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Zarządzanie finansami firm – teoria i praktyka

Tom 1



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THE IMPACT OF FREE CASH FLOW ON MARKET VALUE OF FIRM*

Summary: This paper constitutes an attempt to investigate the relationship between Free Cash Flow to Equity (FCFE) and the firm's market value of pharmaceutical sector of Jordan, by using valuation technique, wherein the rift between theory and practice still needs to be accommodated, taking into consideration the relationship of FCFE, Net Income, Net Capital Expenditure, Working Capital and Debt Position. The 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 a 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 results are in accordance with the hypothesis that FCF to Equity have significant positive effect on stock market of a firm. Our findings add to the understanding of the determinants of the market value of firm effect on the FCFE projected decision.

Keywords: market value, free cash flow, equity.

1. Introduction

The debate of 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 theory of finance; more, FCF is an important but elusive concept often used in cash flow analysis. It is intended to measure the cash available to a firm for discretionary uses after making all requirements of cash outlays. The concept is widely used by analysts and in the finance literature as the basis for many valuation models [White, Cerald et al. 1997]. FCF is a term that received increased attention in the 1990s. FCF is equal to cash flow from operating activities minus capital expenditures (required to maintain

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the production capacity of firm) minus dividends (which are needed to maintain the necessary payout on the common stock and to cover any preferred stock obligation).

The concept of FCF forces a 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 from plant and equipment to maintain normal activities similar to each other. At the same time 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 and to take its privates with the hope of restructuring its balance sheet and perhaps going public again in a few years at higher price than it is paid [Block, Hirt 1994]. An analyst or a banker normally looks at FCF to determine whether there are sufficient excess funds to pay back the loan associated with the leverage 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 shareholders. Jensen defines FCF as cash flow left after the firm has invested in all available positive NPV projects [Lang, Stulz, Walkling 2009].

The FCF and 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 of 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 do not use 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 and it is 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 of the firms issue debt restrict the FCF firm problem.

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

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

Two stages are dependable in this paper to examine this relation, the first one is to show the computation of FCF to Equity (FCFE) for the Hikma pharmaceutical company, the second stage is to show the relation 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 firm. Section four provides the conclusions.

2. Literature review

Mohsen Dastgir and others [2010]

The researchers have taken the method of capital cash flow discounted at the Weighted Average Cost of Capital (WACC) before tax as a valuation method of 54 firms listed on Tehran Exchange Market. They found that by using appropriate discount rate and considering the value of tax shield in 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).

Sheng-Syan Chen and others [2009]

They investigate the role of investment opportunities and free cash flow in explaining the value enhancing potential of stock market liberalization at the firm level. They found that the markets' responses to stock market liberalization announcements are more favorable for high-growth firms than for low-growth firms, a result that is consistent 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]

In their article, they 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 firm optimally issues 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 heteroskedasticity of stock market prices, even when earning is independently distributed.

James A. Gentry and others [2002]

In their article, the authors tried to discover whether the accounting earning approach or the finance FCFE approach provides a better explanation for estimating the capital gain rates of return on American and Japanese equities. This study found strong sup-

port for using net earning 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 the study 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 tend to be more stable than cash flow data.

Ignaco Velez-Pareja and Josegh Tham [2001]

They 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 result 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]

In their article, they 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. The analytical results supported the investment opportunities hypotheses and hold even after controlling other potential explanatory factors. In contrast they found that free cash flow did 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 is if the FCF provides the gauge of company financial operational health, and indication of share price performance (market value).

Rising FCF often indicates that increased earning lies 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 market value of firm.

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 how practically stock valuation (market value) is affected by FCF to Equity.

Damodaran, Aswath [2006] defines the FCF to Equity:

“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; ΔWC = 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 of FCFE model is 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: $FCFE_1$ = expected FCFE in one year; $FCFE_0$ = 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)

Table 1 shows the computation of FCFE for 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 of working capital accounts for each year from 2004 to 2010. The working capital accounts are the account receivable, inventory and account payable. The change in working capital is defined as the net change in account receivable plus inventory minus account payable. In 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 equals new debt financing minus old debt retirement and the result added to FCFE before debt to calculate FCFE after debt.

Table 1. Computing of FCFE for Hikma pharmaceutical firm

FCFE(AD)	NCF(FD)	FCFE(BD)	Δ WC	Cap Exp	Depr	NI	Year
95.696	(5.429)	101.125	68.166	(11.271)	6.772	37.458	2004
191.731	77.319	114.412	73.318	(13.098)	10.325	43.867	2005
137.010	(13.581)	150.591	118.200	(35.928)	13.797	54.522	2006
181.467	(12.620)	194.087	117.597	(6.538)	18.462	64.566	2007
186.823	(31.956)	218.779	121.875	(4.227)	20.773	80.358	2008
208.442	(39.125)	247.567	129.513	(1.707)	23.293	96.468	2009
222.952	(46.566)	269.518	120.855	(5.921)	25.921	116.821	2010

Source: Financial statements of the company which is listed on London Stock Exchange; The table is created by the authors; Amount in USD (' 000).

The FCFE for 2010 is 222.952 \$. However, 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 the anticipation of the future value of FCFE for the next five years (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 presented in the Table 2.

Table 2. Projected FCFE 2011 to 2015 for Hikma Firm

PV(FCFE)	FCFE	Year
128.899	154.741	2011
136.336	162.669	2012
144.203	173.113	2013
152.524	183.102	2014
161.325	193.667	2015

The present value of FCFE for the years from 2011 to 2015 discounted at the required rate of return on equity for Hikma pharmaceutical firm is (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 20% of the required return, minus the anticipated growth rate of 5.77% and equal 89.393\$. The computation is as follow:

$$\begin{aligned}
 & 1 \\
 & \text{FCFE}_6 = \text{FCFE}_5 (1+g) \\
 & \quad = 193.667(1+0.0577) \\
 & \quad = 204.841 \\
 & \text{P}_5 = \text{FCFE}_6 / (r-g) \\
 & = 204.841 / (0.20 - 0.0577) \\
 & \quad = 143.950 \\
 & \quad 5 \\
 & \text{PV}(\text{P}_5) = \text{P}_5 / (1+r)^5 \\
 & = 143.950 / (1+0.20)^5 \\
 & \quad = 89.393
 \end{aligned}$$

So, the total current value of Hikma company 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

723.287 \$	PV (FCFE)
143.950 \$	PV (terminal value)
867.237 \$	Total current value

When we worth a stock for the year from 2011 to 2015 equity value is the discount 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 Hikma firm valuation, we assume that the period 2011-2015 will last five years. This is standard in the valuation industry. Projections for five years are not assured. Therefore the value of the stock in the 2011-2015 period is the discounted present value for the future FCFE which computed from the $\text{P}_5 = \text{FCFE}_6 / (r-g)$. 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 is constant and r is exactly greater than b . Since we are using expected FCFE for the period 2011-2015, the terminal value of the stock is $\text{P}_5 = \text{FCFE}_6 / (r-g)$. The value of P_5 is five years into the future and must be discounted.

4. Conclusions

This paper has confirmed the relationship between FCFE and market value of the firm's hypothesis. The concepts of equity valuation projected growth, required rate of return on equity, and anticipated growth to determine the long-term value of Hikma firm. The equity value is stated as the present value of total cash flows from Hikma firm 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 networking capital plus the net change in long-term debt financing. The required rate of return for equity is taken from 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. We also found strong support for the relationship between FCFE and market value of Hikma firm.

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WPLYW WOLNYCH PRZEPLYWÓW PIENIĘŻNYCH NA WARTOŚĆ RYNKOWĄ FIRMY

Streszczenie: Artykuł jest próbą zbadania związku pomiędzy wolnymi przepływami pieniężnymi do kapitału własnego (FCFE) i wartością rynkową przedsiębiorstwa z branży farmaceutycznej w Jordanii, z wykorzystaniem technik wyceny, z odniesieniem do rozdźwięku pomiędzy teorią a praktyką, biorąc pod uwagę zależności między FCF, zyskiem netto, nakładami inwestycyjnymi netto, kapitałem pracującym i zadłużeniem. W artykule zostały wykorzystane dane panelowe z lat 2004-2010. Określenie wartości rynkowej przedsiębiorstwa jest trudną decyzją uwzględniającą różne, antagonistyczne czynniki, takie jak ryzyko długu i wydatki inwestycyjne, w czasach gdy otoczenie gospodarcze przedsiębiorstwa cechuje się brakiem stabilności. Z tego powodu wybór idealnej formuły FCFE może wpłynąć na wartość rynkową firmy w takim samym stopniu jak stopa zysku. Wyniki pokazują, że wartości rynkowe firm są określane przez FCFE. Nasze wyniki są zgodne z hipotezą, że FCFE mają istotny pozytywny wpływ na wartość rynkową firmy oraz stanowią one wkład w zrozumienie determinant wpływu prognozowanego FCFE na wartość rynkową firmy.

Słowa kluczowe: wartość rynkowa, wolne przepływy pieniężne.