

Continuing Value Calculation with Discounted Cash Flows

Method: An Application Example for Tekart Tourism

Establishment Whose Shares Are Dealt in

Istanbul Stock Exchange

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Valuation is stated as monetary value belonging to firm assets (Verginis & Taylor, 2004). According to M. L. Rock, R. H. Rock, and Sikora (1994), valuation is the answer of the following questions: What is the maximum price that will be paid for the firm? What are the risk areas? What are the results of cash flows, profitability, and balance-sheet? Chambers (2005, p. 5), on the other hand, estimated a probable price that will be paid for the goods and service at a specific time. For the calculation of continuing value (CV), Verginis and Taylor (2004) used discounted cash flows (DCF) method and Önal, Karadeniz, and Kandır (2005) used economic profit method. Kırılı (2005) suggested Continuous and Constant Growing Model (Gordon Model), Value Driver Model, and Economic Profit Model. In this study, DCF which is suggested by Önal et al. (2005) and Verginis and Taylor (2004) is used for the aim of determining CV of the firm at issue. In this study, analyses are made by using the financial statement data of a tourism business whose shares are dealt in İstanbul Stock Exchange. In consequence of the calculations, CV of the examined firm is found to be 7,485,402 TL and firm value is found to be 15,195,366 TL.

Keywords: firm evaluation, continuing value (CV), discounted cash flows (DCF), discount rates

Introduction

In the business world where there is intense competition, it is important to evaluate the material and nonmaterial factors of the firm as calculable and to detect the firm value in the process of rising value of the stock within the deepening financial markets (Aydın, 2012). Each method produced to guess the price and marketing value of the asset investment right should contain validity (French & Gabrielli, 2005). Because as long as firm assets can create cash they represent a value, the firm value is tried to be determined by estimating cash flows. Firm value occurs if it makes capital investment in a way that it will provide returns above the capital cost (Copeland, Koller, & Murrin, 1996, p. 96; Önal et al., 2005). The most common method in the calculation of the value of firms is “discounted cash flows (DCF)” method (Verginis & Taylor, 2004).

Literature Review

DCF Method

DCF is described as the method which reduces cash flows that the firm will create in the future to present value by using the discount rate determined as of the valuation date (Aydın, 2012). Firm value is attempted to be detected by the estimation of cash flows (Ercan, Öztürk, & Demirgüneş, 2003, p. 5; Önal et al., 2005). Firm value which is one of the variables in the equation of DCF method is formulized as follows (Önal et al., 2005):

$$Firm\ Value = \sum_{t=1}^n \frac{(FCFF)_t}{(1+WACC)^t} + \frac{(FCFF)_{n+1} / WACC - g}{(1+WACC)^n}$$

where:

t : Period of cash flows;

g : Growth rate of cash flows after the anticipated period;

$(FCFF)_t$: Free cash flow to the firm in t period in the future;

$(WACC)$: Weighted average cost of capital.

Damodaran (2002, p. 303) and Kırılı (2005) formulized firm value as follows:

$$V = \sum_{t=1}^n \frac{CF_t}{(1+k)^t} + \frac{Continuing\ Value(n)}{(1+k)^n}$$

where:

V : Firm value;

CF_t : Cash flow in t period;

k : Reduction ratio;

n : Estimation period of cash flows;

$Continuing\ Value(n)$: Continuing value at the end of the estimated period of the company.

Process layout in DCF method (Copeland et al., 1996, p. 157):

- (1) Analysis of previous data and performance;
- (2) Estimation of future cash flows;
- (3) Determining capital cost;
- (4) Determining CV;
- (5) Interpreting the results.

When the related model is wanted to be used for non-public firms, the model is tried to be applied with a comparative method by benefiting from the data (Aydın, 2012).

Cash Flows

One of the methods calculates free cash flows with reference to net profit, the other method subtracts the tax from the earnings before interest and tax ($EBIT-t$) and calculates free cash flow with reference to this value (Önal et al., 2005). After subtracting investment expenses, for the rest amount, net changes in actives or passives are considered depending on whether they are positive or negative (Chambers, 2005, p. 225).

Weighted Average Capital Cost (WACC)

WACC is calculated according to the weights of average costs of different sources used in financing of a firm as follows (Üreten & Ercan, 2000, p. 61):

$$WACC = ce(E / (E + D + PS)) + cd(D / (E + D + PS)) + cps(PS / (E + D + PS))$$

where:

ce: Cost of equity;

cd: Cost of debts;

cps: Cost of preferred stocks;

E/(E+D+PS): The market value of equity ratio to total resources;

D/(E+D+PS): The market value of debts ratio to total resources;

PS/(E+D+PS): The market value of preferred stocks ratio to total resources.

Brealy and Myers (1988, p. 451) explained weighted average capital cost with the following formula:

$$r^* = rD(1 - Tc) \frac{D}{V} + rE \frac{E}{V}$$

where:

r^* = Weighted average cost of capital;

rD = Market return ratio of the firm shares;

rE = Expected return ratio of the firm shares (dependent on the ratio of business risk and debt of the firm);

Tc = Marginal income tax ratio of the firm;

D, E = Market value of equity and debt;

$V = D + E$ = Total market value of firm assets.

Continuing Value (CV)

According to CV period (Jennergren, 2008) method, CV is calculated as follows (Copeland et al., 1996, p. 287):

$$CV = NOPLAT + 1 * (1 - g / ROIC) / (WACC - g)$$

where:

$NOPLAT+1$: First-year net operating profit less adjusted taxes after the expected period;

g : Expected growth rate in NOPLAT value forever;

$ROIC$: Expected net return ratio on new invested capital.

In another method, CV can be calculated as follows (Levin & Olsson, 2000, p. 17):

$$CV = \frac{FCFF_{t+1}}{(WACC - g)(1 + WACC)_t}$$

where:

$FCFF$: Free cash flow to the firm;

$WACC$: Weighted average cost of capital;

t : Period of cash flows;

g : Growth rate of cash flows after the anticipated period.

Methodology

Accordingly, DCFs are found via the following method:

$$DCF = \frac{A_1}{(1+i)^1} + \frac{A_2}{(1+i)^2} + \frac{A_3}{(1+i)^3} + \dots + \frac{A_n}{(1+i)^n} = \sum_{t=1}^n \frac{A_t}{(1+i)^t}$$

where:

A_t : Net cash flow in t th year;

n : Period used in cash flows estimation;

i : Discount rate.

In this study, CV of Tek-Art Construction Trade Tourism Industry and Investments Inc., which is one of the tourism businesses dealt in Istanbul Stock Exchange (BIST), is calculated according to the DCF method. In order to determine CV of the firm in question, basic financial statements between 2008-2012 years are used in the analysis. Data related to the firm are obtained from the website of Public Disclosure Platform (PDP). Four years of data of Tek-Art Construction Trade Tourism Industry and Investments Inc. taking place in both sector extent are reached and in order for the data to be cleansed from inflation, they are escalated to 2012 year. CPI annual change rates used for that purpose are given in Table 1¹. Moreover, values are exchanged to ABD dollars through CBT (Central Bank of Turkey) exchange rate. The rate used for that purpose is determined as 2.03 as of the date of December 16, 2013².

Table 1

CPI Change Rates (%)

Year	2008	2009	2010	2011	2012
CPI (Change)	12.72	1.23	8.52	11.09	6.09

Note. Source: https://www.asmmmo.org.tr/asmmmo/content.php?content_id=40. Change rates show annual average with respect to previous December.

WACC value used while finding estimated market value of the examined tourism business is calculated with capital asset pricing model (CAPM) on an annual basis, and then it is averaged and assumed that this value will not change for the following years (Önal et al., 2005). September 2013 dated Treasury bill rate (4.40%) of Central Bank is used as riskless interest rate in CAPM. ROIC value which is another necessary datum in calculations is assumed to be the same with WACC (Önal et al., 2005). Furthermore, some components necessary in estimation of firm value are calculated by averaging the values between the years of 2009-2012 and trends are examined. In the valuation process of analyzed tourism business for the year 2013, the following phases are applied.

Results

Financial statement values of the examined tourism business between the years of 2013-2017 are analyzed, and it is assumed that the value of the determined components will not change in the future. Under these assumptions, CV of the firm is calculated as follows. In the calculation of firm's CV, for other data that must be estimated, values obtained from income tables and balance sheets in 2013-2017 of the firm are averaged.

¹ https://www.asmmmo.org.tr/asmmmo/content.php?content_id=40.

² <http://www.tcmb.gov.tr/kurlar/today.html>.

Table 2

NOPLAT Estimated Net Operating Profit Less Adjusted Taxes and Invested Capital for Expected Activities (Billion \$)

	2013	2014	2015	2016	2017	Infinite
Net sales	7,095,600	7,095,600	7,095,600	7,095,600	7,095,600	7,095,600
Cost of sales except amortization	3,520,245	3,520,245	3,520,245	3,520,245	3,520,245	3,520,245
Operating costs	2,216,713	2,216,713	2,216,713	2,216,713	2,216,713	2,216,713
Amortization costs	162,960	186,915	214,392	245,907	282,056	323,518
Operating profit	1,195,682	1,171,727	1,144,250	1,112,735	1,076,586	1,035,124
Tax through operating profit %30	358,705	351,518	343,275	333,820	322,976	310,537
Net operating profit (NOPLAT)	836,977	820,209	800,975	778,914	753,611	724,587
Invested capital for expected activities						
	2013	2014	2015	2016	2017	Infinite
Working assets (except stocks and bonds)	15,143,145	15,143,145	15,143,145	15,143,145	15,143,145	15,143,145
Short-term loans (except financial liabilities)	4,403,547	4,403,547	4,403,547	4,403,547	4,403,547	4,403,547
Net business capital	10,739,598	10,739,598	10,739,598	10,739,598	10,739,598	10,739,598
Net tangible fixed assets	60,719,396	60,719,396	60,719,396	60,719,396	60,719,396	60,719,396
Other assets – other debts	2,754,832	2,754,832	2,754,832	2,754,832	2,754,832	2,754,832
Invested capital for activities	68,704,162	68,704,162	68,704,162	68,704,162	68,704,162	68,704,162

Note. Source: <http://www.borsaistanbul.com/veriler/verileralt/mali-tablolar-arsiv>.

CV calculation according to DCF method is as follows:

$$CV \text{ of DCF} = [NOPLAT_{2018} \times (1 - (Growth \text{ Rate of Sales} / ROIC))] / (WACC - Growth \text{ Rate of Sales})$$

$$CV \text{ of DCF} = [724,587 * (1 - (0 / 0.0968))] / (0.0968 - 0) = 724,587 / 0.0968 = 7,485,402.89$$

Table 3

Value of Firm Activities According to DCF Method (Billion TL)

Year	Free cash flow	Present value factor	Net present value
2013	836,977	0.9091	760,895
2014	820,209	0.8264	677,820
2015	800,975	0.7513	601,772
2016	778,914	0.6830	531,998
2017	753,611	0.6209	467,917
CV	7,485,402	0.6209	4,647,686
Value of activities previous to correction			7,688,088
Midyear correction factor			2.03
Value of activities			15,606,818
CV, Billion TL (\$)			
NOPLAT			1,470,911 (724,587)
WACC			0.0968
ROIC			0.0968
G (growth)			0
CV			15,195,366 (7,485,402)

Notes. Source: <http://www.borsaistanbul.com/veriler/verileralt/mali-tablolar-arsiv>. Value of activities = 15,195,366; Stocks and bonds = 767,445; Firm value = 15,962,811.

In accordance with the assumptions and predictions about Tek-Art Construction Trade Tourism Industry and Investments Inc., value of activities (7,485,402 TL) and CV (7,485,402 TL) achieved as a result of the calculations made according to DCF method are detected to be the same values. When stocks and bonds are added to the value of activities, firm value is found to be 15,962,811 TL. When looked at the analysis results of Tek-Art Tourism business, value of activities (15,195,366 TL), firm value (15,962,811 TL), and CV (7,485,402 TL) are the same values according to DCF method. Moreover, the rate of firm's calculated CV to firm value is detected to be 46.89%. That share of CV in the company value approaches 50% is a sign that fixed capital investments' converting to company as cash will occur in the following years.

Conclusion and Implications

The most applied method in firm evaluation studies is DCF method. "DCF method" is a commonly used and accepted method in the calculation of the firm value. While valuation is being made according to DCF method, firm value is divided into two sections: present value of cash flows in the anticipated period and present value of cash flows after the anticipated period. In this method, firm value is achieved by reducing cash flows that are expected to be obtained from the forward activities of firms to present value with a specific discount rate. However, uncertainty of cash flows that the firm will provide in the future is an important problem in the determination process of the firm value. Thus, in order to determine the firm value, it is compulsory to accept that firm lifespan is limited to a specific period. In this process, because it gets difficult to predict cash flows which occur after the period in which estimation will be made, correctly, rather than calculating cash flows which occur after the period in which estimation will be made for each year in details, the only value representing cash flows value after the projected period "Continuing Value" calculation should be resorted. As a result of the calculation, present value of cash flows after the period in which estimation will be made will be acquired and firm value will be revealed by reducing it to the valuation day. Consequently, CV has a crucial role in revealing firm value realistically. In this study, analyses are made by using the financial statement data of a tourism business whose shares are dealt in BIST; Firm value and CV are calculated. In consequence of the calculations, CV of the examined firm is found to be 7,485,402 TL and firm value is found to be 15,195,366 TL. In conclusion, it is understood that CV of the examined firm makes a significant share of 46.89% of firm value. This situation reveals how important CV is in firm evaluation.

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