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# 1FP571

# Special seminar – Advanced Corporate Finance



EVROPSKÁ UNIE  
Evropské strukturální a investiční fondy  
Operační program Výzkum, vývoj a vzdělávání



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# Valuation Basics

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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



# Valuation Basics

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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?



# Valuation Basics

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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



# Valuation Basics

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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.)

$$PV = CF_1 / (1+r)$$

$$PV = \$100 / (1+0.0136)$$

$$PV = \$98.66$$

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!



# Valuation Basics

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

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?



# Valuation Basics

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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.



# Valuation Basics

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

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

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%.

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

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





# Valuation Basics

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

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

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"



# Valuation Basics

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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?



# Valuation Basics

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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?



# Valuation Basics

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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%.

$$PV = CF/(r-g)$$

$$PV = 10/(0.12-0.05)$$

$$PV = \$142.86 \quad \text{..... Warnings!!!}$$



# Valuation Basics

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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.



# Valuation Basics

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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 Basics

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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.



# Valuation Basics

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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





# Valuation Basics

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## REFERENCES

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



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