A Case Study of Examining and Analyzing Weighted Average Cost of Capital in Traditional and New Approach for Calculating the Value of Firm

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Abstract

In this study we investigate two methods of calculating the firm value base on correct rate of WACC, which are traditional and new approach published by Llano-Ferro (2009). If the WACC rate is wrong calculated, the result affects the firm value. It is essential of using methods to find the firm value without using of WACC rate and with it. The study by Rehman & Raoof (2010) examines Llano-Ferro's (2009) approach by an example. We try to find the correct method and correct WACC formulation by using the real example in current market and reality examination. We found Rehman & Raoof's (2010) formulation is correct for calculating firm value and WACC.

Key Words: Weighted Average Cost of Capital (WACC), Firm value

1. Introduction

Firm value is one of important criterion for financial evaluation for any sectors which looking certain aims. For this matter they need to find WACC if the capital structure is important and, by using a standard formula and find the significant errors in Net Present Value of the Firm. It is liable to calculate wrong firm value due to wrong WACC, so correct WACC will propel to calculate the correct firm value. There is a traditional formula for finding firm value; however another method of calculating firm value was offered by Llano-Ferro (2009) that discussed a standard formula of calculating WACC and calculate firm value. Rehman & Raoof (2010) discussed by an example his opinion that the approach of Llano-Ferro (2009) for firm value is incorrect due to wrongly calculated WACC.

WACC is important due to some reasons, first, greater variety of projects the company can engage, because of a lower WACC, more projects will contain a positive NPV; for second reason, greater Firm Value, and consequently, better Stock Price, because it is discounted cash flows by a smaller number. This study tries to find correct formula for calculating the firm value by the real example which is the active company in the market.

2- Literature Review

Miller & Modigliani (1961) recognized that the a firm value should be unaffected, which contain capital structure or dividend policy in involve of taxes. Once venture taxes are initiated the capital structure is able to persuade the value of the firm. While interest payments are able to be deducted, for reason of cost of external financing for the company becomes cheaper(Modigliani & Miller, 1958). The prepositions used are same to that of calculating CAPM, definition of with perfect information capital markets. Formula as below;

$$K_{tot} = K_e + (1-t)(\frac{D}{E})(K_e - K_d)$$

$$WACC_e = WACC_{tot}(1+\frac{D}{E})$$

Miles & Ezzel (1985) calculated a formulation further WACC in infinity assuming that duration of the first period the assumption of risk of the Tax Savings (TS) which is equal the cost of debt (Kd) and ,which it is equal to Ku (cost of unlevered equity) during residual periods. Taggart (1991) investigate a formulation to cost of equity Ke and weighted average cost of capital (WACC) for perpetuities which is none growing. Fernández (2007)suppose that WACC and Ke perpetuities, which is growing, should be, where D and E are the market values for Debt and Equity, VTS is the present value of the Tax Savings, T is the Tax Rate, and g is the constant growth rate in perpetuity. Vélez Pareja & Magni (2010) analyzed the behavior of tax shields has suggested an alternative to M&E's proposal and concludes that the discount rate for TS should be Ku.

3-Research Assumption and Calculation

We choose the case of an existing company in Malaysia, since the example of Rehman & Raoof (2010) was not based on reality and we tried to find a correct solution by means of an existing company and in the current market. Our assumption is base on below formulations;

Llano-Ferro's (2009) formulation:

(i)

$$WACC = \frac{E i_E + D(1-T) i_D}{E + D}$$

(ii)

$$NPV_{FIRM} = NPV_{equity} + NPV_{debt}$$

Where:
E = Annual Free Cash Flow to Equity
i_E *= Annual cost of equity*
D = Annual interest payments (before taxes)
i_D *= Annual cost of debt*
T = tax rate

Rehman & Raoof's (2010) approach:

(iii)

$$WACC = \frac{K_e * FCFF}{K_e * Debt + FCFF}$$

K_e *= cost of equity*
FCFF= Free cash for firm
FCFE= Free cash for equity
(iv)

$$The\ general\ formula\ for\ computing\ Firm\ value = \frac{FCFF}{WACC}$$

All formulas are available in the studies of Llano-Ferro (2009) and Rehman & Raoof (2010) offer their opinion in their studies and present all formula and method of calculating. The company as an example is Padini Holding Berhed which is the listed company in Bursa Malaysia and the size of company is Large.[1] We calculated the capital structure and WACC of this company taking into account its five years activities.

[1] http://www.padini.com/

Year	2005	2006	2007	2008	2009
Total equity	10,502.38	8,422	16,349	29,906	30,561
Total debt	416.44	5,394	4,349	3,214	3,404
Total Value of Firm (B+S)	10,918.82	13,816.00	20,698.00	33,120.00	33,965.00
Debt/equity ratio	0.040	0.640	0.266	0.107	0.111
Debt to value Ratio	0.038	0.390	0.210	0.097	0.100
Equity to Value ratio	0.962	0.610	0.790	0.903	0.900

Table 1, Capital structure

Year	2005	2006	2007	2008	2009
Ke	0.211	-0.849	-0.467	-0.877	0.353
Kd	0.745	0.032	0.078	0.239	0.448
Debt to value Ratio	0.0381397	0.390	0.210	0.097	0.1002
Equity to Value ratio	0.9618603	0.6096	0.7899	0.903	0.8998
TAX	0.289	0.298	0.286	0.276	0.267
R WACC	0.2231651	-0.5088	-0.35717	-0.77508	0.350516

Table 2, WACC

We computed all three methods for 2009, which were offered in the study by Llano-Ferro (2009) and Rehman & Raoof (2010). We downloaded and calculated all amounts from the Annual reports of Padini Berhed that is our sample from the bursa Malaysia and all amounts is in Ringgit and Million.

First way

step	Assumption and calculation
1	EBIT = 69,135 & Interests= 1,525
2	WACC= 0.350516
3	FCFF (Free cash for firm)= EBIT x (1-T) 69,135x(1- 0.267)= 50,676
4	Firm value =FCFF/WACC = 50,676/0.350516=144,575 * (1)

Second way

step	Assumption and calculation
1	FCFE (free cash for equity) =(EBIT – Interest)(1-T) (69,135- 1,525)x(1-0.267)=49,558
2	Ke=0.353 debt= 3,404 Value of equity= 49,558/0.353= 140,391
3	Firm value = value of equity +value of debt = 140,391+ 3,404=143,794** (2)

Here we can see that two amounts are different due to wrong WACC. Now we find new WACC by using Rehman & Raoof‘s (2010) alternative method and computing the firm value by new WACC rate.

Third way

step	Assumption and calculation
1	WACC=(Ke x FCFF)/(Ke x Debt + FCFE) (0.353x50,676)/(0.353x3,404 +49,558)=0.35243
2	(3) Firm value =FCFF/WACC 50,676/0.35243= 143,794*** (3)

4- Discussion

We found the amount of firm value by first method 144,575 and second method 143,794, so there are no same results. By computing alternative method of Rehman & Raoof (2010), we found same value of firm as second with the method of Llano-Ferro (2009), which does not need WACC. As a result when WACC is wrong the firm value will be wrong by first method of Llano-Ferro (2009), but when we found the correct rate of WACC, so the firm value will be same with second method of Llano-Ferro 's (2009) approach, so (2) and (3) have equal value.

5-Conclusion and Future Research

We reached the conclusion that WACC is instrumental for computing firm value in the finance management. There are some formulations, but there are also some mistakes by using them. By analyzing two approaches (Rehman & Raoof, 2010; Llano-Ferro, 2009), which are strongly related together actually first is identify formulation of WACC and firm value, and second study is about finding mistake of first one for computing correct value of firm due to correct WACC. By using a Malaysian firm as an example, we found results similar to those of Rehman & Raoof (2010), and we found real formula of WACC, which can help to compute firm value of the company. WACC is important item and help external and internal users of company. For the future research we recommend to do this calculating more than one example and it is better to do for more than one year and one company.

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