frac{E(FCF)_n}{(1+k)^n} \quad (1)$$

where;  $E(FCF)$  represents expected free cash flow the firm will generate in the future,  $k$ ; is required rate of return.

The full expression of the above formula is as shown below. If we discount the FCFF by WACC we will get the overall value of the firm, and if we discount the FCFE by the required rate of the shareholders (required rate of equity, cost of equity) we will get the value of equity of the firm. The FCFF or FCFE in the formula below are assumed to be constant.

$$Business\ Value = \sum_{t=1}^{t=n} \frac{FCFF}{(1+k_o)^t} \quad (2)$$

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