TO SELL OR NOT TO SELL? A CASE ON BUSINESS VALUATION

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INSTRUCTOR'S NOTES

CASE DESCRIPTION

The purpose of this case is to explore the financial challenges faced by corporate executives about determining the intrinsic value of a company when making merger and acquisition (M&A) decisions. It is designed to be used with the textbook of Koller, Goedhart & Wessels (2015) and is best suited for discussions in a capstone financial policy and strategy course and other courses such as business valuation and student-managed investment funds at both undergraduate and graduate levels. The case can be discussed in two class periods and will require 4-5 hours of outside preparation by students. In the first class period, the instructor could review various business valuation models and discuss this case in the second class period. Upon completion of the case, students will understand the valuation procedures by using Excel to calculate the intrinsic value per share of a company's common stock and to make rational corporate M&A decisions based on both discounted cash flow (DCF) and relative valuation models. Another merit of this case is that the forecast of financial metrics for the next ten years is provided, which allows students to focus on the valuation process rather than on the forecasting process.

CASE SYNOPSIS

Schumacher, a publicly-listed athletic-shoe and apparel retailer, received a tender offer from a private equity firm. The cash offer represents a 45.57% premium above the prevailing market price. Facing the imminent challenge from the seemingly formidable online shopping trend, Schumacher has not experienced a consistent double-digit growth during the past three years. Receiving a lofty tender offer has further presented a dilemma to the board of directors: whether to sell or not to sell Schumacher to the private equity firm. To help the board make the best decision, Austen Johnson, the president's special assistant and a recent MBA graduate, was instructed to conduct an internal study to determine the intrinsic value of Schumacher's common shares.

INSTRUCTOR'S NOTES

This case is designed to be used with the textbook of Koller, Goedhart & Wessels (2015), *Valuation: Measuring and Managing the Value of Companies* (Wiley, Sixth Edition), especially Chapter 6 (Framework for Valuation), Chapter 7 (Reorganizing the Financial Statements) and Chapter 14 (Using Multiples to Triangulate Results).

LEARNING OBJECTIVES

It is assumed that all of the above chapter readings have been covered prior to asking students to analyse the case. Upon successful completion of this case, students should:

1. Understand how to identify and measure corporate value drivers;
2. Learn how to reorganize financial statements to derive net operating profit less adjusted taxes (NOPLAT), free cash flow (FCF) and invested capital (IC);
3. Learn the framework for valuation;
4. Learn various discounted cash flow models;
5. Learn how to use multiples for valuation;
6. Use Excel to conduct financial modelling; and
7. Make rational merger and acquisition (M&A) decisions.

TEACHING STRATEGY

This case is best suited for discussions in a capstone financial policy and strategy course and other courses such as business valuation and student-managed investment funds at both undergraduate and graduate levels. Depending on the nature of the course, the instructor can emphasize on various parts of the case.

DISCUSSION QUESTIONS

1. Name a few discounted cash flow (DCF) models and relative valuation models (multiples) and discuss pros and cons of each model.
2. What is the intrinsic value of Schumacher's common stock per share using the Enterprise Discounted Cash Flow (EDCF) model as shown in Table 2?
3. What is the intrinsic value of Schumacher's common stock per share using the Discounted Economic Profit (DEP) model as shown in Table 3?
4. What is the intrinsic value of Schumacher's common stock per share using the Adjusted Present Value (APV) model as shown in Table 4?
5. Based on relative valuation metrics as shown in Table 5, is the cash offer from the private equity firm acceptable?
6. What should Austen Johnson recommend to Schumacher's Board of directors?

ANSWERS TO DISCUSSION QUESTIONS

1. Name a few discounted cash flow models and relative valuation models (multiples) and discuss pros and cons of each model.

Since this case is based on Koller et al. (2015), the discussion should begin with the frameworks for DCF-based valuation outlined in Chapter 6 of the text, which are reproduced in the following table. The first three models, EDCF, DEP and APV, were briefly mentioned in the case. Since both EDCF and DEP models discount future cash flow streams at the weighted average cost of capital (WACC), it is worth mentioning that WACC-based models work best when a company maintains a relatively stable capital structure going forward. If a company plans to change its capital structure in the future, WACC-based models can still derive accurate results, but the WACC must be adjusted to accommodate a changing capital structure, which is more difficult to apply. As a result, the APV model is a better alternative, which values the cash flow associated with the capital structure like tax shields separately from the cost of equity.

Table 1
FRAMEWORKS FOR DCF-BASED VALUATION

Model	Measure	Discount Factor	Assessment
Enterprise Discounted Cash Flow (EDCF)	Free cash flow (FCF)	WACC	Companies that manage their capital structure to a target level.
Discounted Economic Profit (DEP)	Economic profit (EP)	WACC	Explicitly highlights when a company creates value.
Adjust Present Value (AVP)	Free cash flow (FCF)	Unlevered cost of equity	Highlights changing capital structure more easily than WACC-based models.
Capital Cash Flow (CCF)	Capital cash flow (CCF)	Unlevered cost of equity	Compresses FCF and ITS in one number, making it difficult to compare performance among companies and over time.
Equity Cash Flow (ECF)	Equity cash flow (CFE)	Cost of equity	Difficult to implement correctly because capital structure is embedded within cash flow.

Besides Enterprise Discounted Cash Flow (EDCF), Discounted Economic Profit (DEP) and Adjust Present Value (AVP) models introduced in the case, the other two models are capital cash flow (CCF) and equity cash flow (ECF) models. CCF's equity value equals the sum of free cash flow (FCF) and interest tax shield (ITS) called capital cash flow, discounted at the unlevered cost of equity. ECF uses equity cash flow, which is dividends plus share repurchased minus new equity issued, discounted at the cost of equity to evaluate the equity value. Because both CCF and ECF models commingle operating performance and capital structure in cash flow, they lead more easily to mistakes in implementation. Another shortcoming of the ECF model occurs when valuing a company's business unit. Applying the ECF model requires the allocation of debt and interest expense to the business unit. For these reasons, Koller et al. (2015) believe that free cash flow models are superior to both CCF and ECF models; consequently, the latter two models are excluded from this case. Nevertheless, the ECF model is best suited when valuing financial institutions like banks because we cannot value banks' operations separately from their financing decisions. In summary, a recent survey of the CFA Institute's members conducted by Pinto, Robinson & Stowe (2015) indicates that 78.8% of the 1,980 survey respondents reported using DCF-based models in 59.5% of their valuation cases.

In relative valuation, there are many comparable multiples available for use, such as P/E (share price divided by earnings per share), P/S (share price divided by sales per share), P/B (share price divided by book value per share), EV/EBITDA (enterprise value divided by earnings before interest, taxes, depreciation and amortization), etc. When carrying out a useful analysis of comparable multiples, remind students the following three requirements: (1) Use the right multiple, (2) calculate the multiple in a consistent manner and (3) use the right peer group, according to Damodaran (2012).

Among the four aforementioned multiples, the PE multiple is widely used, but it is subject to two flaws. First, the P/E multiple mixes the effects of operations and capital structure. Second, the denominator of the P/E multiple includes nonoperation items, such as amortization of intangible assets and nonrecurring gains and losses. As a result, a one-time nonrecurring loss could significantly lower earnings, causing the P/E to be artificially high. In addition, negative earnings could render the P/E multiple meaningless.

Although the P/S multiple does not suffer the same flaws as its P/E counterpart, sales alone do not reveal the whole picture of the firm's profitability, as the company may be unprofitable with a low P/S ratio. Nevertheless, it is best suited for unprofitable companies. In addition, comparing P/S ratios implicitly assumes that all firms in the comparison have an identical capital structure, which is always a problematic assumption.

Alternatively, investors find the P/B multiple useful because the book value of equity provides a relatively stable and intuitive metric that can be directly compared to the market price per share. The P/B multiple can be easily used for firms with positive book values, but one caveat is that the same accounting standards to measure earnings should be applied consistently to all firms in the comparison; otherwise, the P/B multiples may not be comparable.

In practice, the EV/EBITDA multiple is also widely used. The enterprise value is calculated as the company's market capitalization of equity plus debt and net of cash. The EV/EBITDA multiple is better than the P/E multiple because the latter is affected by a company's choice of capital structure, whereas the former is not affected for two reasons because enterprise value includes the value of debt and EBITDA is available to both debt and equity holders. The EV/EBITDA multiple also controls for different levels of capital expenditure required in different industries because EBITDA can be a more appropriate measure of a company's underlying profit potential since it excludes the cost of capital investments. Finally, the EV/EBITDA multiple is a better measure of a company's takeover value because enterprise value takes into account the company's debt, which other multiples such as the P/E do not include.

Based on Pinto et al. (2015) survey of the CFA Institute's members, 92.8% of the 1,980 survey respondents reported using a market multiples approach in 68.6 % of their valuation cases, in which P/E and EV multiples are the most popularly used tools.

2. What is the intrinsic value of Schumacher's common stock per share using the enterprise Discounted Cash Flow (EDCF) model as shown in Table 2?

Since it is rather straightforward by plugging numbers into Table 2, the valuation of the EDCF model will be briefly discussed below. First, the value of non-operating assets in 2013 is the sum of both short-term and long-term investments only, i.e., \$48+\$329=\$377. Next, the value of debt should include interest-bearing debt, such as both long-term debt and other long-term liabilities, i.e., \$133+\$221=\$354. Continuing value in year 10 is calculated as follows:

$$CV_{10} = \frac{NOPLAT_{10}(1+g)[1-\frac{g}{RONIC}]}{(WACC-g)} = \frac{674.25*(1+3\%)*[1-\frac{3\%}{13\%}]}{(8.49\%-3\%)} = 9{,}370.66$$

WACC assumed at 8.49% is used as the discount rate. As shown in Table 2, the intrinsic value of Schumacher's common stock per share is \$44.91.

3. What is the intrinsic value of Schumacher's common stock per share using the Discounted Economic Profit (DEP) model as shown in Table 3?

WACC is used in the DEP model. Invested capital is taken from the previous year. Economic profit is the product of invested capital and ROIC. Continuing value in year 10 is calculated as follows:

$$CV_{10} = \frac{EP_{10}(1+g)}{WACC} + \frac{NOPLAT_{10}(1+g)\left(\frac{g}{RONIC}\right)(RONIC - WACC)}{WACC(WACC - g)}$$

$$CV_{10} = \frac{354.98 * (1+3\%)}{8.49\%} + \frac{674.25 * (1+3\%) * \left(\frac{3\%}{13\%}\right)(13\% - 8.49\%)}{8.49\% * (8.49\% - 3\%)} = 5{,}857.27$$

As shown in Table 3, the intrinsic value of Schumacher's common stock per share is $45.42.

Table 2
VALUATION OF THE ENTERPRISE DISCOUNTED CASH FLOW (EDCF) MODEL

t	Forecast year	FCF* or CV*	Discount factor	Present value*
1	2014	207.62	0.9217	191.37
2	2015	307.92	0.8496	261.62
3	2016	326.40	0.7831	255.61
4	2017	345.98	0.7218	249.75
5	2018	366.74	0.6654	244.01
6	2019	415.46	0.6133	254.79
7	2020	436.23	0.5653	246.60
	2021	458.04	0.5211	238.66
9	2022	542.79	0.4803	260.69
10	2023	559.07	0.4427	247.50
10	Continuing value* (CV)	9,370.66	0.4427	4,307.70
=	Value of operations (sum of present value of cash flows)*			6,758.30
+	Value of nonoperating assets*			377.00
=	Enterprise value*			7,135.30
−	Value of debt*			354.00
=	Value of common equity*			6,781.30
÷	Number of shares outstanding*			151.00
=	Intrinsic value per share			44.91

*In millions

4. What is the intrinsic value of Schumacher's common stock per share using the Adjusted Present Value (APV) model as shown in Table 4?

As opposed to the previous two WACC-based models, the unlevered cost of equity, Ku=8.66%, is use for the APV model. The continuing value in the APV model is the sum of the present value of free cash flow (FCF) and the present value of interest tax shields (ITS) with both discounted at Ku. According to Ruback (2000), there is no need to separate free cash flow from interest tax shields when both flows are discounted by the same cost of capital and the combination of both flows is named the capital cash flow. If capital structure is assumed to be constant going forward, the capital cash flow valuation and the WACC-based EDCF model will lead to identical results. Therefore, for the sake of simplicity, the continuing value in the APV model is obtained from the continuing value in the EDCF model, $9,370.66. As shown in Table 4, the intrinsic value of Schumacher's common stock per share is $44.80.

Table 3
VALUATION OF THE DISCOUNTED ECONOMIC PROFIT (DEP) MODEL

t	Forecast Year	Invested capital*	ROIC	Economic profit* or CV*	Discount factor	Present Value*
1	2014	2,354.00	18.47%	235.01	0.9217	216.62
2	2015	2,565.86	17.97%	243.11	0.8496	206.55
3	2016	2,707.71	18.05%	258.73	0.7831	202.62
4	2017	2,858.08	18.12%	275.28	0.7218	198.71
5	2018	3,017.46	18.19%	292.82	0.6654	194.83
6	2019	3,186.41	18.09%	305.93	0.6133	187.62
7	2020	3,335.65	18.15%	322.08	0.5653	182.07
8	2021	3,492.35	18.20%	339.04	0.5211	176.66
9	2022	3,656.88	17.90%	344.14	0.4803	165.28
10	2023	3,760.54	17.93%	354.98	0.4427	157.14
10	Continuing value* (CV)			5,857.27	0.4427	2,592.92
	Present value of economic profit*					4,481.01
+	Invested capital in 2013*					2,354.00
=	Value of operations*					6,835.01
+	Value of nonoperating assets*					377
=	Enterprise value*					7,212.01
−	Value of debt*					354
=	Value of common equity*					6,858.01
÷	Number of shares outstanding*					151
=	Intrinsic value per share					45.42

*In millions

Table 4
VALUATION OF THE ADJUSTED PRESENT VALUE (APV) MODEL

t	Forecast Year	Free cash flow (FCF)*	Interest tax shields (ITS)*	Discount factor	Present value of FCF* or CV*	Present value of ITS*
1	2014	207.62	8.72	0.9203	191.07	8.02
2	2015	307.92	9.25	0.8470	260.80	7.84
3	2016	326.40	9.81	0.7795	254.41	7.65
4	2017	345.98	10.40	0.7173	248.19	7.46
5	2018	366.74	11.02	0.6602	242.11	7.28
6	2019	415.46	11.68	0.6075	252.41	7.10
7	2020	436.23	12.27	0.5591	243.91	6.86
8	2021	458.04	12.88	0.5146	235.69	6.63
9	2022	542.79	13.52	0.4736	257.04	6.40
10	2023	559.07	13.93	0.4358	243.65	6.07
10	Continuing value* (CV)	9,730.66		0.4358	4,240.78	
=	Value of operations* (sum of PV of FCF and PV of ITS)					6,741.37
+	Value of nonoperating assets*					377.00
=	Enterprise value*					7,118.37
−	Value of debt*					354.00
=	Value of common equity*					6,764.37
÷	Number of shares outstanding*					151.00
=	Intrinsic value per share					44.80

*In millions

Based on relative valuation metrics as shown in Table 5, is the cash offer from the private equity firm acceptable?

The relative valuation metrics for Schumacher and two competitors as of December 31, 2013 are presented in Table 5 below.

Table 5
RELATIVE VALUATION METRICS (MULTIPLES) FOR SCHUMACHER AND TWO COMPETITORS

P/B				
Based on stock price of $34.35 on 12/31/2013		P/E	P/S	EV/EBITDA
Schumacher	2.70	13.1	0.84	6.97
Competitor 1	2.62	16.2	0.90	6.85
Competitor 2	2.58	15.5	1.02	8.39
		Based on the offer price of $50		
Schumacher	3.92	19.0	1.22	10.79

Based on the market price of $34.35 per share on December 31, 2013, Schumacher is the most expensive company in the industry based on P/B, but it is either the cheapest company based on P/E and P/S or close to the cheapest company based on EV/EBITDA. However, if the above valuation metrics are recalculated based on the offer price of $50 per share, all of Schumacher's multiples are well above those of its two competitors as shown in the above table (averaging 50.8% higher than its competitors on P/B, 19.9% on P/E, 27.6% on P/S and 43.1percent on EV/EBITDA), making the private equity firm's offer price very attractive.

5. What should Austen Johnson recommend to Schumacher's Board of directors?

The intrinsic values of common stock per share derived from the three DCF models are summarized below. As shown, Schumacher's common stock was under-valued by the market between $10.45 (30.41%) and $11.07 (32.22%) at the time of evaluation. The reason that students did not derive identical intrinsic value results is simply because both WACC-based models, EDCF and DEP, use a constant WACC as the discount rate. But in reality, Schumacher's capital structure is not constant going forward. In order to obtain the same results, WACC needs to be adjusted by the prevailing capital structure each year, which is beyond the scope of this case (Model 1).

Model 1
VALUATION SUMMARY

Model	Intrinsic Value Per Share	Market Price on Dec. 31, 2013	Under-Valued by
EDCF	$44.91	$34.35	$10.56 (30.74%)
DEP	$45.42	$34.35	$11.07 (32.22%)
APV	$44.80	$34.35	$10.45 (30.41%)

Based on the DCF analysis, Schumacher's common stock was significantly under-valued. Since the offer price of $50 is approximately 10-11% higher than the three derived intrinsic values coupled with the conclusion derived from the relative valuation analysis, a prudent recommendation to sell the company to the private equity firm is thus warranted.

CONCULSION

Besides the widely-used valuation methods mentioned above, there are other approaches used by the practitioners, such as asset-based models and real options approach reported in Pinto et al. (2015). Alternatively, Sim & Wright (2017) proposed to use the dividend discount model in conjunction with the internal rate of return of future cash dividends to evaluate the intrinsic value of a stock and its investment risk.

Furthermore, to ensure the accuracy and robustness of the conclusions drawn by various valuation models, additional analyses can be implemented. First, examine the economic consistency of the models to see whether there are structural changes in key assumptions from one year to another, whether the forecast patterns are consistent with industry dynamics and whether a steady state is reached for the company's operation by the end of the explicit forecasting period. Second, conduct a sensitivity analysis to evaluate how the company's intrinsic value responds to changes in key valuation variables, such as the expected growth rate of NOPLAT in perpetuity (g), RONIC and WACC.

One thing worth mentioning is that the above conclusion is only based on the prescribed quantitative analyses, which should be guided by a sound and thorough business economic outlook for the firm. The instructor may lead class discussion into qualitative analyses, such as the PESTLE analysis (a mnemonic of P for Political, E for Economic, S for Social, T for Technological, L for Legal and E for Environmental), Porter's (1979) five forces analysis and the SWOT and value chain analyses, to evaluate both business and economic outlooks for the company and its industry. Other important M&A considerations include whether the M&A decision fits the company's long-range strategic planning, how to negotiate for a better offer, strategies for takeover defences, etc. (Weston, Mitchell & Mulherin, 2004).

EPILOGUE

This case, for teaching purpose, is written with a hypothetical scenario using a fictitious company name of Schumacher, but the financial information used in this case is based on a real publicly-listed company. We try to preserve the confidentiality and integrity of the company as much as possible.

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