

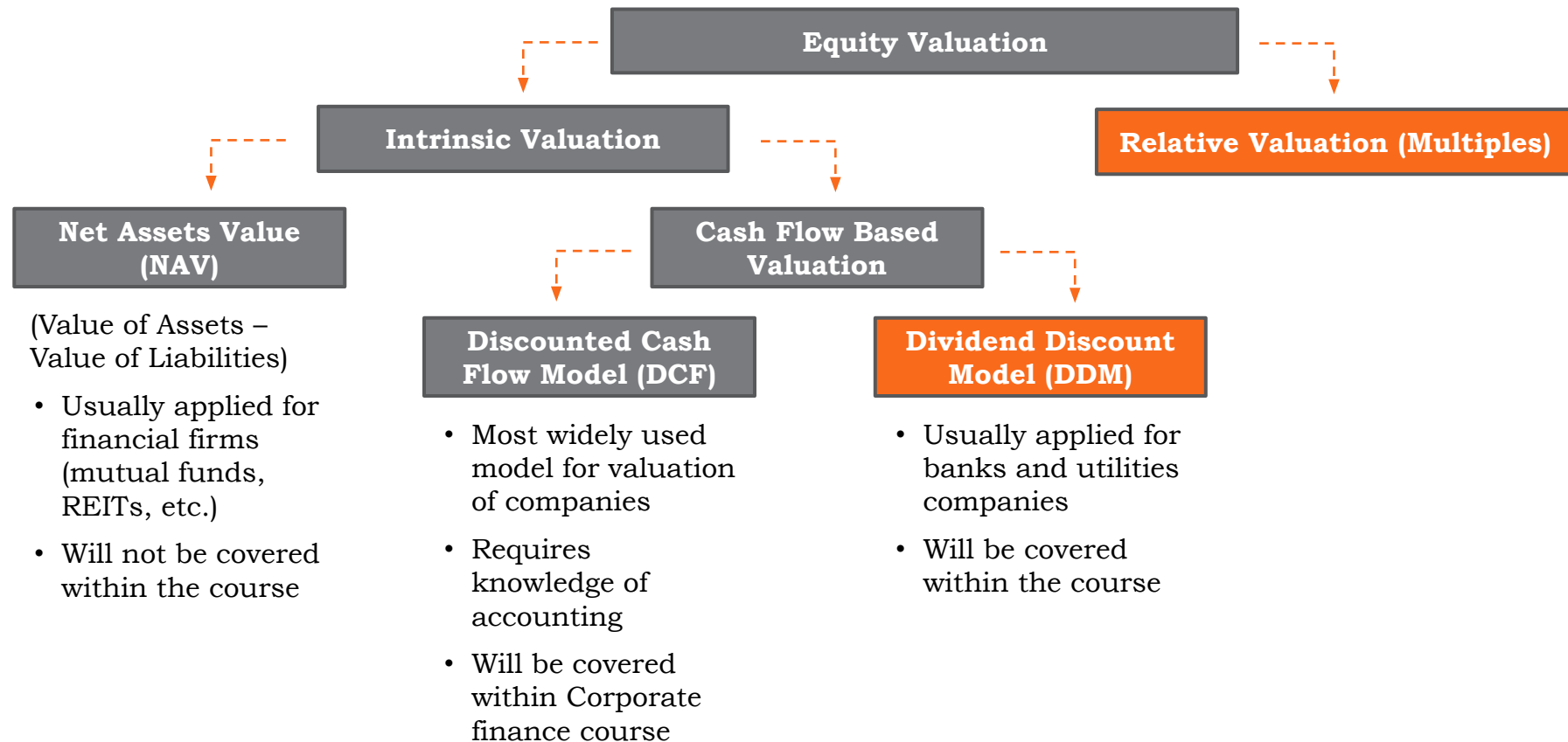
Lecture 7.  
Financial markets: Equity market in details

International finance and globalization

## Major Types of Financial Instruments

Debt	Equity	
	Preferred Stock	Ordinary (Common) Stock
Repayment of principal/face/par and interest (coupon)	Guaranteed (fixed) dividends	Claim on future profits (Dividends) Not obliged to make periodic payments
Have a maturity date (when face value is paid)	<b>Do not have a maturity date</b>	
The least volatile price -> lower capital gain/losses	More volatile price -> more capital gain/losses	The most volatile price -> the most capital gain/losses
Prior claims in case of default	Receive payments after debt holders in case of default	Junior claims in case of default (after debt and preferred stock)
Least risky	More risky	Most risky
No voting rights	No voting rights (usually)	Have voting rights (usually)
Tax deductible (coupons)	Not tax deductible (dividends)	

## Introduction: Methods of Equity Valuation



Market Capitalization of the Company = Equity value =  $P_{sh} \times \text{\#shares}$   
 (e.g. Apple has Mcap of \$1.1 trln as of 28 Sep 2018)

## Dividend Discount Model (DDM)

$$P_{sh} \text{ (Fair Price per Share)} = \overbrace{\frac{DPS_1}{(1+i)^1} + \frac{DPS_2}{(1+i)^2} \dots + \frac{DPS_{N-1}}{(1+i)^{N-1}}}^{\text{Extraordinary growth}} + \overbrace{\frac{TV_N}{(1+i)^{N-1}}}^{\text{Stable growth (Mature Company)}}$$

$$DPS_t = DPS_{t-1} \times (1 + g_t) \quad (\text{For extraordinary growth period})$$

$$TV_{N \rightarrow \infty} = \frac{DPS_{N-1}(1+g_{st})}{(i-g_{st})} = \frac{DPS_N}{(i-g_{st})}, \quad i \geq g_{st} \quad (\text{Gordon growth model})$$

$$\text{Equity Value (E)} = P_{sh} \times \# \text{ shares outstanding}$$

**P<sub>sh</sub>** – Fair Price per Share

**g<sub>st</sub>** – Rate of stable growth of dividends

**DPS** – Dividends per share (DPS=DIV/# shares outstanding)

**TV** – Terminal Value (shows how much money we would get for the stock if we are to sell it in year N)

Since equity doesn't have maturity, you should assume that dividends lasts forever and apply Gordon growth formula to calculate the value.

**i** – Discount rate (return on other stocks with the same level of risk)

## DDM: Example 1

- a) Calculate fair price of the following common stock:  
it is expected to distribute a dividend of \$100 per share next year. After that, dividends are expected to grow at rate of 20% for two years and thereafter dividends are expected to grow with 10% growth forever. Assume that alternative expected rate of return on equity is 15%.
- b) Compare your fair price with market price.

$$P_{fair} = \frac{100}{(1+0.15)^1} + \frac{120}{(1+0.15)^2} + \frac{144}{(1+0.15)^3} + \frac{\frac{144(1+0.1)}{0.15-0.1}}{(1+0.15)^3}$$

## DDM: Example 2

Consider following stocks:

- (A) it is expected to distribute a dividend of \$ 10 per share.
- (B) it is expected to pay a dividend of \$ 5 per share next year. Thereafter, dividend is expected to grow annually at 4% forever.
- (C) it is expected to disburse a dividend of \$10 per share next year. Thereafter, dividend is expected to grow at 20% for five years and then it settles at that level, i.e. no growth.

If the expected rate of return on equity is 10% for A, B and C, which of these three stock you find more valuable?

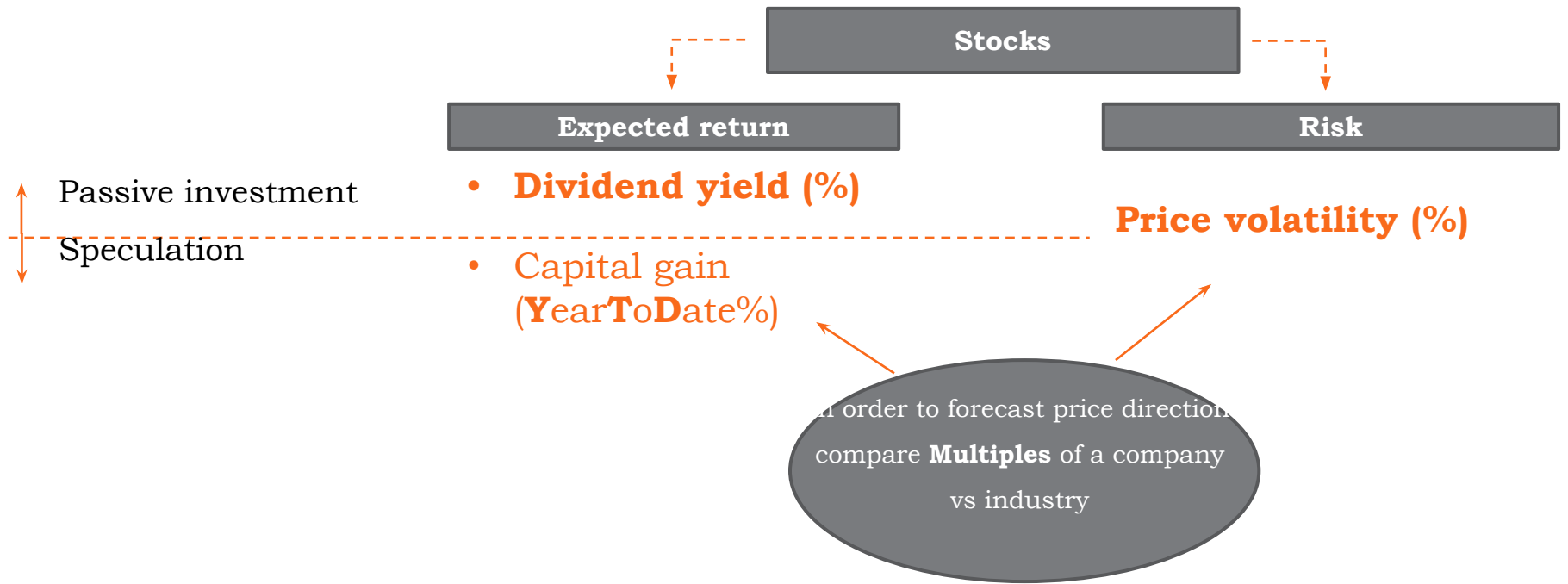
### Answer

Price of A,  $P_A = D/r = 100$

$P_B = D_1/(r-g) = 5/(.1-.04) = 83.3$

Year	1	2	3	4	5	6	...	T	...
Div for C	10	12	14.4	17.28	20.74	24.88	...	24.88	...

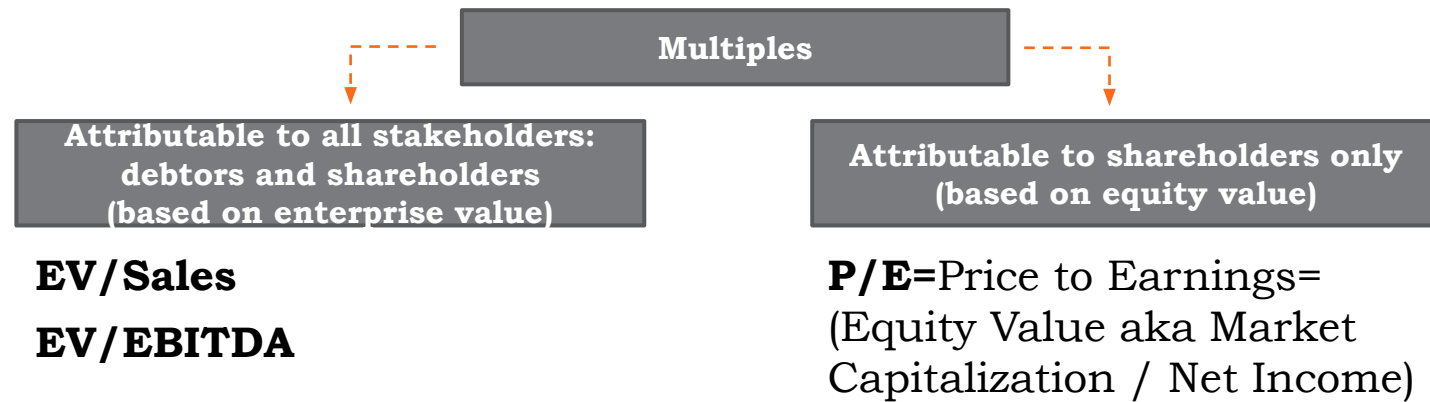
$$P_{C \text{ fair}} = \frac{10}{(1+0.1)^1} + \frac{12}{(1+0.1)^2} + \frac{14.4}{(1+0.1)^3} + \frac{17.28}{(1+0.1)^4} + \frac{20.74}{(1+0.1)^5} + \frac{\frac{24.88}{0.1}}{(1+0.1)^5}$$







## Relative Valuation: Most Commonly used Multiples



## Relative Valuation: Step by step procedure

1. Search for comparable companies  
Criteria: Sector, Business Model, Geography, Margin (range), Market Capitalization (range)
2. Calculate required multiple for each of these companies
3. Take median multiple across the companies
4. Compare multiple of your company VS this median

Alternatively,  
Google for industry  
Multiples

**Example:**

Assume we want to value a retail company that has operations in Russia with P/E=16 and EV/EBITDA=7.

Company	Mcap, \$ m	P/E '19E	EV/EBITDA '19E
X5	9,190	15.2	6.5
Magnit	7,671	17.9	6.8
Lenta	1,637	9.1	5.3
O'KEY	436	15.8	5.4
<b>Median</b>		<b>15.5</b>	<b>6.0</b>

According to P/E and EV/EBITDA our company is **Overvalued**=> Sell it!

## Equity Valuation

Company	Country	Currency	MC	EV	EBITDA CAGR	EBITDA	EV /	EV / Sales	P / E
			\$ M	\$ M	17- '21	margin	EBITDA		
APPLE INC	USA	USD	1 077 653	948 510	7%	30,6%	11,7x	3,6x	18,2x
AMAZON.COM INC	USA	USD	900 521	919 260	41%	13,6%	28,8x	3,9x	68,1x
BERKSHIRE HATHAWAY INC-CL A	USA	USD	545 056	324 307	n/a	16,3%	8,1x	1,3x	23,4x
TESLA INC	USA	USD	42 585	53 243	570%	7,9%	32,8x	2,6x	-38,9x
TWITTER INC	USA	USD	21 364	18 399	40%	36,6%	17,3x	6,3x	40,2x
SNAP INC - A	USA	USD	9 433	7 863	n/a	-58,7%	-11,6x	6,8x	-13,2x
SBERBANK OF RUSSIA PJSC	Russia	RUB	62 052	42 367	n/a	n/a	n/a	1,4x	5,0x
GAZPROM PJSC	Russia	RUB	60 942	92 461	9%	27,7%	2,7x	0,7x	3,3x
NOVATEK PJSC-SPONS GDR REG S	Russia	USD	54 593	56 507	5%	35,4%	13,9x	4,9x	15,8x
MAGNIT PJSC-SPON GDR REGS	Russia	USD	6 785	8 453	9%	7,1%	5,9x	0,4x	10,5x
SISTEMA PJSC-REG S SPONS GDR	Russia	USD	1 184	13 313	1%	28,0%	4,4x	1,2x	n/a

Company	Dividend Yield, %	Closing Price	Share Price Performance					Volatility 60D
			YTD	-12 M	-6 M	-3 M	-1 M	
APPLE INC	1,22	223	31,8%	43,7%	32,5%	18,7%	0,8%	21,58
AMAZON.COM INC	0,00	1 846	57,9%	86,6%	31,4%	7,9%	-5,4%	22,20
BERKSHIRE HATHAWAY INC-CL A	0,00	331 460	11,4%	18,0%	12,7%	16,8%	3,0%	15,27
TESLA INC	0,00	250	-19,8%	-30,1%	-16,6%	-19,2%	-5,2%	78,07
TWITTER INC	0,00	28	17,4%	57,9%	0,3%	-39,6%	-7,5%	62,71
SNAP INC - A	0,00	7	-49,5%	-50,1%	-48,2%	-45,4%	-25,6%	36,84
SBERBANK OF RUSSIA PJSC	9,17	192	-14,8%	-1,2%	-25,3%	-15,4%	9,7%	36,34
GAZPROM PJSC	5,33	172	31,7%	39,2%	21,4%	18,5%	15,5%	26,27
NOVATEK PJSC-SPONS GDR REG S	1,53	180	49,6%	51,5%	26,9%	16,9%	4,2%	38,13
MAGNIT PJSC-SPON GDR REGS	3,53	13	-51,3%	-66,8%	-29,4%	-24,2%	-5,2%	39,39
SISTEMA PJSC-REG S SPONS GDR	0,00	2	-41,2%	-47,6%	-37,4%	-14,1%	8,1%	32,70

Essential reading for Lecture 7:

1. Buckle, M. and E. Beccalli Principles of banking and finance (UOL study guide) **pp. 152-155, 26-30 (excluding The term structure of interest rates), 32-36**
2. Brealey, Myers and Allen. Principles of Corporate finance. **pp. 74-86**
3. Mishkin, F. and S. Eakins Financial Markets and Institutions. (Addison Wesley) **Chapter 13**