

Free Cash Flow, Economic Value Added and Firm Value

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Abstract

This paper addresses the issue of value creating potential of the firm and its current and proposed endeavours along with their financial impacts. In this regard, two valuation proposed – Free Cash Flow (FCF) and Economic Value Added (EVA) – both of which are based on the notion of discounted cash flow concept, are used as logical and appropriate criteria of value creation. In the course of the discussion the author defines FCF, presents the FCF method of valuation, and describes the process of FCF forecasting. The paper also highlights the concept of EVA and its use in computing Economic Value (EV) of the firm. In conclusion, an effort is made to reconcile these two approaches to establish that firm value is independent of these perspectives.

Key-Words : Value Creation; Discounted Cash Flow; Free Cash Flow; Economic Value Added; Economic Value.

Introduction

In recent times, capital as a factor of production has been gaining more prominence than ever because of globalisation and movement of capital across countries. As a result, the needs of suppliers of capital (investors) become paramount. They are very much interested to know the underlying value for making investment decisions. The value creating potential of the firm and its current and proposed endeavours along with their financial impacts are the most significant information they demand. Therefore, the question that comes uppermost is : on what basis valuation of a firm should be done so as to reflect value creation perspective. As value creation is a continuous process and value of a firm is a mathematical function of amount, timing and risk involved in generating its future income stream, any valuation method that addresses these criteria of value creation should be considered to be appropriate and logical. In this article, two such valuation frameworks – Free Cash Flow (FCF) and Economic Value Added (EVA) method of valuation – are presented.

Both these valuation methods are based on the notion of Discounted Cash Flow (DCF) concept and assume the perspective of firm's investors when deciding how best to run the business. Section two of the article defines FCF while section three presents the concept of FCF method of valuation. Section four narrates the process of forecasting FCF, whereas section five describes the concept of EVA and its use in computing Economic Value (EV) of the firm. In the last section, an effort is made to reconcile these two approaches so as to establish that firm value is independent of these perspectives.

FCF and its Computation

In defining FCF, we are interested in Investor's perspective. Therefore, the question is : what is cash flow that matters to the firm's investors. It is the cash that is free and available to provide a return to investor's capital. Technically, FCF is equal to after tax cash flows from operation less any incremental investments made in the firm's operating assets. Increase in incremental

- investment in operating assets may be calculated by adding the figure of increase in working capital and increase in fixed assets and other long term assets. An alternative and equivalent approach of calculating such amount is increase in total assets minus the increase in non interest bearing current liabilities. A simple way of calculating FCF is shown below.

	Amount Rs.
Net operating profit before tax	XX
Add : Depreciation and Amortization	XX
Add/Less : Non cash items and extra ordinary items	XX
Less : Tax paid	XX
After tax cash flow from operation	XX
Less : Increase in net working capital, which is equal to increase in current assets minus increase in non-interest bearing current liabilities	XX
Less : Increase in fixed assets and other long term assets	XX
Free Cash Flow (FCF)	XX

To summarize, a company's free cash flow is equal to the amount distributable to its investors. So, free cash flow is the result of firm's operating, investing and financial decisions.

FCF Method of Valuation

Constituents of cash flows and how these are distributed or applied while are essential information in managing a firm, there is another reason for computing a firm's cash flows – to estimate firm value. If it is given that a firm generates a FCF of Rs. 8000 lakh in a year and if investors expect the firm to generate this same level of cash flows every year in the future, then it definitely suggests something about firm value. In the context of DCF model of firm value, we could think of firm value as equal to the present value of the future cash flow stream. In other words, firm value is the present value of the future cash flow stream of Rs.8000 Jakh, discounted at the investor's required rate of return.

Free cash flow method is the most important and recognized method of valuing a firm. This method is based on the notion of DCF concept of valuation and therefore considers the amount, timing and risk involved in generating future cash flow. It can be said that if cash is returned to the business and ultimately to the investors then it would lead to value creation. This fact popularizes the cash flow basis of valuation. Another reason is that cash flow is a fact and not an opinion like profits and, as such, any valuation based on cash flow is logically superior.

Firm's EV is equal to the present value of its future FCFs discounted at its cost of capital (K_0) plus the value of the firm's non-operating assets. Thus,

Firm value = Present value of all future FCFs + Value of non-operating assets

The concept of valuing a firm based on FCF does not appear to be difficult. But to estimate the value of a firm, we should at first project future FCFs. And projecting a firm's FCFs for its entire life is no easy task because of the degree of uncertainty involved. However, given the difficulties with forecasting distant cash flow, a more sensible approach is to divide the firm's flows into two parts :

- (1) cash flows to be received during a finite period that corresponds to the firm's strategic planning period ;
- (2) cash flows to be received after the strategic planning period.

The length of the planning period should be determined by the duration of the competitive advantage that the firm enjoys. When the competitive advantage has dissipated, there is no incentive, at least not in terms of creating economic value, to continue to spur growth. Thus, growth duration is an important criterion for determining the length of the planning period. In order to identify the firm's growth duration, we have to examine the company relative to its competition according to number of factors. Consideration should be given to the presence of established distribution channels, any brand names and the research and development. For example, pharmaceutical companies have relatively long growth duration because of patented products and intense R & D activities.

In order to estimate growth duration of a firm, we could make assumptions regarding the variables that affect a firm's FCFs. We would hold these variables constant and then vary the length of the forecast until the present value of cash flows less debt is equal to the market value of shares.

The first part of firm's value, i.e. present value of all future FCFs, has two components – present value of FCFs generated in the planning period and present value of post planning period of residual period FCFs. If we assume that a firm's strategic planning period is n years, the present value of the planning period FCFs for years 1 through n would be computed as follows:

$$\text{Present Value} = \frac{\text{FCF}_1}{(1+K_0)} + \frac{\text{FCF}_2}{(1+K_0)^2} + \dots + \frac{\text{FCF}_n}{(1+K_0)^n}$$

The second part requires two calculations. First, the value of the residual cash flows in year n (the end of the planning period) with cash flows beginning in year $(n+1)$ and growing at a constant rate (g) in perpetuity would be calculated as follows :

$$\text{Residual value in year } n = \frac{\text{FCF}_{(n+1)}}{K_0 - g}$$

Then, finally, we calculate the present value of post-planning period of residual cash flow stream in the following way :

$$\text{Present value of residual cash flows} = \frac{\text{residual value}_n}{(1+K_0)^n}$$

To continue, the value of non-operating assets (including items like marketable securities, excess real estate etc.) is to be added. From the firm value, we can get the shareholder value by deducting future claims of outsiders. Future claims include both short-term and long-term interest bearing debt and contingent liability. The value of each of these claims should be determined by asking the question : if this claim were to be settled now, what would have to be paid.

In the above model, K_0 is used as a discount factor. K_0 is an economic concept and represents the cost that a firm has to bear in order to use capital. It is generally used in the sense of weighted average cost of capital incorporating cost of all sources having regard to the weights of these sources. The determination of cost of equity, one of the important components, is generally fraught with difficulties. Capital Asset Pricing Model (CAPM) is the ideal model to be used for the purpose.

Forecasting FCFs

To determine firm value on the basis of FCFs, firstly we have to determine the length of planning period and then to estimate the firm's future FCFs in doing so, we require estimating year to year sales figure for the planning period and an annual sales growth rate assumed to be constant in perpetuity after the planning period. We then project both the firm's future cash flows from operations and the asset investments to be made over time.

In the context of managing firm for shareholder value, FCF, rather than profit, is the key determinant of value. However, in forecasting a firm's FCF, we should not totally disregard the information content of profit. We could use this very well as a basis for predicting future cash flows themselves. Profit measures the results of operating cycles but involves judgments, which reduce its credibility. But cash flows, on the other hand, involves less judgements.

At the beginning, the firm's historical performance is determined; then the industry in which it competes and its competitive position within the industry are required to be ascertained. Generally, the following are the key issues of concern:

- Sales for the most recent period.
- Sales growth rate for planning period and a growth rate that can be maintained in perpetuity after the planning period.
- Expected operating profit margins (operating profit/sales).
- Projected ratio of operating assets to sales: net working capital, fixed assets and other long term assets relative to sales.
- Cash tax rate.

These variables are called value drivers, because they are factors or drivers determining a firm's free cash flows, which in turn affect firm value. As a beginning point for estimating the

firm's cash flows, some assumptions regarding the above value drivers over the years are made. These assumptions are based on the company's historical performance, adjusted for some anticipated expected changes.

In estimating future FCFs, depreciation expenses are not added to net profit as is generally done in computing historical FCFs. The assumption is that in looking forward in time, it is logical to take that the depreciation expenses is equal to the cost of replacing existing fixed assets. Depreciation is viewed as a proxy to reinvestment.

EVA and its Use in Computing EV of the Firm

While profit, no doubt, is the barometer of performance, the concept of profit differs significantly between accountant and economist. Accountants measure profits from owners points of view and as such, profits are measured as revenues less operating expenses less the cost of debt financing in the form of interest expenses and preference dividend. There is no cost, as such for equity capital; after all the shareholders are the owners to whom profits flow. But according to economists, profits represent that portion of revenue which is left with the business after recovering cost of all factors that are employed in the business activity. This is an age-old stand of economists and its origin can be traced back to 1800s. True profits come only after subtracting all financing costs, both for debt capital and equity capital, where cost is defined as the opportunity cost of funds if they were to be invested in another firm of similar risk. In other words, those who speak of economic profits maintain that a business activity must not only break even but also earn enough to justify the cost of all the capital used in pursuing the activity. Only then has the firm broken eve. Thus,

Accounting	=	Sales	- Cost of goods	-	Operating	- Interest	-	taxes
profit			sold		Expenses		Expenses	
Economic	=	Sales	- Cost of goods	-	Operaing	- Taxes		Charge for
Profit			sold		expenses			all capital used

Or, Economic profit = Net operating profits after taxes - Charge for all capital used.

EVA is based on this fundamental concept of economic profit. EVA is defined as any surplus generated from operating activities over and above the cost of capital (Ghosh, 2000). Technically defined, EVA is the quantitative measure of genuine addition or draining of the net worth of shareholders and is calculated as net operating profit after tax but before interest reduced by weighted average cost of capital multiplied by the capital employed. It essentially seeks to measure the actual rate of return as against the required rate of return. It is a way to measure corporate's real profitability recognizing the fact that the capital employed in any business has a cost - irrespective of general belief that equity has no cost. Thus, EVA is accounting for the cost of capital and determining the sufficiency or insufficiency of earning generated by a firm to cover the cost of capital, i.e., whether a firm is value creator or value destroyer.

Although, EVA is primarily used as period-by-period performance measurement, yet, Stern Stewart & Co., the originator of EVA concept, advocates the use of EVA in estimating EVA of the firm. It restates the FCF paradigm as : firm value is equal to the present value (PV) of all future EVAs plus invested capital. Thus -

$$\begin{aligned} \text{Firm Value} &= \text{PV of future} &+& \quad \text{Invested Capital} \\ &\quad \text{EVAs} \\ &= \text{PV of planning} &+& \quad \text{PV of post planning + Invested capital} \\ &\quad \text{period EVAs} && \quad \text{period EVAs} \end{aligned}$$

In case of estimating future EVAs, we follow the same route as discussed earlier in section four. That is, we estimate the value drivers based on the analysis of historical performance of firm and industry suitably revised by expected future prospects and challenges.

Reconciliation between FCF & EVA Valuation Method

In this juncture, it is important to know how EVA relates to FCF in determining firm's value. By reconciling these two approaches we can say that value is independent of the perspective taken and the two methods are essentially tied to the same financial theory. Let us consider the case of a hypothetical company (A Ltd.).

The company projects the followings :

- Anticipated sales for the year 2002 will be Rs. 3 crore on total beginning capital (debt and equity) of Rs. 1.5 crore.
- Company expects to maintain a constant net operating profit after tax margin (NOPAT/Sales) of 6.25% over the future periods. This implies a NOPAT of $(3 \text{ crore} \times 6.25\%)$ or Rs. 18,75,000 which is $12.5\% [(18.75 \text{ lakhs}/150 \text{ lakhs}) \times 100]$ of invested capital.
- Company is planning to reinvest 60% of its NOPAT for growth. Given the return on capital of 12.5%, the firm is expected to grow at 7.5% (60% of the return of 12.5%).
- The company assumes that the 7.5% growth rate will be continued for five years, the period management believes to maintain its competitive edge and also the time period during which it can continue to earn a rate higher than its cost of capital of 10%.
- After the five year period, company expects growth will not create any additional value and as such, company has no plan to expand.
- Company will be financing its entire investment to facilitate growth from internal sources (i.e. profit) and as such, no additional risk will be taken which in turn stabilizes cost of capital.

Based on the foregoing projections, we can estimate the value of A Ltd. either by finding the present value of FCFs or by computing the present value of EVAs. The calculations are shown in Table 1.

TABLE 1

Valuation of A Ltd. under FCF Method & EVA Method (Rs. in thousand)

Year	FCF based Valuation					EVA based Valuation			
	Sales	NOPAT	Investment = 0.6 × (3)	FCF = (3) – (4)	Present value of	Beginning Capital FCF	Cost of Capital	EVA = (3) – (8) = (7) × 0.1	Present Value of EVAs
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2002	30000	1875	1125	750	682	15000	1500	375	341
2003	32250	2016	1209	807	667	16125	1612	404	334
2004	34669	2167	1300	867	652	17334	1733	434	326
2005	37269	2329	1397	932	637	18634	1863	466	318
2006	40064	2504	1502	1002	623	20031	2003	501	311
2007 and beyond	43069	2692	Nill	2692 (residual (FCF))	16715	21533	2153	539 (residual EVA))	3346
	PV of all F.C.F. (i.e. value of A. Ltd.)				19976	PV of EVAs — Original Invested Capital Value A Ltd. —			4976 15000 19976

In the left hand side, FCFs (NOPAT less additional investment) are computed and in the right side EVAs are computed (NOPAT – Cost of capital × Beginning capital). Since there will be no plan to grow in year 2007 and beyond, no additional investment will be made. In the year 2007, FCF, as a result, is estimated to be Rs. 2692 thousand. This FCF is expected to continue in perpetuity. The value of Rs. 2692 thousand annual perpetual cash flow stream at the beginning of 2007 (or at the end of 2006) is Rs. 2,69,20,000, determined as :

$$\begin{aligned}
 \text{PV of 'Residual Value' at } &= \frac{\text{FCF}_{2007}}{K_0} \\
 \text{the end of 2006} \\
 &= \frac{\text{Rs. } 26,92,000}{0.10} \\
 &= \text{Rs. } 2,69,20,000.
 \end{aligned}$$

Now, the PV of perpetual cash flow is calculated as :

$$\begin{aligned}
 \text{PV of 'Residual Value' at the beginning of 2002} &= \frac{\text{PV of 'Residual Value' at the end of 2006}}{(1+K_0)^5} \\
 &= \frac{\text{Rs. } 2,69,20,000}{(1+0.10)^5} \\
 &= \text{Rs. } 1,67,15,196.
 \end{aligned}$$

The present value of all FCFs, i.e., the estimated value of A Ltd. is Rs. 19975 thousand. Similar steps are followed in converting EVAs to their present values as on the beginning of 2002. Here, EVAs are computed by subtracting capital charge (equals of beginning capital multiplied by cost of capital) from NOPAT. The sum total of all present values of future EVAs is arrived at Rs. 4976 thousand. When we add beginning capital investment with the above figure, we get firm value of Rs. 19976 thousand — the exact outcome found with free cash flow method.

The above illustration shows that both FCF and EVA method of estimating firm value yield identical result. Although it is a very simple and straight forward example, yet it suffices to conclude that, in theory, there is no significant difference between the two approaches, at least not when it comes to measuring firm value.

Inspite of no difference between FCF valuation and EVA based valuation, EVA method provides some additional insights that is lacking in case of FCF valuation method. The weakness of FCF method is that it does not provide a readily apparent measure of annual performance. Free cash flow can be negative because of two reasons :

- i. Investment is high in profitable business, or
- ii. Operating profitability is low in unprofitable business.

In the year 1992, when Wal-Mart was one of the leading value creating firms, the firm had a FCF of (-)13 percent of capital while earning a rate of return 8% above its cost of capital. At the same time, K-Mart had a FCF equal to 7% of capital but earned a rate of return on capital 3% below its cost of capital (Martin and Petty, 2000). Thus, FCF can be uninformative or even misleading. But EVA method provides a better measure of annual performance while maintaining consistency with FCF valuation method.

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