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Digital Area for Networking
Teachers and Educators

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Business Valuation: An Introduction

Structure

✓Cash Flow determination

✓Time value of money

✓Discount rate or cost of capital determination

✓Comparable valuation

Valuation

- **Valuation** is the analytical process of determining the current or projected worth of an asset or a company.

- Valuation is a quantitative process of determining the fair value of an asset, investment, or firm.

- There are several methods and techniques for arriving at a valuation. In this part of seminar, we will go through basic valuation principles of income approach – determining cash flows, time value of money, determining the discount rate and comparable valuation.

VALUATION

Price = Present Value (Cash Flows)

Ingredients:

- Current (Cash) Profits
- Growth
- Risk + Timing

Determining Cash Flows

Determining Free Cash Flows to the Firm

Revenue

\- Cost

Includes cost of goods sold, sales, general and administrative costs and depreciation

= Earnings Before Interest and Taxes

\- Taxes

\- Investments

4a. Capital Expenditures
4b. Changes in Net Working Capital =
Changes in Op. Assets – Op. Liabilities

Determining Cash Flows

Free Cash Flow = EBIT * (1 – T)

+ Depreciation

- Capital Expenditures

- Changes in Net Working Capital

Find a set of comparable companies (risk, industry, etc.)

Valuation starts with cash profits!

Need to invest in order to generate profits
(CAPEX, ΔNWC)

Determining Cash Flows

Free Cash Flow = EBIT * (1 – T)

+ Depreciation

- Capital Expenditures

- Changes in Net Working Capital

What this does not include:

Interest Expenses

Dividends

TIME VALUE OF MONEY

WHY "PRESENT": TIME VALUE OF MONEY

Cash in 1 year, 2 years, … , 10 years
is worth less than today

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100 dollars in the bank, interest rate of 10%

grows to

100 * (1+10%) = 110 after 1 year

WHY "PRESENT": TIME VALUE OF MONEY

100 dollars in the bank, interest rate of 10%

grows to

100 * (1+10%) = 110 after 1 year

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110 dollars in the bank, interest rate of 10%

is worth

110 / (1+10%) = 100 today

WHY "PRESENT": TIME VALUE OF MONEY

100 dollars in the bank, interest rate of 10%

grows to

100 * (1+10%) = 110 after 1 year

---

100 dollars in the bank, interest rate of 10%

After 2 years is worth

$100 * (1+10\%) * (1+10\%) = 100 * (1+10\%)^2 = 121$

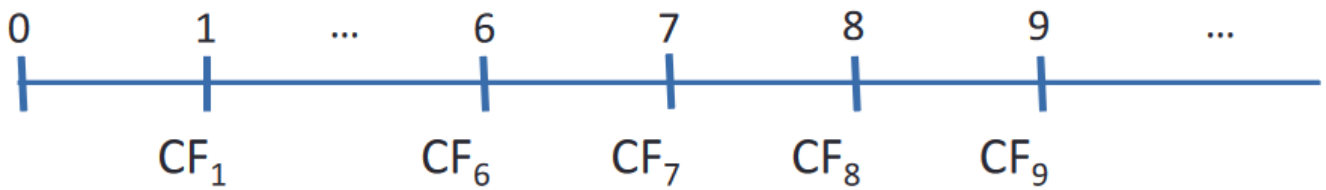
WHY "PRESENT": TIME VALUE OF MONEY

Cash in 1 year, 2 years, … , 10 years is worth less than today

$$\text{Present Value} = \frac{\text{Future Value}}{(1+r_d)^t}$$

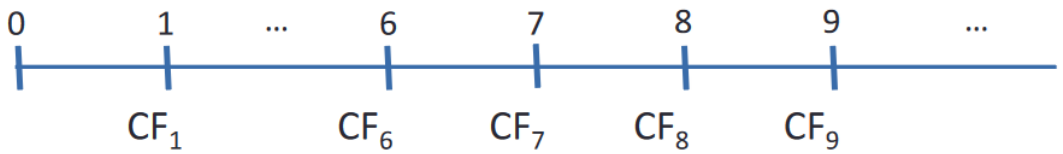
for some discount rate "r_d".

More than 1 Cash Flow



$$\text{Present Value}_0 = \frac{CF_1}{1 + r_d} + \cdots + \frac{CF_6}{(1 + r_d)^6} + \frac{CF_7}{(1 + r_d)^7} + \frac{CF_8}{(1 + r_d)^8} + \frac{CF_9}{(1 + r_d)^9} + \cdots$$

More than 1 Cash Flow



With constant growth rate g:

$CF_2 = (1+g)*CF_1$
$CF_3 = (1+g)*CF_2 = (1+g)^2*CF_1$; ...)

$$\text{Present Value}_0 = \frac{CF_1}{r_d - g}$$

DETERMINING THE DISCOUNT RATE

DETERMINING THE DISCOUNT RATE

What goes into r_d?

Pure time value

Risk

Determining the discount rate

What goes into r_d?

Pure time value

Risk-free rate: Interest rate paid (annually) by the government for an equivalent period.

One common choice for valuation of firms is the US government's 10-year constant maturity rate.

DETERMINING THE DISCOUNT RATE

What goes into r_d?

Risk

Does not include “idiosyncratic” or “diversifiable” risk

Includes only “systematic” risk, measured by how the returns of the firm co-vary with the market

This is measured by β

DETERMINING THE DISCOUNT RATE

What goes into r_d?

Pure time value

Risk

Together:

$$r_d = r_f + \beta * (r_m - r_f)$$

Risk-free rate

Beta: From CAPM

Market risk premium

COMPARABLES VALUATION

Using Multiples

1. Find a set of comparable companies (risk, industry, etc.).

2. For each comparable, divide value (EV or Equity, depending on the multiple) by an accounting measure

   - Firm Value / EBITDA
   - Firm Value / EBIT
   - Firm Value / Sales
   - Price / Earnings (or Market Capitalization / Net Income)

3. Multiply the average ratio across comparables by your estimate of the same accounting statistic for the project (or firm)

THANK YOU FOR YOUR ATTENTION!

Any questions?

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