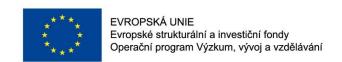


1FP571 Special seminar – Advanced Corporate Finance





Firm value and future cash flows (CFs)

The value of a firm (or its shares) must be related to (net) cash flows returned to its owners.

If not, there is an arbitrage opportunity (money-making machine)

expected future CFs vs. actual future CFs

What is the source of cash flows?

How will firm generate its cash flows in the future?

- strategy, economics, marketing, operations, etc.

What are the competitive market forces?

- a great idea that generates huge profits soon attracts the competitors to follow!
- barriers to entry, first-mover advantage, monopoly

How will e.g. Microsoft (Apple) generate its future sales, profits, cash flows?

DCF Analysis is fundamental

- when performing any type of valuation analysis ... it will always boil down to DCF
- P/E multiples, PEG ratios, price targets .. these all are transformations of DCF
- other factors things like real options are just extensions to basic DCF model

Question: "How much would you be willing to pay to purchase 1 share in a company that will pay you a one-time cash flow of \$100 to be paid (with no risk) in one year?" (risk-free rate = 1.36% p.a.)

If you could buy shares in this firm for less than \$98.66, what would you do?

If the price of the shares is more than \$98.66, what would you do?

People are greedy (which is good)! While markets may not be perfectly efficient, they are certainly competitive!

$$PV_{Today} = E(CF_1)/(1+r)$$

this simple version of general DCF analysis says it all ... and it is really simple ... all we need to do is:

- a) estimate future cash flows
- b) estimate discount rate (future risk)
- where do we get future cash flows (crystal ball?) financial statements!
- where do we get estimate of future risk?

What is the present value of a one-time riskless cash flow of \$100 to be paid in two years (Assume r=1.36%)?

$$PV = CF/(1+r)^2 = 100/(1+0.0136)^2 = $97.33$$

What if we are not certain that we will receive exactly \$100 two years from now?

Use a higher discount rate

Systematic risk is only relevant!

CAPM – Discount rate only determined by non-diversifiable risk.

What if the firm will generate many cash flows at different times in the future?

$$PV = CF_1/(1+r)+CF_2/(1+r)^2+CF_3/(1+r)^3+...$$

Example: Calculate the present value of three \$10 cash flows paid at end of year 1, year 2 and year 3. Assume discount rate of 10%.

$$PV = 10/(1.10) + 10/(1.10)^2 + 10/(1.10)^3$$

$$PV = 9.09 + 8.26 + 7.51 = $24.86$$

What if we received \$10 a year indefinitely? Seems like a lot of work

$$PV = CF_1/(1+r)+CF_2/(1+r)^2+CF_3/(1+r)^3+...$$

Formula for perpetuity: PV = P = CF/r

Check back of today's handouts for a "proof" of this nifty formula.

Useful for calculating "terminal values"

As a preview to topic on "Comparative Analysis", we can see that P/E Ratio is really just a DCF formula!

As a first approximation, accounting can be thought of a proxy for net cash flows available to shareholders.

What if firm will generate constant Earnings = Cash flows in the future?

Perpetuity Formula: P = CF/r = E/r

where

CF= Free Cash flows,

E = Earnings

Therefore, re-arrange to get: P/E = 1/r

What is the P/E ratio of a stock randomly picked from the S&P 500?

It seems a little extreme to assume that cash flows will be constant forever.

Why might cash flows grow in the future?

- these are nominal amounts; t
- the discount rate also takes into account inflation.

Example: Calculate the present value of a cash flow stream that starts at \$10 one year from today, and then grows at a rate of 5% p.a. thereafter. Assume discount rate of 12%.

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PV = CF/(r-g)

PV = 10/(0.12-0.05)

PV = $142.86 ..... Warnings!!!
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WARNINGS:

Always draw a time-line for yourself and label the cash flows!

- know when they occur (beginning/end of period)
- make sure discount rate and growth rates are reasonable
- growing perpetuity: discount rate "r" must be larger than cash flow growth rate; otherwise you will get garbage.

PV of what? Equity vs Enterprise

Equityholders? (i.e. shareholders) .. valuation goal is often to determine price of 1 share:

- equityholders are residual claimants.
- they receive the "leftover" cash after paying who?

All Investors? (Shareholders and Lenders)?

known as "Enterprise Value"

DCF looks the same: PV = CF/(1+r), but

- CF's are usually different for equity versus enterprise.
- risk is different.

Valuation:

- 1) Equity valuation:
 - forecast free cash flows available to equity.
 - discount expected cash flows by the cost of equity capital
- 2) Enterprise (firm or asset) valuation:
 - forecast cash flows available to all providers of capital (debt and equity).
 - discount expected cash flows by weighted average cost of (debt and equity) capital (WACC)
 - can get equity value by subtracting value of debt.
 - widely used in practice.

General Valuation Approach:

First: Forecast cash flows over finite horizon (usually 5 to 10 years), final year is terminal year.

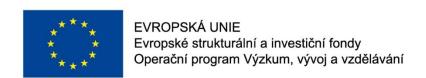
Second: Forecast cash flows beyond terminal year (invoke assumptions)

Third: Discount by appropriate cost of capital (if Enterprise, then WACC)

Fourth: (if using Enterprise valuation): Subtract estimated market value of debt to get current estimate of equity value

REFERENCES

Wysocki, Peter. 15.535 Class #2 "Valuation Basics", MIT OpenCourseWare, https://studylib.net/doc/13616765/





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