

## **The Impact of Free Cash Flow on Market Value of Firm**

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*This paper constitutes an attempt to investigate the relationship between Free Cash Flow to Equity (FCFE) and the firm's market value of the pharmaceutical sector of Jordan by using a valuation technique, wherein the rift between theory and practice still need to be accommodated taking in consideration the relationship of FCFE, Net Income, Net Capital Expenditure, Working Capital and Debt Position. This paper uses panel data covering the period 2004-2010. The determination of a company's market value is a difficult decision, taking into account several antagonistic factors, such as risk of debt and capital expenditure, in times when the economic environment in which the company operates is unstable, therefore the choice among the ideal equation of FCF to Equity can affect the market value of the firm as much as profit rate can. The results show that the market values of a firm are assessed by the Free Cash Flow to Equity. Our result is in accordance with the hypothesis that FCF to Equity has significant positive effect on the stock market. Our findings add to the understanding of the determinants of the market value of firms.*

**Keywords:** Market Value; Free Cash Flow; Equity

### **1. Introduction**

The debate about the Free Cash Flow (FCF) relationship with the market value of a firm has been the core of the finance literature for the previous several decades. The use of FCF for investment-decision making and valuation is well enriched in finance theory, moreover, FCF is an important but elusive concept often used in cash flow analysis. It is intended to measure the cash available to the firm for discretionary uses after making all required cash outlays. The concept is widely used by analysts and in the finance literature as the basis for many valuation models [White, Sondhi, Fried, 1997]. FCF is a term that has received increasingly the most attention in 1990s, Where FCF is equal to cash flow from operating activities minus capital expenditures (required to maintain the production capacity of the firm) minus dividends (which are needed to maintain the necessary payout on the common stock and cover any preferred stock obligation).

The concept of FCF forces the stock analyst or a banker not only to consider how much cash is generated from operation activities but also to subtract the necessary capital expenditures on plant and equipment to maintain normal activities; similarly, dividend payments to shareholders must be subtracted as these dividends must generally be paid to keep shareholders satisfied. The balance of FCF is available for special financing activities which have often been an equivalent to leverage buyouts, in which a firm borrows money to buy its stock with the hope of restructuring its balance sheet and perhaps going public again in a few years at higher price than it had paid [Block, Hirt, 1994]. An analyst or banker normally looks at FCF to determine whether there are sufficient excess funds to pay back the loan associated with the leveraged payout.

The FCF hypothesis advanced by Jensen (1988) states that managers attached to FCF will invest in negative net present value (NPV) projects rather than pay it out to

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shareholders. Jensen defines FCF as cash flow left after the firm has invested in all available positive NPV projects [Lang, Stulz and Walkling, 1991].

The FCF and the firm's investment opportunities can be important when assessing the stock market response to the firm's announcements of corporate investment decisions. Many authors show that corporate investments by firms with good investment opportunities are generally worthwhile while those firms with poor investment opportunities may be wasteful. In contrast, Jensen's (1986) FCF theory, which predicts differential market response to corporate investment announcements depending on the firm's level of FCF, has mixed support [Chen, Chung, 2001].

Minton and Schrand (1999) show that higher cash flow volatility is associated with lower average levels of investment in capital expenditures (R&D and advertising), this association suggests that the firms have not used external capital markets to fully cover cash flow shortfalls but rather permanently forgo investment. Gui and Tsui (1998) also examine the association between FCF and market identified by Jensen (1986) as sources of agency problems for low growth firms; FCF is defined as the cash flow in excess of that required to fund positive-net-present-value project that is not paid out in dividends. According to Jensen (1986, 1989), managers of low growth/high FCF firms are involved in non-value-maximizing activities. More importantly, the interaction between FCF and debt is significant in the redirected direction. Jensen (1986, 1989) also debated that some low growth/high FCF firms issue debt to restrict the FCF firm problem.

There are many models to calculate the impact of FCF on the company value for instance,  $\text{operating cash flow} = \text{operating profit} - \text{investment}$  and  $\text{FCF on Assets} = \text{INC} - \text{Tax} - \text{INT Exp} - \text{Pre Dividend} - \text{Or Div/Assets}$ .

This paper tries to examine the relationship between FCF to Equity and market value of the firm. Data were collected from Hikma which was listed in the Amman Stock Exchange (ASE) and London Stock Exchange (LSE) for the period of 2004-2010.

Two stages are applied in this paper to examine this relationship, The first one is to show the computation of FCF to Equity (FCFE) for the Hikma pharmaceutical company and the second stage is to show the relationship between FCFE and market value of this firm.

This paper proceeds as follows. Section two is to provide a brief discussion of the literature review. Section three is to describe the model of FCFE and its computation with the relation between FCFE and market value of the Hikma pharmaceuticals company. Section four provides the conclusions.

## 2. Literature Review

By using the method of capital cash flow discounted at the Weighted Average Cost of Capital (WACC) before tax as a valuation method of 54 firm listed on Tehran Exchange market Mohsen, Dastgir and others (2010) found that by using the appropriate discount rate and considering the value of the tax shield in the calculation, the application of capital cash flow in firms' valuation would lead to the same results as the other two methods, Cash Flow method and Adjusted Present Value. By investigating the role of investment opportunities and free cash flow in explaining the value enhancing potential of stock market liberalization at the firm level (Sheng-Syan Chen and others 2009) They found that the market's responses to stock market liberalization announcements are more favorable for high-growth firms than for low-growth firms a result that is consistent

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with the investment opportunities hypothesis. They also found that firms with high cash flow experience lower announcement-period returns associated with stock market liberalization than do firms with low cash flow. Jean Paul Decamps and others (2008) studied the issuance and payout policies that maximize the value of a firm facing both agency costs of free cash flow and the external financing costs. They found that firms optimally issue equity. Equity distributes no dividends until a target cash level is reached while new equity is issued when the firm runs out of cash. The main insight of this paper is that the introduction of exogenous issuance costs is enough to generate heteroscedasticity of stock market prices, even when earnings are independently distributed. Gentry and others (2002) tried to discover whether the accounting earnings approach or the finance FCFE approach provides a better explanation for estimating the capital gain rates of return on American and Japanese equities. They found strong support for using the net earnings approach to explain the capital gain rates of return for both American and Japan's companies during the period 1981-1999 and 1986-1999, respectively. Additionally, they found strong support for the relationship between capital gain returns and net cash flow associated with operations, interest and debt financing. And they found that the accrual accounting information is more useful in explaining capital gain rates of return than free cash flow components because accrual information tends to be more stable than cash flow data.

Ignacio Velez—Pareja and Joseph Tham (2001) examined the relationship between firm value calculated through the FCF and CFE. They compared the traditional M&M WACC with the WACC approach presented by Harris and Pringle (1985). They showed three approaches to calculate total and equity value with different expressions for WACC, they are the M&M WACC (the traditional WACC) the HP WACC and the TV WACC. The first one produces inconsistent results, the second one is consistent as long as there are no losses and/or losses carried forward. The last one, the TV WACC, produces consistent results either with no losses or losses and losses carried forward. It can be shown that when taxes are paid the following year after accrual, the only one that gives consistent results is TV WACC.

Sheng-Syan Chen and others (2001) examined the importance of investment opportunities and free cash flow in assessing the stock market reaction to announcements of cross-border investment in China by Taiwanese firms. Their analytical results supported the investment opportunities hypotheses and hold even after controlling for other potential explanatory factors. In contrast, they find that free cash flow does not explain the wealth effect of Taiwanese investments in China. This evidence suggests that Jensen's free cash flow theory may not apply to such investments. Our finding adds to the understanding of the determinants of the stock market response to cross-border investment decisions in the Asia-Pacific region.

### 3. Free Cash Flow to Equity Model and Computation

The most important question in this paper: does the FCF provide the gauge of company financial operational health and an indication of share price performance (market value)?

Rising FCF often indicates that increased earnings lie ahead and when FCF booms as a result of revenue growth, cost cutting and debt reduction, a firm is in a position to reward its investors immediately. This is why analysts generally view FCF as a reliable metric for measuring the market value of a firm?

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The value of stock (market value) is the discounted present value of future FCF to Equity discounted at the cost of equity. In this paper we try to show practically how stock valuation (market value) is affected by FCF to Equity.

Domodoran and Aswath (2006) define FCF to Equity as:

*“Calculating FCFE from the net income, net income is taken from the income statement, minus capital expenditures minus depreciation, both taken from cash flow statement minus the change in working capital plus the long-term debt position. The change in working capital is the difference of account receivable plus inventory from one year to the next less the difference in account payable from one year to the next”.*

$$FCFE = NI - (CE - D) - (\Delta WC) + (NDI - DR)$$

Where:

FCFE = Free Cash Flow to Equity

NI = Net Income

(CE-D) = Net Capital Expenditure (Capital Expenditure - Depreciation)

D = Depreciation

$\Delta WC$  = Change in Non-Cash Working Capital Account: account receivable, Inventory and payable

NDI - DR = new debt issues are a cash inflow while the repayment of Outstanding debt is a cash inflow.

The difference is the net effect of debt financing on cash flow

NDI = New Debt Issue

DR = Debt Retired

Net Borrowing = long- and short-term new debt issues – long- and short-term debt payment

The above method is to calculate historical FCF and apply a growth rate under assumptions that growth will be constant and fundamental factors will be maintained.

Free Cash Flow to Equity valuation model by Damodoran. The single stage constant-growth FCFE model is a parallel to the single stage FCFE model with required return on equity instead of weighted average cost of capital (WACC).

$$\text{Value of Equity} = \frac{FCFE_1}{R - g} = \frac{FCFE_0 * (1+g)}{r - g}$$

Where:

FCFE<sub>1</sub> = expected FCFE in one year

FCFE<sub>0</sub> = starting level of FCFE

g = constant expected growth rate in FCFE

r = required return on equity's

The Computation of the FCFE for the Hikma Pharmaceutical Firm for 2004-2010

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Table 1 shows the computation of FCFE for the Hikma pharmaceutical manufacturing firm in Jordan for the period 2004-2010. Capital expenditure is the difference between purchases of property, plant & equipment and the depreciation. The change in working capital for each year is calculated by taking the difference in each working capital account for each year from 2004 to 2010. The working capital accounts are accounts receivable, inventory and accounts payable. The change in working capital is defined as the net change in account receivable plus inventory minus account payable. In the case of net income, depreciation, capital expenditure and the change in working capital are joined to have FCFE before change in debt. Net cash flow from debt equal new debt financing minus old debt retirement and the result added to FCFE before debt to calculate FCFE after debt.

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**Table 1: Computing of FCFE for Hikma pharmaceutical firm**

| Year | NI      | Depr   | Cap Exp  | $\Delta WC$ | FCFE(BD) | NCF(FD)  | FCFE(AD) |
|------|---------|--------|----------|-------------|----------|----------|----------|
| 2004 | 37,458  | 6,772  | (11,271) | 68,166      | 101,125  | (5,429)  | 95,696   |
| 2005 | 43,867  | 10,325 | (13,098) | 73,318      | 114,412  | 77,319   | 191,731  |
| 2006 | 54,522  | 13,797 | (35,928) | 118,200     | 150,591  | (13,581) | 137,010  |
| 2007 | 64,566  | 18,462 | (6,538)  | 117,597     | 194,087  | (12,620) | 181,467  |
| 2008 | 80,358  | 20,773 | (4,227)  | 121,875     | 218,779  | (31,956) | 186,823  |
| 2009 | 96,468  | 23,293 | (1,707)  | 129,513     | 247,567  | (39,125) | 208,442  |
| 2010 | 116,821 | 25,921 | (5,921)  | 120,855     | 269,518  | (46,566) | 222,952  |

Source, financial statements of the company which it is listed in London stock exchange

\* The table is created by authors.

\* Amount in US \$(' 000)

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The FCFE for 2010 is \$222,952. But because FCFE for Hikma company declined in 2006 compared with 2005 and increased again in 2007, we use the average value for the period 2004 – 2010 of \$146,300 for anticipation the future value of FCFE for the next five year (2011-2015). The growth rate 5, 77% of FCFE for the period 2004-2010 is used to project FCFE for the years 2011 to 2015 as in Table 2.

**Table 2: Projected FCFE 2011 to 2015 for Hikma Firm**

| Year | FCFE    | PV(FCFE) |
|------|---------|----------|
| 2011 | 154,741 | 128,899  |
| 2012 | 162,669 | 136,336  |
| 2013 | 173,113 | 144,203  |
| 2014 | 183,102 | 152,524  |
| 2015 | 193,667 | 161325   |

The present value of FCFE for years 2011 to 2015 discounted at the required rate of return on equity for Hikma (0.20). The projected FCFE for year 2016 is \$204,841. The terminal value (P5) for year 2015 is 143,950 \$ which is equal to \$204,841 divided by the required of return 20% minus the anticipated growth rate of 5.77% and equal \$89.393. The computation is as follows.

$$\begin{aligned}
 \text{FCFE}_6 &= \text{FCFE}_5 (1+g) \\
 &= 193,667(1+0.0577) \\
 &= 204,841
 \end{aligned}$$

$$\begin{aligned}
 P_5 &= \text{FCFE}_6 / (r-g) \\
 &= 204,841 / (0.20 - 0.0577) \\
 &= 143,950
 \end{aligned}$$

$$\begin{aligned}
 \text{PV}(P_5) &= P_5 / (1+r) \\
 &= 143,950 / (1+0.20) \\
 &= 89,393
 \end{aligned}$$

So, the total current value of Hikma is the sum of five anticipated present values of FCFE plus the present value of firm value at time t=5 (PV of terminal value P5).

**Table 3: Current value for Hikma firm**

|                     |            |
|---------------------|------------|
| PV (FCFE)           | 723,287 \$ |
| PV(terminal value)  | 143,950 \$ |
| Total current value | 867,237 \$ |

When we value the stock for the years 2011 to 2015, that equity value is the discounted present value of the expected FCFE during the period 2011-2015 plus the terminal value of stock at the end of the period. In the case of the Hikma valuation, we assume that the period 2011-2015 will last five years. This is standard in the valuation industry. Projections after five years are not assured; therefore the value of the stock at the 2011-2015 period is the discounted present value for the future FCFE which is computed from the  $P_5 = \text{FCFE}_6 / (r-g)$ . The difference is that the PV of stock at time = t is equal to the expected FCFE at time = (t+1). The return on investment for the long-term growth rate with both r and g be fitting

constant and  $r$  being greater than  $b$ . Since we are using expected FCFE for the period 2011-2015, the terminal value of the stock is  $P_5 = \text{FCFE}_6 / (r-g)$ . The value of  $P_5$  is five years into the future and must be discounted.

### 4. Conclusions

This paper has confirmed a positive relationship between FCFE and market value of the firm. The concepts of equity valuation, projected growth, required rate of return on equity and anticipated growth determine the long-term value of Hikma. The equity value is stated as the present value of total cash flows from Hikma to the equity. The Firm Value is the Free Cash Flow to Equity divided by the total of the required rate of return for equity minus the rate of the firm's returns. FCFE is stated as net income minus net capital expenditures minus the change in net-working capital plus the net change in long-term debt financing. The required rate of return for equity is taken from the Hikma valuation which is published by the global investment house in Jordan. Our finding suggests that the FCFE hypothesis dominates the firm's stock return; also we found a strong support for the relationship between FCFE and market value of Hikma.

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