University of Toronto Engineering Finance Association Learning Session

September 26, 2019

Agenda

Introduction to Valuation

Intrinsic vs Relative Valuation

Discounted Cash Flow Analysis

Conclusion

What is Valuation?

Introduction

How much is some financial asset worth? What is its value?

Price: What others pay for a similar asset/security under some metric
Value: A function of a company's cash flows, growth and risk

UTEFA focuses on valuing companies:
- Discount Cash Flow Analysis (Intrinsic)
- Company Comparables, precedent transactions etc.. (Relative)
- Qualitative Analysis (Management, labor relations, branding etc..)

Other ways to value companies:
- Dividend Discount Model, Sum of the Parts etc.. (Intrinsic)
- Build Cost, Replacement Cost (Cost)
- And many more!

Insight: The market price of a share of a company does not necessarily reflect one's perceived worth of that company share!

Intrinsic vs. Relative

When do we use a particular valuation technique?

Intrinsic

Finding the essential value of a company by analyzing its cash flow and growth rate.
The intrinsic value of a company tells us what the company is really worth depending on our (justified) input assumptions!

Relative

Analyzing the value of a company by its ratios with similar competitors in its industry.
Finding the Relative value of company is a quick and great starting point because the multiples are easy to calculate and the information is so readily available.

Insight: We should use both!

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Using Relative Valuation

Public Company Comparables

Comparing company multiples to others in a similar enough industry. You value the company based on a number of relevant metric and multiples.

Pick the comparables by looking at financial statements, industries, and the geography.

Precedent Transactions

Finding the value of a company by the way similar companies have been valued in the past.
You must focus on transactions that are similar enough to use a standardized metric as to evaluate the cost of the multiples or premiums.

Pick the comparables by looking at the similarities in the financial statements, industry, and size of the company while considering when (time) the previous transactions occurred!

Common Multiples

***EV/EBITDA - Enterprise Value/ Earnings before interest, tax, depreciation and amortization**

***EV/EBIT - Enterprise Value/ Earnings before interest, tax**

P/E - Market Price per share / Earnings per share

Price/Sales - Market Capital / Total Revenue past 12 months

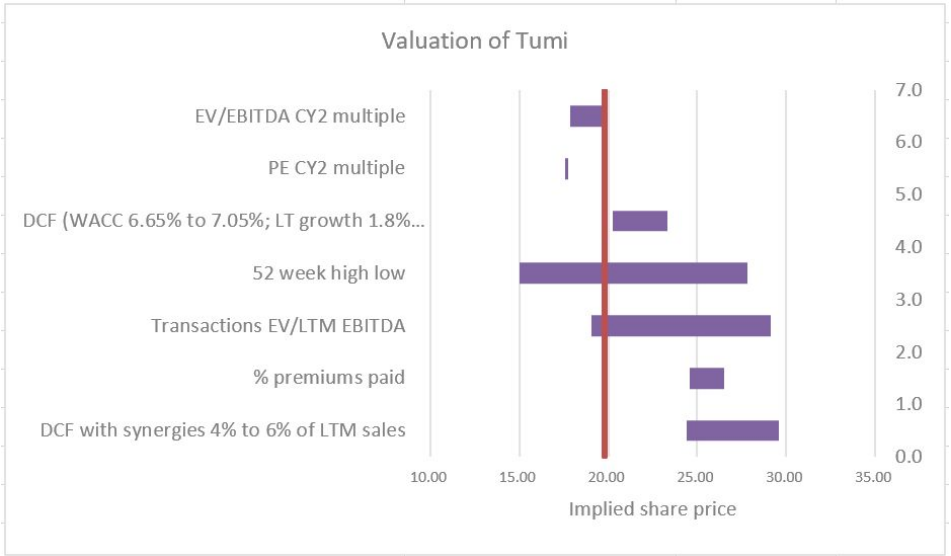
EV/Revenue - Enterprise Value / Revenue

Price/Book value - Market Price / (assets - liabilities)

Presenting A Relative Valuation

Find the minimum, maximum, median, 25th percentile and 75th percentile of the other company multiples you analyzed and apply them to your own company's financial figures!
Present the full range of values using a 'Football Field' chart.

Example:



Insight: You should consider a security a buy if most of its multiples are undervalued.

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Discounted Cash Flow Analysis

What is a DCF?

“A company is worth the discounted sum of its cash flows from today until eternity”

A DCF analysis attempts to figure out the value of a company today, based on projections of how much money it will make in the future.

Given that money today is worth more than what it is worth in the future, we have to discount the future cash flows back to find the company’s present enterprise value.

Key Assumptions we make and we should justify:

1. What growth rate are we projecting the company’s future cash flows at and why?
2. What value should we use to discount the future cash flows back with?
3. What is the value of a business at the end of the projection period? (Terminal Value)

What are cash flows?

Free cash flow is the cash, which is left out after the company pays all of its operating and capital expenditure.

The free cash flow corresponds to the actual cash flow that an investor would receive each year if they bought the company.

Free cash flow can be used to enhance company growth by, for example, developing new `products, establishing new facilities and paying dividends to its shareholders.

Unlevered Free Cash Flow

The **free cash flow** available to pay all stakeholders in a firm, including debt holders as well as equity holders ie. before the impact on Debt and Cash. This is the industry norm.

- Discount using WACC (weighted average cost of capital)
- Obtain the Enterprise Value (Cost to buy the company)

Calculation:

UFCF=EBITDA−CAPEX−Working Capital−Taxes

You will use ULFCF in your own analysis!

Levered Free Cash Flow

Projects the free cash flows after Interest Expense (Debt) and Interest Income (Cash)

- Use cost of equity to discount the FCF
- Obtains an equity value

You don't need to worry much about this as levered free cash flow is more suited for equity analysis!

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Discount Rates

The discount rate in a DCF calculation is the required rate of return on the investment. There are different discount rates for different reasons in each circumstance. **The rate at which you discount cash flows is the most important assumption you make! Make sure to justify it!**

WACC (Weighted Average Cost of Capital

This is the most common calculation for a discount rate and the one in which we will be using for our DCF.
It is defined as follows:

$$WACC = \frac{E}{E+D} \times R_E + \frac{D}{E+D} \times R_D \times (1-t)$$

Where E is the market value of equity, D is the market value of debt, R_E is the cost of equity, R_D is the cost of debt, and t is the tax rate.
We determine the cost of each part of a company's capital structure, then taking an average of its Equity, and Debt
The **assumptions** are made when you choose the **risk premium** in your **cost of equity** calculation! ie . how much risk to reward you or an investor is willing to take for an investment!

Cost of Equity

The Cost of Equity is a rate of return an investor requires for investing equity into a business. The rate of return an investor requires is based on the risk involved with that investment. Cost of equity is typically measured as the historic volatility of the investment returns.

Calculation:

$$E(R_i) = R_f + \beta_i * [E(R_m) - R_f]$$

Where:

$E(R_i)$ = Expected return on asset i

R_f = Risk-free rate of return

β_i = Beta of asset (Find this on Google, Yahoo etc.. under stock information)

$E(R_m)$ = Expected market return

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Cost of Debt & Preferred Stock

Cost of debt is the company's weighted average of interest rates paid on the debt. Notice that in WACC, Cost of Debt is taken after taxes—i.e., it is multiplied by (1 – T)

$$WACC = \frac{E}{E+D} \times R_E + \frac{D}{E+D} \times R_D \times (1-t)$$

Cost of Preferred Stock

Creditors receive their interest and principal payments before anyone else. Preferred shareholders are next, who receive their dividends before those promised to common shareholders.

You can reduce the WACC by adding the cost of its preferred stock. Simply divide its dividend by its share price

$$WACC = \frac{E}{E+D} \times R_E + \frac{D}{E+D} \times R_D \times (1-t)$$ ***+ Cost of Preferred Stock * %Preferred Stock***

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Terminal Value

Estimated value of a business beyond a specific time range (our forecast period). It typically makes up a large percentage of the total value of a business. This is one of the assumptions we make.

EBITDA Multiple Approach

TV = EBITDAt (last projection period) * EBITDA multiple
**You could also use other comparable metrics multiplied by a multiple

Perpetuity Growth Approach

TV = (FCFn x (1 + g)) / (WACC – g)
Where:
FCF = free cash flow
g = perpetual growth rate of FCF
WACC = weighted average cost of capital

The present value (PV) of our TV is added to the PV of the free cash flows in the projection period to arrive at an implied firm value.

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All Together

1. FORECAST THE FREE CASH FLOWS (Typically 5-10yrs)
2. CALCULATE DISCOUNT RATE USING WACC
3. DISCOUNT THE FCFs TO ITS PRESENT VALUE
4. FIND THE TERMINAL VALUE AND DISCOUNT IT TO THE PRESENT VALUE
5. ADD THE DISCOUNTED FCFs TO THE DISCOUNTED TV

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Sensitivity Analysis

Once you have completed your analysis, make sure to test your DCF model with changes to your assumptions. As you should know already, the assumptions you make impact your valuation. If you provide a range of possible inputs you make get a clearer understanding of the value of the company.

Sensitivity Analysis

growth \ WACC	7%	8%	9%	10%	11%
1%	87.6	74.2	64.1	56.4	50.2
2%	100.5	82.8	70.2	60.8	53.5
3%	119.8	94.8	78.3	66.5	57.7
4%	152.0	112.9	89.6	74.0	63.0
5%	216.4	143.1	106.5	84.6	70.1
6.0%	409.5	203.4	134.8	100.5	80.1

Source: https://www.wallstreetmojo.com/dcf-discounted-cash-flow/

Changes in our WACC and a growth assumptions changes the price valuation we get in our DCF!

Conclusions

Knowing how to do a Discounted Cash Flow Analysis helps to estimate the value of a company today based on its future cash flow. The value of the company depends upon the sum of the cash flows that the company might make in the future. If we are careful in the way we discount our cash flows and with the assumptions we make, we can find the perceived intrinsic value of the company!

Questions?

Thank you for coming out to the 2nd learning session!

You learn valuations best by doing them! Our live DCF analysis will be held on:
Thursday, October 3rd at 6:00pm in GB 119

Stay in touch:
Website: utefa.com
Email: utefa@ecf.utoronto.ca
LinkedIn: https://www.linkedin.com/company/utefa/
Facebook: https://www.facebook.com/utefa

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