Project comments

International finance and globalization

Bonds and Stocks market evaluation
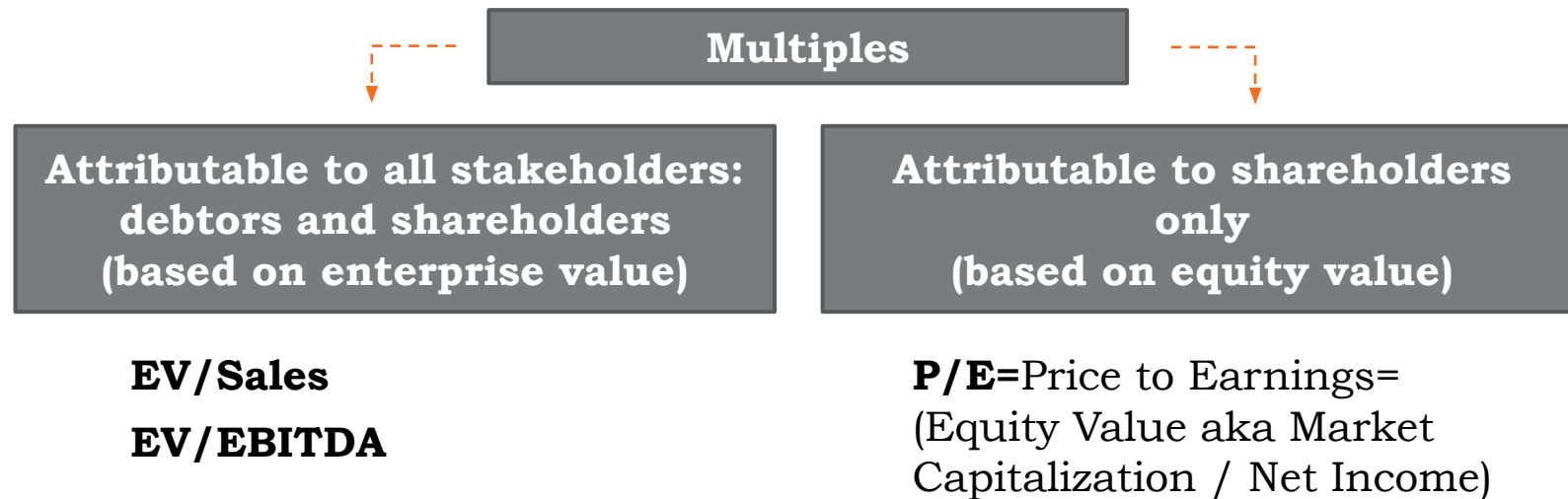
Bonds

Expected return   **Risk**

Hold until maturity   • **YTM (%)**   • **DUR (M.DUR -%)**

Sell before maturity   • Capital gain (%)   • Price volatility (%)

Expected annual return of a bond (if you sell before maturity)(%)	= Annual coupon(%) + Capital gain(%) = = Annual coupon(%) + ((Pnew-Pold)/Pold *100)/#of years hold

Stocks

Expected return   **Risk**

Passive investment   • **Dividend yield (%)**

                                                                   Price volatility (%)

Speculation   • Capital gain
                              (**Y**ear**T**o**D**ate%)   In order to forecast price direction
                                                                 compare **Multiples** of a company
                                                                 vs industry

Expected annual return of a stock(%)	= Dividend yield(%) + Capital gain(%) = = Dividend yield(%) + ((Pnew-Pold)/Pold *100)/#of years hold

Equity estimation

Company	Country	Currency	MC	EV	EBITDA CAGR	EBITDA margin	EV / EBITDA	EV / Sales	P / E
			$ M	$ M	18- '22				
GAZPROM	Russia	RUB	83 855	119 653	-1%	27,9%	3,5x	1,0x	4,3x
ROSNEFT	Russia	USD	67 616	123 895	6%	25,1%	3,8x	1,0x	5,0x
YANDEX	Russia	RUB	9 724	9 172	37%	32,6%	8,1x	2,6x	15,2x
AEROFLOT	Russia	RUB	1 733	10 532	57%	24,0%	3,8x	0,9x	4,7x
AMAZON	USA	USD	860 246	890 397	28%	15,7%	17,2x	2,7x	36,6x
FACEBOOK	USA	USD	529 565	488 779	22%	53,2%	10,7x	5,7x	17,2x
EXXON MOBIL	USA	USD	292 644	346 015	10%	17,1%	7,1x	1,2x	16,2x
BOEING	USA	USD	209 973	221 079	9%	15,6%	11,5x	1,8x	15,9x
MCDONALD'S	USA	USD	160 129	204 287	5%	52,8%	17,8x	9,4x	24,6x
TESLA	USA	USD	44 576	55 333	48%	10,1%	18,2x	1,8x	74,0x

Company	Dividend Yield, %	Closing Price	Share Price Performance					Volatility 60D
			YTD	-12 м	-6 м	-3 м	-1 м	
GAZPROM	8,02	227	48,1%	40,4%	43,9%	-8,0%	-3,3%	23,5
ROSNEFT	9,06	6	3,2%	-8,1%	-5,3%	-3,9%	0,4%	21,2
YANDEX	0,09	1 898	-1,7%	-10,4%	-22,0%	-23,9%	-23,0%	47,5
AEROFLOT	9,09	100	-1,0%	-0,7%	1,8%	-7,1%	-5,9%	19,2
AMAZON	0,00	1 739	15,8%	1,1%	-5,7%	-13,1%	-4,6%	21,4
FACEBOOK	0,00	186	41,6%	21,0%	4,6%	-7,8%	-1,5%	26,3
EXXON MOBIL	5,17	69	1,4%	-15,2%	-15,6%	-10,8%	-3,8%	22,0
BOEING	2,38	373	15,7%	4,2%	0,8%	3,9%	-2,6%	26,8
MCDONALD'S	2,36	211	18,7%	29,4%	11,6%	-0,9%	0,3%	17,9
TESLA	0,00	249	-25,2%	-1,3%	-7,3%	4,3%	0,7%	51,1

Multiples

Attributable to all stakeholders: debtors and shareholders (based on enterprise value)	**Attributable to shareholders only (based on equity value)**
EV/Sales **EV/EBITDA**	**P/E=**Price to Earnings= (Equity Value aka Market Capitalization / Net Income)

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
Median		**15.5**	**6.0**

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

Expected return of a portfolio

$$E(r_p) = E(r_A) * w_A + E(r_B) * w_B + \ldots$$

Portfolio risk

$$\sigma_p = \sqrt{\sigma_A^2 * w_A^2 + \sigma_B^2 * w_B^2 + 2Cov(A,B) \ldots}$$

σ-volatility

Comment on **diversification** of your portfolio!

You can assume *during your calculations* that Covariance between any securities is zero . However you need separately to comment whether your securities are correlated or not and whether it is good or bad in terms of your portfolio risk

Find weights optimal for your investor!

Lecture 9.
Financial markets: Derivatives

International finance and globalization

What are Derivatives?

Securities

Primary assets

Securities sold by firms or government to raise capital (stocks and bonds) as well as stock indexes (S&P, Nikkei), interest rates, exchange rates, credit risk, commodities (gold, coffee, corn)…

Derivatives assets

Options, forward and futures contracts, FRAs, Eurodollars, Swaption, CDS, etc. These financial assets are derived from existing primary assets

Why using derivatives?
– Risk management (e.g., hedging)
– Speculation
– Reduce market frictions, e.g., cost of default, taxes, and transaction costs
– Exploit arbitrage opportunities

Exchange-traded✔ ✔

Over-the-counter traded ✔

Exchange-traded

Over-the-counter traded ✔ ✔ ✔

Options:
- Call - option to buy underlying asset
- Put - option to sell underlying asset

A call/put option gives the owner the *right but not the obligation* to buy/sell the underlying asset at a predetermined price during a predetermined time period.

- **Strike** (or exercise) price: the amount paid by the option buyer for the asset if he/she decides to exercise
- **Exercise:** the act of paying the strike price to buy the asset
- **Expiration:** the date by which the option must be exercised or become Worthless
- **Premium:** the price of the option paid today
- **Exercise style:** specifies when the option can be exercised
– European-style: can be exercised only at expiration date
– American-style: can be exercised at any time before expiration
– Bermudan-style: can be exercised during specified periods (e.g., on the first day of each month. Bermuda is located between the US and Europe.)

Long Call Option example

Payoff = Max [0, spot price at expiration – strike price]
Profit = Payoff – future value of option premium

Example:
S&P Index 6-month Call Option
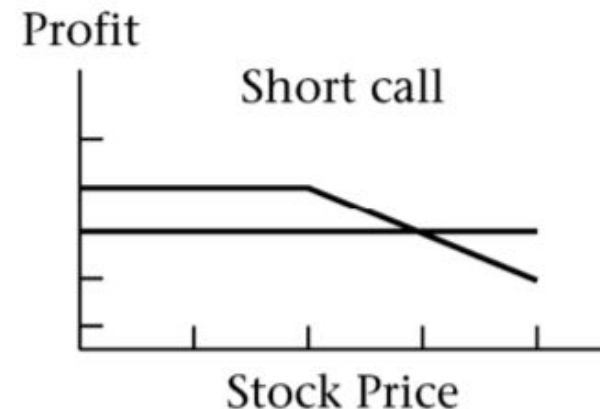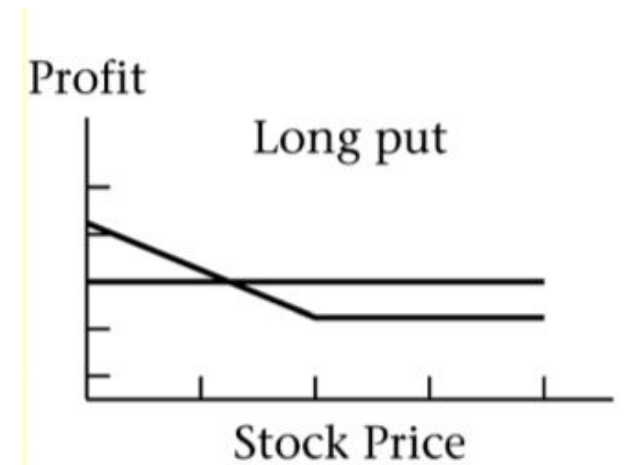Strike price = $1,000, Premium = $93.81, 6-month risk-free rate = 2%

– If index value in six months = $1100

- Payoff = max [0, $1,100 – $1,000] = $100
- Profit = $100 – ($93.81 x 1.02) = $4.32

– If index value in six months = $900

- Payoff = max [0, $900 – $1,000] = $0
- Profit = $0 – ($93.81 x 1.02) = – $95.68

Short Call Option example

Payoff = – Max [0, spot price at expiration – strike price]
Profit = Payoff + future value of option premium

Example:
S&P Index 6-month Call Option
Strike price = $1,000, Premium = $93.81, 6-month risk-free rate = 2%

– If index value in six months = $1100

- Payoff = – max [0, $1,100 – $1,000] = – $100
- Profit = – $100 + ($93.81 x 1.02) = – $4.32

– If index value in six months = $900

- Payoff = – max [0, $900 – $1,000] = $0
- Profit = $0 + ($93.81 x 1.02) = $95.68

Short call — Profit vs Stock Price

Long Put Option example

Payoff = Max [0, strike price – spot price at expiration]
Profit = Payoff – future value of option premium

Example:
S&P Index 6-month Call Option
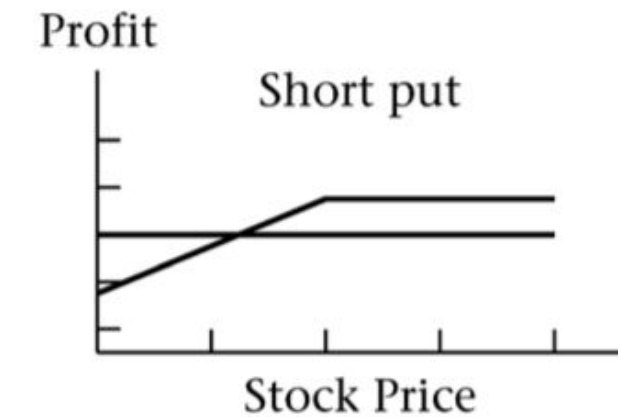Strike price = $1,000, Premium = $93.81, 6-month risk-free rate = 2%
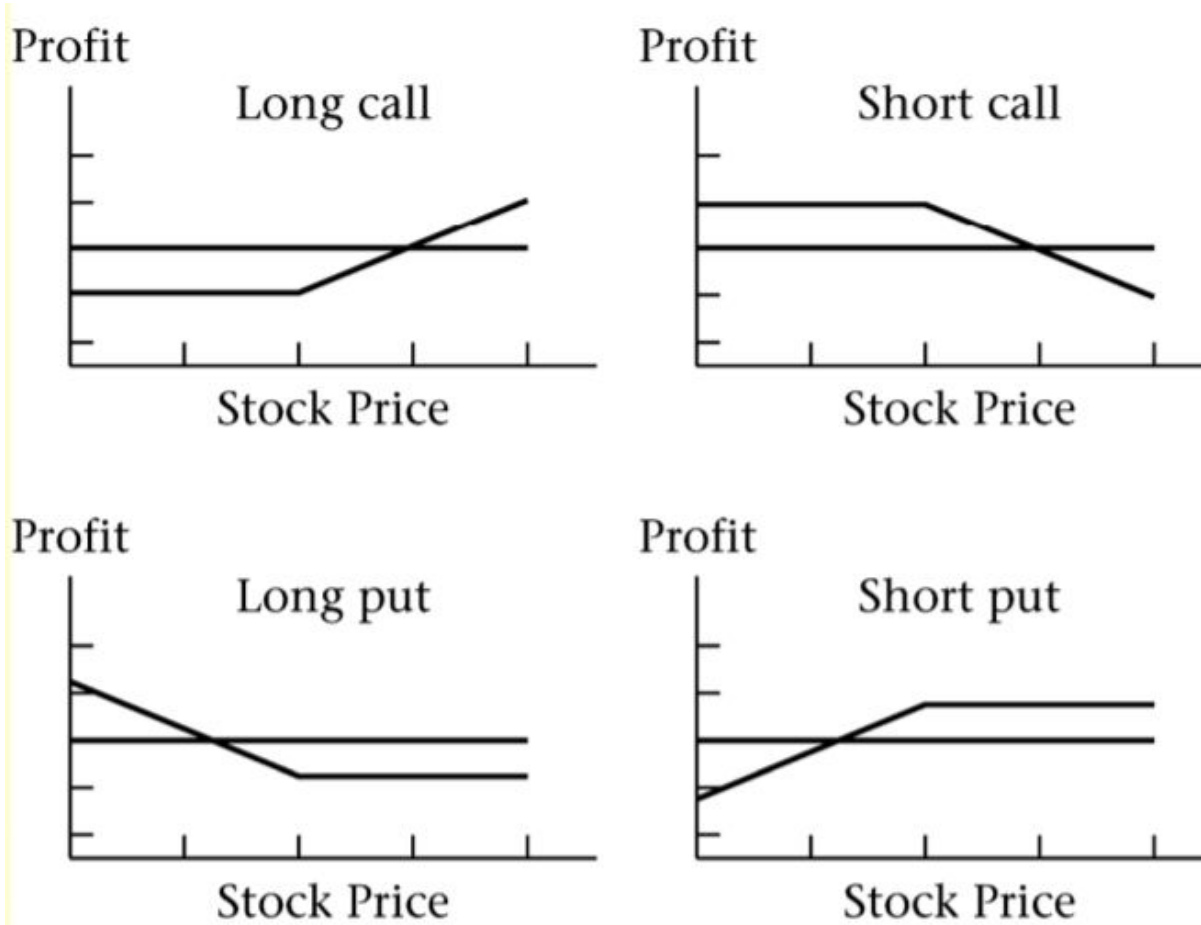
– If index value in six months = $1100

- Payoff = max [0, $1,000 – $1,100] = $0
- Profit = $0 – ($93.81 x 1.02) = – $95.68

– If index value in six months = $900

- Payoff = max [0, $1000 – $900] = $100
- Profit = $100 – ($93.81 x 1.02) = $4.32

Profit

Long put

Stock Price

Short Put Option example

Payoff = – Max [0, strike price – spot price at expiration]
Profit = Payoff + future value of option premium

Example:
S&P Index 6-month Call Option
Strike price = $1,000, Premium = $93.81, 6-month risk-free rate = 2%

– If index value in six months = $1100

- Payoff = – max [0, $1,000 – $1,100] = $0
- Profit = $0 + ($93.81 x 1.02) = $95.68

– If index value in six months = $900

- Payoff = – max [0, $1000 – $900] = – $100
- Profit = – $100 + ($93.81 x 1.02) = – $4.32

In the Money - exercise of the option would be profitable
Call: market price>exercise price (denoted by K or X)
Put: exercise price>market price

Out of the Money - exercise of the option would not be profitable
Call: market price<exercise price
Put: exercise price<market price

At the Money - exercise price and market price are equal

Forward Contract

A forward contract is an agreement made today between a buyer and a seller who are **obligated** to complete a transaction at a pre-specified date in the future.

•The buyer and the seller **know each other**. The negotiation process leads to **customized** agreements: What to trade; Where to trade; When to trade; How much to trade?

$\approx$

Futures Contract

A Futures contract is an agreement made today between a buyer and a seller who are **obligated** to complete a transaction at a pre-specified date in the future.

•The buyer and the seller **do not know each other**. The "negotiation" occurs in an organized future exchange.
•The terms of a futures contract are **standardized.** The contract specifies what to trade; where to trade; When to trade; How much to trade; what quality of good to trade.

Long and Short Future example

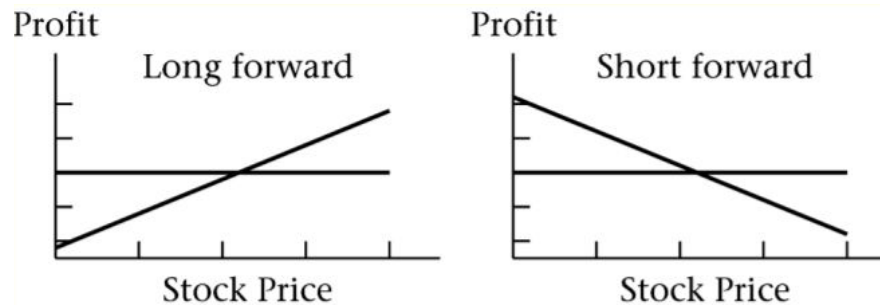Payoff for a contract is its value at expiration

Payoff for
– Long forward = Spot price at expiration – Forward price
– Short forward = Forward price – Spot price at expiration

Example:
– Today: Spot price = $1,000, 6-month forward price = $1,020
– In six months at contract expiration: Spot price = $1,050

• Long position payoff = $1,050 – $1,020 = $30
• Short position payoff = $1,020 – $1,050 = ($30)

Example: Speculating in Gold Futures, Long

- You believe the price of gold will go **up**. So,
  - You go **long** 100 futures contract that expires in 3 months.
  - The futures price today is **$400** per ounce.
  - Assume interest rate is zero.
  - There are 100 ounces of gold in each futures contract.

- Your "position value" is: $400 ×100 × 100 = $4,000,000

- Suppose your belief is correct, and the price of gold is **$420** when the futures contract expires.

- Your "position value" is now: $420 × 100 × 100 = $4,200,000

Your "long" speculation has resulted in a gain of $200,000

Example: Speculating in Gold Futures, Short

- You believe the price of gold will go **down**. So,
  - You go **short** 100 futures contract that expires in 3 months.
  - The futures price today is **$400** per ounce.
  - Assume interest rate is zero.
  - There are 100 ounces of gold in each futures contract.

- Your "position value" is: $400 × 100 × 100 = $4,000,000

- Suppose your belief is correct, and the price of gold is **$370** when the futures contract expires.

- Your "position value" is now: $370 × 100 × 100 = $3,700,000

Your "short" speculation has resulted in a gain of $300,000

Risk Management: The Producer's Perspective

A producer selling a risky commodity has an inherent long position in this commodity

When the price of the commodity increases, the profit typically increases

Common strategies to hedge profit:
– Selling forward
– Buying puts
– Selling Calls

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