



Capital Markets for MBA Students

December 13th
Barcelona

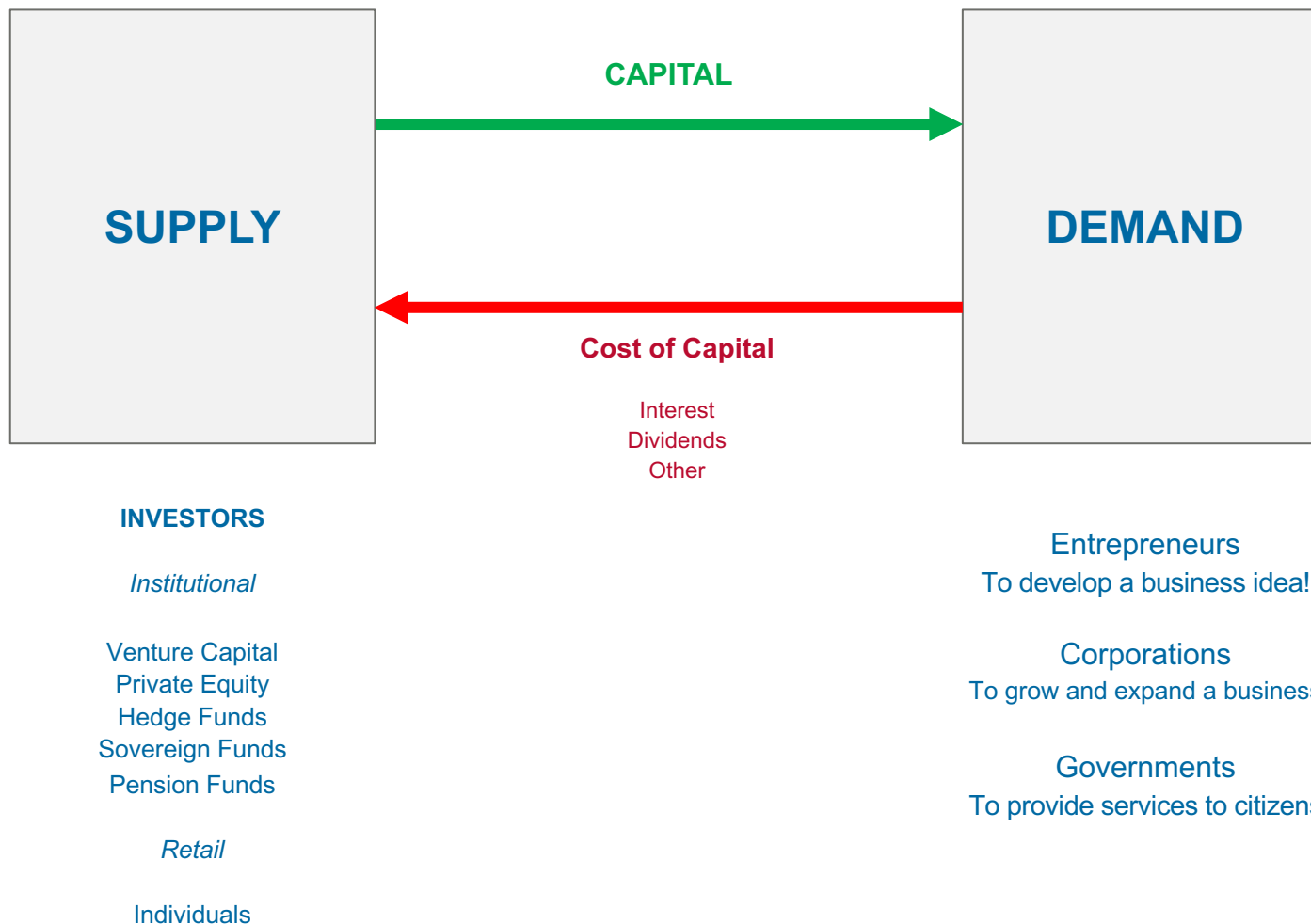
Nicolás L. D'Agnillo

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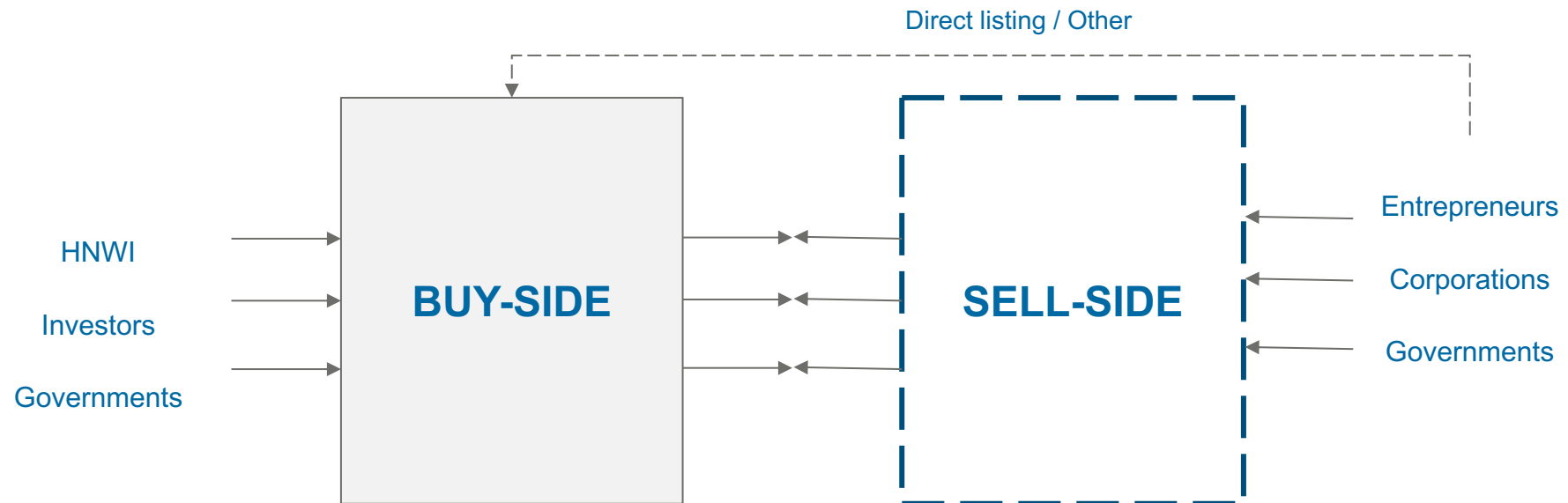
1. The Different Players of Financial Markets

What are Capital Markets?

The markets where **SUPPLY** and **DEMAND** of **CAPITAL** meet



1. The Different Players of Financial Markets



Venture Capital

Private Equity

Hedge Funds

Sovereign Funds

Pension Funds

Family-office

Investment Banks

Help clients to raise capital (primary markets)

- IPO (ECM)
- Debt Offerings (DCM)

Provide liquidity in existing markets (secondary markets)

- Buy/sell securities (market making)

Brokers / Dealers

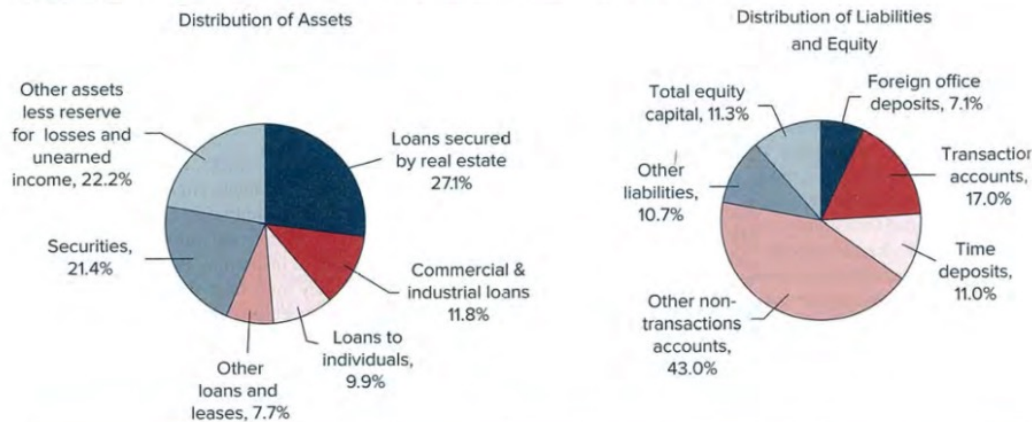
Provide liquidity in existing markets

- Buy/sell securities (secondary markets)

1.1 Commercial vs Investment Banks

- Commercial and investment banks are both critical financial institutions in a modern economy, but they perform very different functions. Commercial banks are what most people think of when they hear the term "bank." Commercial banks accept deposits, make loans, safeguard assets, and work with many different types of clients, including the general public and businesses.
- On the other hand, investment banks provide services to large corporations and institutional investors. For example, an investment bank may help in merger and acquisition (M&A) transactions, issue securities, or provide financing for large-scale business projects.

Figure 11-3 Distribution of Commercial Bank Assets, Liabilities, and Equity, 2019



Source: Federal Deposit Insurance Corporation, *Quarterly Banking Profile*, Fourth Quarter 2019, www.fdic.gov

Figure 11-1 Differences in Balance Sheets of Commercial Banks and Nonfinancial Firms

Commercial Banks		Nonfinancial Firms	
Assets	Liabilities and Equity	Assets	Liabilities and Equity
Loans	Deposits	Deposits	Loans
Other financial assets		Other financial assets	
Other nonfinancial assets	Other liabilities and equity	Other nonfinancial assets	Other liabilities and equity

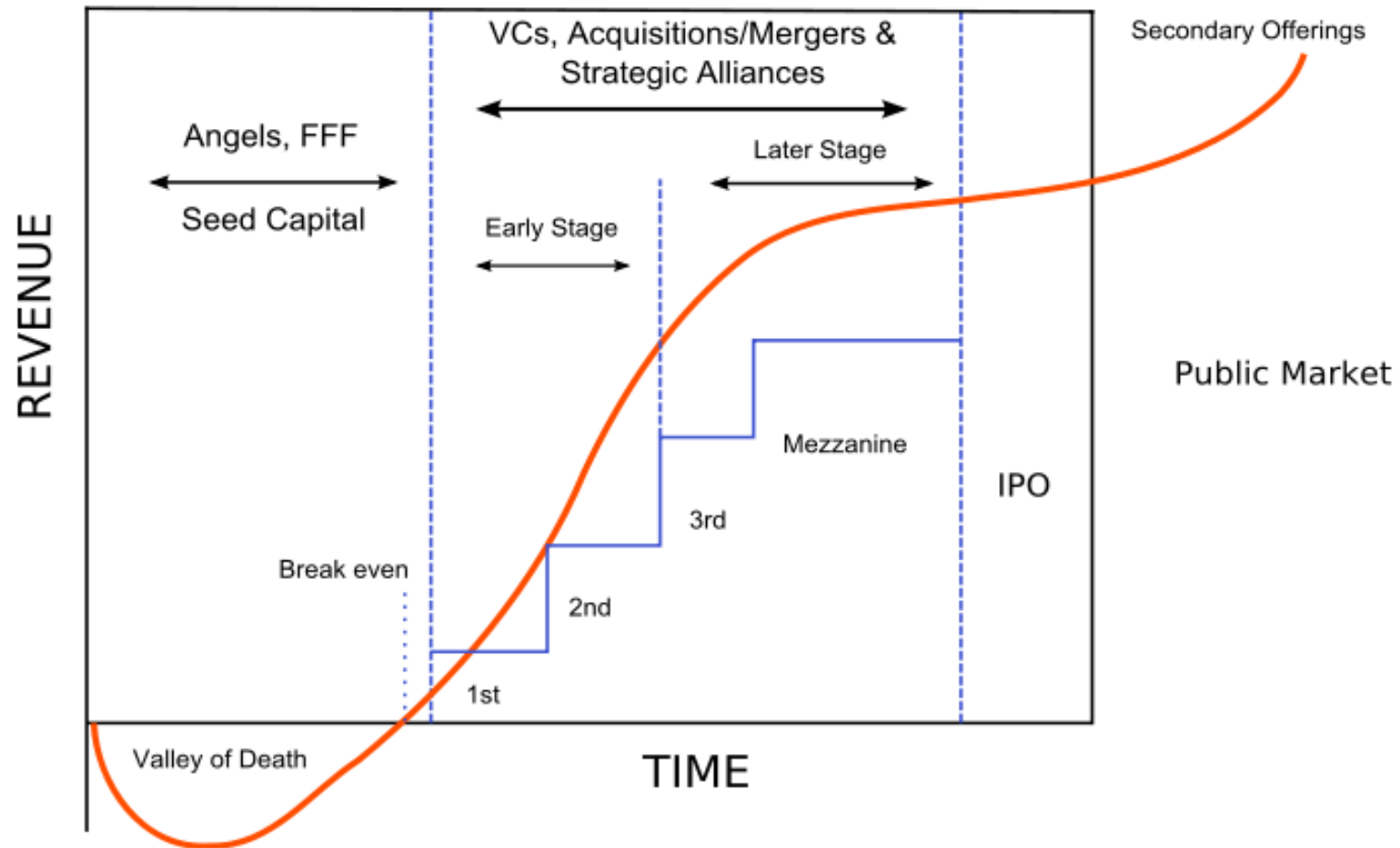
Figure 11-2 Interaction between Commercial Banks and Nonfinancial Firms



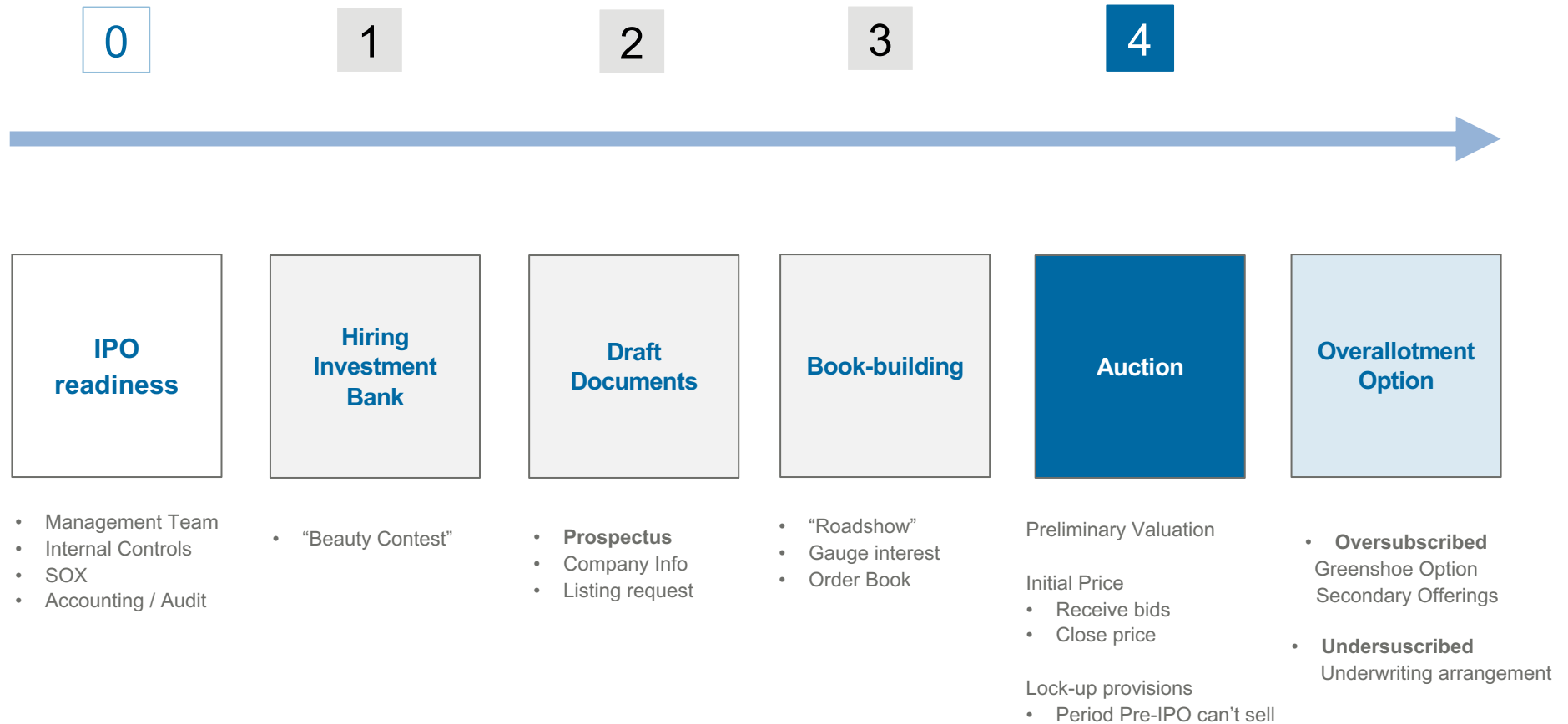
Links:

IB vs Commercial Banks: <https://www.investopedia.com/articles/professionals/091615/career-advice-investment-banking-vs-commercial-banking.asp>

2. How to Raise Capital?



3. The IPO Process



4. Fiscal & Monetary Policy

Fiscal Policy:

- The use of government spending and tax policies to influence economic conditions, especially macroeconomic conditions
- Probably the most direct way to stimulate (slow) the economy
- Decrease in government spending directly deflate the demand for goods and services. Similarly, increases in tax rates immediately affects the income from consumers and results in a rapid decrease in consumption
- Immediate impact on the economy, but the formulation and implementation is slow
- Government budget (surplus or deficit) = revenues - expenditures

Monetary Policy:

- Refers to the manipulation of the money supply, and is the other main leg of demand-side policy
- Works largely through its impact on interest rates. Increase in the money supply (lower short-term interest rates) encourage investments and consumption
- Slow impact on the economy, but it is implemented quickly
- Open Market Operations: refers to the purchase and sales of securities in the open market by the Central Banks.

To increase the money supply – Central Banks buy Treasury securities

To decrease the money supply – Central Banks sell securities

Fiscal vs. Monetary Policy:

- Both monetary and fiscal policy are macroeconomic tools used to manage or stimulate the economy.
- Monetary policy addresses interest rates and the supply of money in circulation, and it is managed by a central bank.
- Fiscal policy addresses taxation and government spending, and it is generally determined by government legislation.
- Monetary policy and fiscal policy together have great influence over a nation's economy, its businesses, and its consumers.

Links:

Fiscal Policy: <https://www.investopedia.com/terms/f/fiscalspolicy.asp>

Monetary Policy: <https://www.investopedia.com/terms/m/monetarypolicy.asp>

Open Market Operations: <https://www.investopedia.com/terms/o/openmarketoperations.asp>

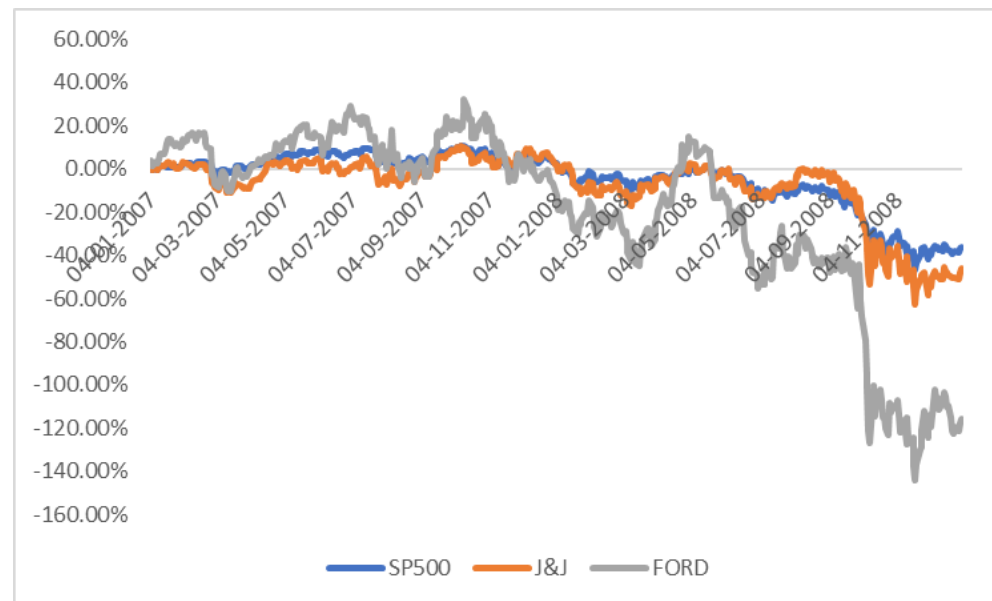
Fiscal vs Monetary Policy: <https://www.investopedia.com/ask/answers/100314/whats-difference-between-monetary-policy-and-fiscal-policy.asp>



4.1 How Macro Economics Affects Prices

Business Cycle:

- The economy recurrently experiences periods of expansion and contraction. This recurring pattern of recession and recovery is called the business cycle
- As the economy passes through different stages of the business cycle, the relative performance of different industry groups might be expected to vary
- When the recovery from a recession starts, cyclical industries (those with above average sensitivity to the state of the economy) would tend to outperform. For example; producers of durable goods such as automobiles.
- In contrast, defensive industries, have low sensitivity to the business cycle. This outperform others when the economy enters a recession. Examples; food producers, pharmaceuticals and public utilities.



Links:

Business Cycle: <https://www.investopedia.com/terms/e/economic-cycle.asp>

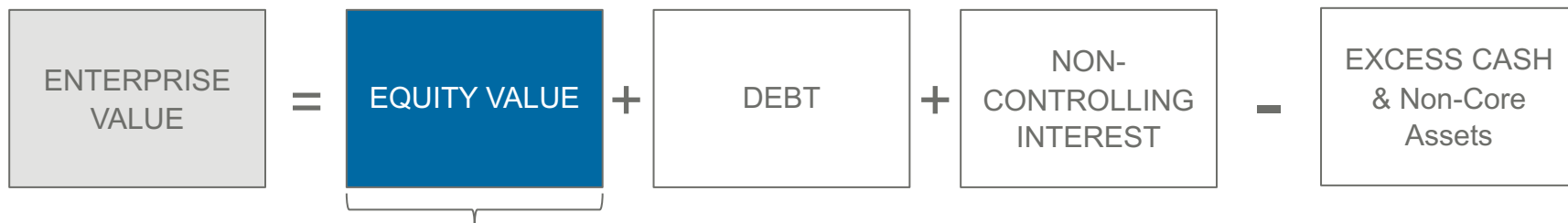
J.P. Morgan

5. Fundamentals Stock Valuation

A **corporation** – or *enterprise* - is a profit-seeking entity funded by investors (Equity + Debt + Others) which **generates cash flows**

$$\text{Present Value of Enterprise Value} = \frac{\text{Future Cash Flows}}{(1 + \text{discount rate})^n}$$

A **stock** is a security that represents the **ownership** - *equity value* - of a fraction of the issuing **corporation**



Stock price * Number of shares

5.1. Discounted Cash Flows

1

Forecast Cash Flows to all investors for a explicit period (5y-10y) to value company

$$\text{Free Cash Flow to the Firm (FCFF)} = \text{EBIT} (1 - t) + \text{D\&A} + \Delta \text{NWC} - \text{CapEx}$$

2

Calculate **Terminal Value** (perpetual value of the firm)

A. Perpetuity: Assume perpetual growth and assume the company will generate CFs forever

$$\text{TV} = \frac{\text{FCFF}_{t+1}}{\text{WACC} - g}$$

B. Exit Multiple: Assume a price at which you will sell the company (i.e comparables)

3

Discount Projected Cash Flows and **Terminal Value** using the company cost of capital (WACC)

4

Calculate **Equity Value** by subtracting other sources of capital and divide per number of shares

5.1.1. WACC & CAPM

1

Weighted Average Cost of Capital is the avg. rate at which the company can finance its operations

$$\text{WACC} = K_d \frac{D}{D+E} (1 - t) + K_e \frac{E}{D+E}$$

Cost of debt = current YTM of a bond issued by the company (rate at which it can finance today).

2

Capital Asset Pricing Model is a method of estimating the required return on equity of a company

$$K_e = r_f + \beta_l (r_m - r_f)$$

Beta= Sensitivity of returns on stock compared to returns on market. i.e. varies per industry

5.1.2. Example - Discounted Cash Flow Analysis

Tenaris

Discounted Cash Flow Analysis

(\$ in millions, fiscal year ending December 31)

	Historical Period			CAGR ('19 - '21)	Projection Period						CAGR ('19 - '24)
	2019	2020	2021		2022	2023	2024	2025	2026	2027	
Sales	\$7,294	\$5,147	\$6,521	-5.4%	\$11,762.5	\$14,679.6	\$13,446.5	\$13,823.0	\$14,210.1	\$14,608.0	4.4%
% growth	NA	(29.4%)	26.7%		80.4%	24.8%	-8.4%	2.8%	2.8%	2.8%	
Cost of Goods Sold	4,990	3,961	4,558		6,875.2	8,807.8	8,067.9	8,293.8	8,526.1	8,764.8	
Gross Profit	\$2,304.5	\$1,185.9	\$1,963.3	-7.7%	\$4,887.3	\$5,871.9	\$5,378.6	\$5,529.2	\$5,684.0	\$5,843.2	3.6%
% margin	31.6%	23.0%	30.1%		41.5%	40.0%	40.0%	40.0%	40.0%	40.0%	
Selling, General & Administrative	1,247.7	994.8	1,112.0		1,502.0	1,761.6	1,613.6	1,658.8	1,705.2	1,753.0	
Other Operating Expenses	199.8	97.4	100.5		405.6	293.6	268.9	276.5	284.2	292.2	
EBITDA	\$1,306.5	\$585.3	\$1,339.2	1.2%	\$3,564.3	\$4,697.5	\$4,302.9	\$4,423.4	\$4,547.2	\$4,674.6	5.6%
% margin	17.9%	11.4%	20.5%		30.3%	32.0%	32.0%	32.0%	32.0%	32.0%	
Depreciation & Amortization	449.5	491.6	588.3		584.5	880.8	806.8	829.4	852.6	876.5	
EBIT	\$857.0	\$93.7	\$750.8	-6.4%	\$2,979.7	\$3,816.7	\$3,496.1	\$3,594.0	\$3,694.6	\$3,798.1	5.0%
% margin	11.7%	1.8%	11.5%		25.3%	26.0%	26.0%	26.0%	26.0%	26.0%	
Taxes	214.2	23.4	187.7		744.9	954.2	874.0	898.5	923.7	949.5	
EBIAT	\$642.7	\$70.3	\$563.1	-6.4%	\$2,234.8	\$2,862.5	\$2,622.1	\$2,695.5	\$2,771.0	\$2,848.6	5.0%
Plus: Depreciation & Amortization	449.5	491.6	588.3		584.5	880.8	806.8	829.4	852.6	876.5	
Less: Capital Expenditures	(349.5)	(194.4)	(218.8)		(365.0)	(660.6)	(605.1)	(622.0)	(639.5)	(657.4)	
Less: Inc./(Dec.) in Net Working Capital						324.2	245.0	(74.8)	(76.9)	(79.0)	
Unlevered Free Cash Flow						\$3,406.9	\$3,068.7	\$2,828.0	\$2,907.2	\$2,988.6	
WACC		13.7%									
Discount Period						0.5	1.5	2.5	3.5	4.5	
Discount Factor						0.94	0.83	0.73	0.64	0.56	
Present Value of Free Cash Flow						\$3,195.8	\$2,532.7	\$2,053.7	\$1,857.6	\$1,680.2	

Enterprise Value	
Cumulative Present Value of FCF	\$11,319.9
Terminal Value	
Terminal Year EBITDA (2027E)	\$4,674.6
Exit Multiple	5.8x
Terminal Value	\$27,112.4
Discount Factor	0.53
Present Value of Terminal Value	\$14,297.5
% of Enterprise Value	55.8%
Enterprise Value	\$25,617.3

Implied Equity Value and Share Price	
Enterprise Value	\$25,617.3
Less: Total Debt	(3,515.8)
Less: Preferred Stock	-
Less: Noncontrolling Interest	-
Plus: Cash and Cash Equivalents	1,091.5
Implied Equity Value	\$23,193.1
Fully Diluted Shares Outstanding	590.0
Implied Share Price	\$39.31

Implied Perpetuity Growth Rate	
Terminal Year Free Cash Flow (2027E)	\$2,988.6
WACC	13.7%
Terminal Value	\$27,112.4
Implied Perpetuity Growth Rate	1.7%
Implied EV/EBITDA	
Enterprise Value	\$25,617.3
LTM 9/30/2022 EBITDA	3,564.3
Implied EV/EBITDA	7.2x

5.2. Trading Comps Valuation

Trading Comparables is a **relative valuation** method which examines market multiples to determine the price of a company

This method uses **public companies** of the same **peer group** as a point of reference to estimate Enterprise Value:

How to select a “peer group”?

1

Business Profile

- Industry
- Product mix
- Geography
- Business Model

2

Financial profile

- Size (market cap)
- Profitability
- Growth
- ROI / Credit Profile

5.1. Example Trading Comps

MENEM Inc is a **cardboard** company.

All the comparable companies in the table below are public cardboard companies of the same size. To value Menem we:

a) Sourced most used multiples, b) Selected median multiple EV/EBITDA 6.9x c) valued by multiplying Menem EBITDA by 6.9x

MENEM Inc

Comparable Companies Analysis

(€ millions, except per share data)

Company	Ticker	Current Share Price	Sales	Enterprise Value	EV / Sales	EV / EBITDA	EBITDA Margin %	Debt / EBITDA	P/E	EPS Mean	Div. Yield	FCF / Sales	FCF Yield
Tier III: Packaging & Cardboard Diversified													
Packaging Corp of America	PKG	149.75	8,478	16,224	1.91	8.79	21.7%	1.09	11.60	8.17	3.3%	2.8%	6.4%
International Paper Co	IP	34.24	21,161	17,694	0.84	6.78	12.3%	2.03	7.30	2.20	5.4%	5.6%	7.9%
Westrock Co	WRK	36.53	21,257	18,569	0.87	6.17	14.1%	2.97	8.55	2.93	3.0%	6.2%	8.9%
Graphic Packaging Holding Co	GPK	23.50	9,440	12,308	1.30	6.94	18.8%	2.96	13.19	2.85	1.7%	4.6%	9.2%
Sonoco Products Co	SON	55.58	7,251	8,581	1.18	7.57	15.6%	2.59	12.85	5.24	3.7%	3.2%	12.0%
Mean					1.2x	7.2x	16.5%	2.3x	10.7x	4.3x	3.4%	4.5%	8.9%
Median					1.2x	6.9x	15.6%	2.6x	11.6x	2.9x	3.3%	4.6%	8.9%

6. Bonds

Fixed income securities are financial claims with promised cash flows of fixed amount paid at fixed dates

The process of raising debt in the financial markets is very similar to an IPO

Major classes of fixed-income securities:

- Treasury: U.S. Treasuries, Bunds, JGBs, etc.;
- US Treasury Bonds: Bills (< 1 year), Notes (2, 3, 5 & 10 years), Bonds 20 or 30 years) & TIPS
- Federal agency (U.S.): FNMA, FHLMC, etc
- Municipal securities
- Corporate
- Mortgage backed and asset backed.

When a bond's value exceeds its face value, it sells at a premium. If price = face value it is traded at par, and if price < face value, then it is traded at a discount.

Let B_t denote the current price (time 0) of a discount bond maturing at t .

Prices of discount bonds provide information about spot interest rates:

$$B_t = \frac{1}{(1 + r_t)^t} \quad \text{or} \quad r_t = \frac{1}{B_t^{1/t}} - 1$$

Example – Bonos Duales Argentina

ARGDUO 4 1/2 02/13/20 \$↑64.915 -.304 64.053 / 65.777 .000 / .000
At 11:15 --X-- Source BVAL

ARGDUO 4 1/2 02/13/20 C Settings Actions Page 1/12 Security Description: Bond

94) No Notes 95) Buy 96) Sell

25) Bond Description

26) Issuer Description

Pages

11)Bond Info

12)Addtl Info

13)Reg/Tax

14)Covenants

15)Guarantors

16)Bond Ratings

17)Identifiers

18)Exchanges

19)Inv Parties

20)Fees, Restrict

21)Schedules

22)Coupons

Quick Links

32)ALLQ Pricing

33)QRD Qt Recap

34)TDH Trade Hist

35)CACs Corp Action

36)CF Prospectus

37)CN Sec News

38)HDS Holders

66)Send Bond

Issuer Information

Name

REPUBLIC OF ARGENTINA

Industry

Sovereign (BCLASS)

Security Information

Mkt Iss

Domestic

Dual Currency

Country

AR

Currency

USD

Rank

Sr Unsecured

Series

Coupon

4.500000

Type

Fixed

Cpn Freq

N/A

Day Cnt

ISMA-30/360

Iss Price

Maturity

02/13/2020

BULLET

Iss Sprd

Calc Type

(99)*NO CALCULATIONS*

Pricing Date

07/11/2018

Interest Accrual Date

07/13/2018

1st Settle Date

07/13/2018

1st Coupon Date

02/13/2020

Issued with a max payout of MAX(ARS 2.35% , USDARS + 4.5%). Rate in pesos is monthly compounded. Rate in USD is yearly basis. Initial FX rate is 27.5633

Identifiers

ID Number

AT5783127

ISIN

ARARGE320622

FIGI

BBG00LDV3N97

Bond Ratings

Moody's

NA

DBRS

SD

Composite

NR

Issuance & Trading

Amt Issued/Outstanding

USD1,638,000.00 (M) /

USD1,638,000.00 (M)

Min Piece/Increment

1.00 / 1.00

Par Amount

1.00

Book Runner

N/A

Exchange

Multiple

Example – Bond Prices



6.1. Bond Yield-to-Maturity

Bonds are **fixed-income** instruments: Expected cash flows are fixed (coupon rate x principal / # periods)

Yet, bond prices fluctuate in the market. Bond prices represent the present value of a bond.

When bond market prices fall, your return increases (you buy the same CFs cheaper)

$$\downarrow MV = \frac{C}{(1+\uparrow YTM)^1} + \frac{C}{(1+YTM)^2} + \frac{C}{(1+YTM)^3} + \dots + \frac{P}{(1+YTM)^n}$$

Inversely, an increase in market price, represents a decrease in YTM.

$$\uparrow MV = \frac{C}{(1+\downarrow YTM)^1} + \frac{C}{(1+YTM)^2} + \frac{C}{(1+YTM)^3} + \dots + \frac{P}{(1+YTM)^n}$$

6.2. Bond Risk Factors

You can decompose yield-to-maturity in 2 factors: a) risk-free rate b) credit spread (z-spread)

$$MV = \frac{C}{\underbrace{(1+YTM)^1}_{r+z}} + \frac{C}{(1+YTM)^2} + \frac{C}{(1+YTM)^3} + \dots + \frac{P}{(1+YTM)^n}$$

r = risk-free rate

z = credit spread

A part of the YTM of a bond represents a “Credit Spread” or premium paid to investors for the probability of default.

$$MV = \frac{C}{(1+r+z)^1} + \frac{C}{(1+r+z)^2} + \frac{C}{(1+r+z)^3} + \dots + \frac{P}{(1+r+z)^n}$$

6.3. Credit Risk Overview



6.4. Bonds Risk Factors

Relation between bond prices and risk factors is **inverse**

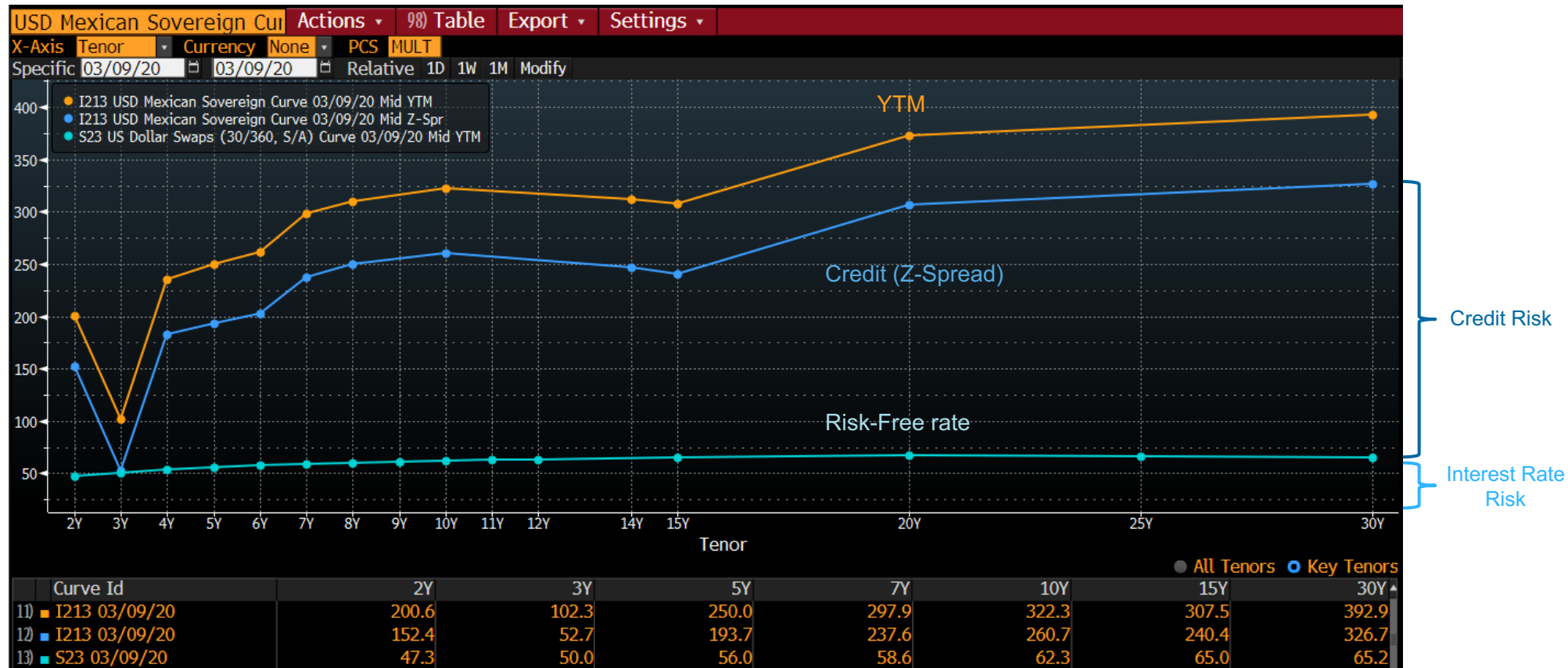
Higher risk-free rate (*higher r*), less **market value** (higher minimum return expected by investors)

$$\downarrow MV = \frac{C}{(1+\uparrow r+z)^1} + \frac{C}{(1+r+z)^2} + \frac{C}{(1+r+z)^3} + \dots + \frac{P}{(1+r+z)^n}$$

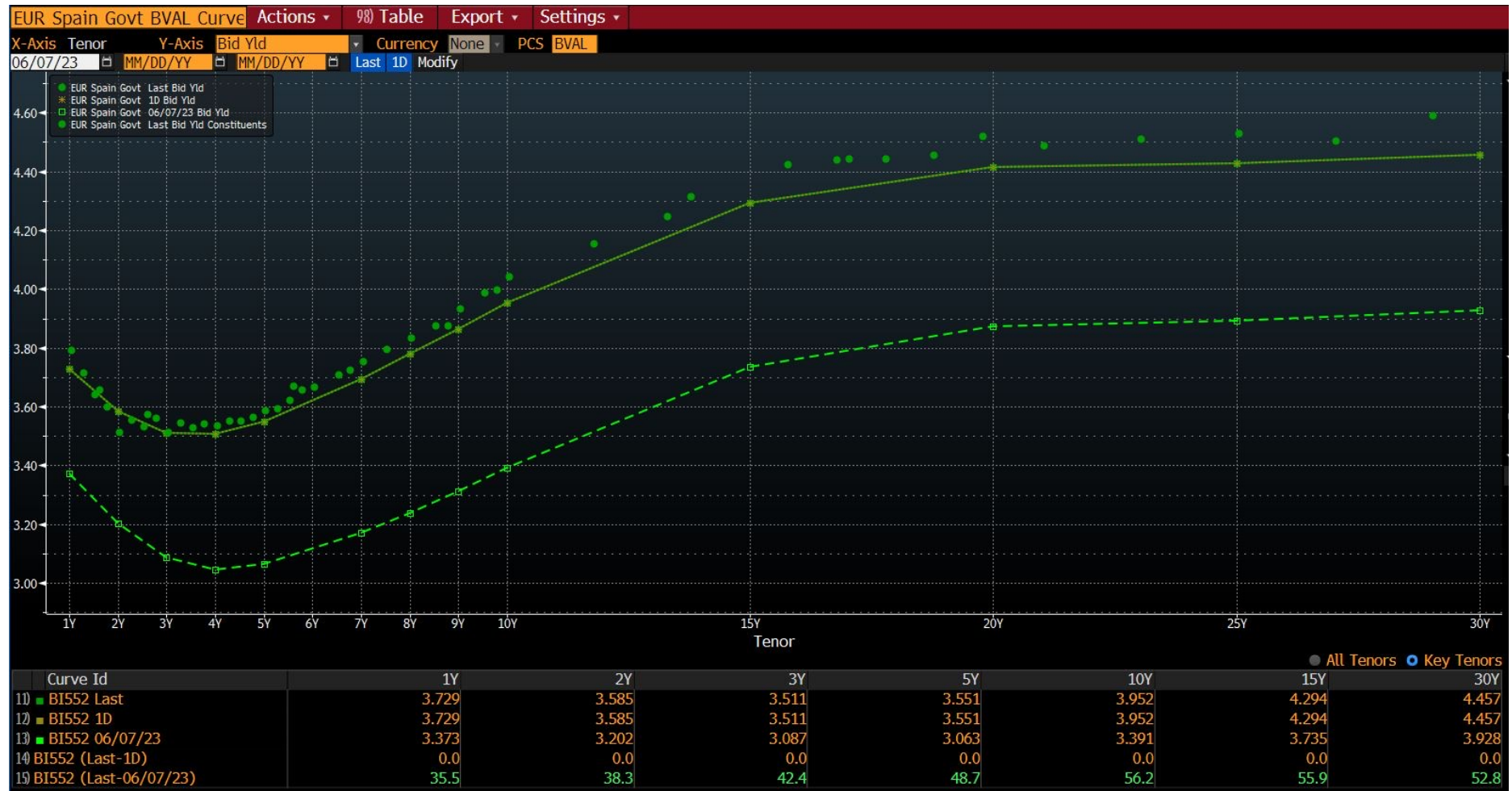
Higher credit risk (*higher Z*), less **market value** (higher probability of default)

$$\downarrow MV = \frac{C}{(1+r+\uparrow z)^1} + \frac{C}{(1+r+z)^2} + \frac{C}{(1+r+z)^3} + \dots + \frac{P}{(1+r+z)^n}$$

Example – Mexico USD Sovereign Bonds Curve

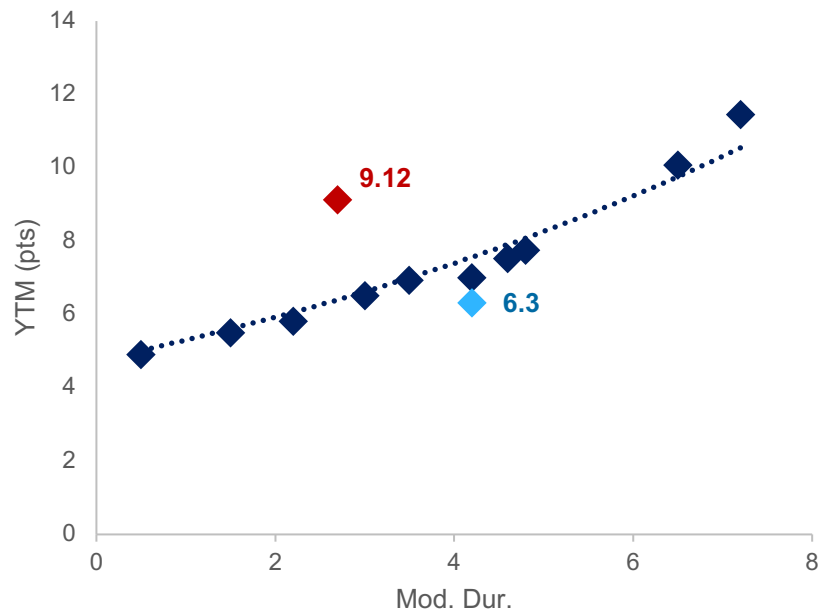


Example – Spain EUR Sovereign Bonds Curve

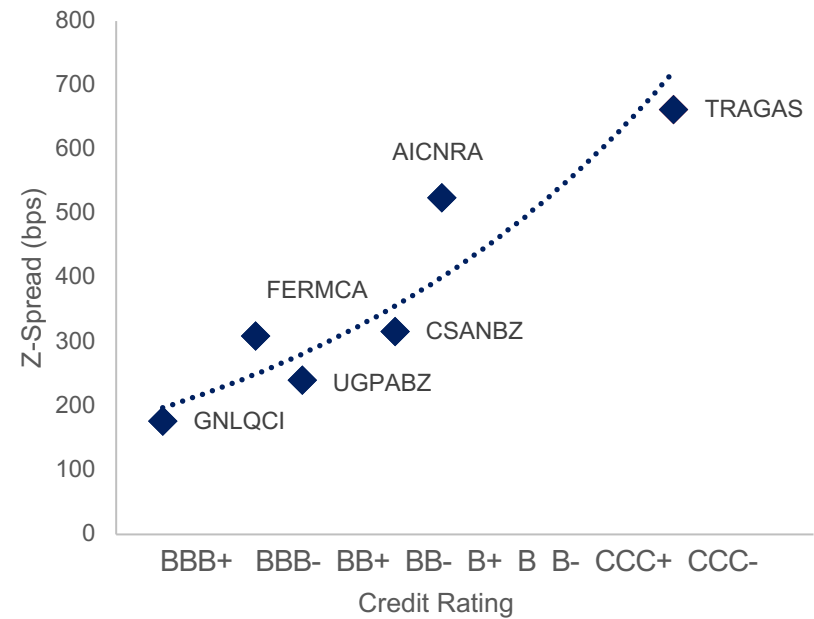


6.5. Bond Pricing, Arbitrage and Relative Value

LatAm USD Corp Bonds - Yield Curve



LatAm USD Midstream Corp Bonds - Credit Curve



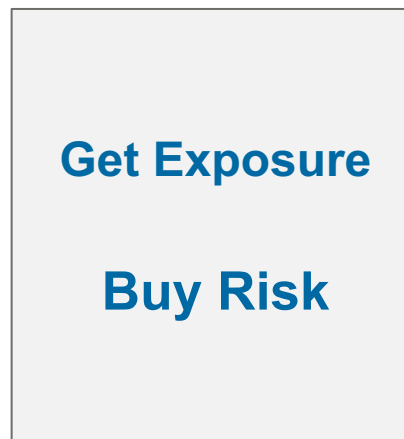
8. Derivatives

<< **Derivatives** are financial instruments used to **transfer risk** among counterparties >>



- **Reduce exposure** to a price change
- Need to have **certainty** on cash flows

i.e Corporations with fixed costs, commodities producers



- **Increase exposure** to a price change
- Ability to forecast price movements

i.e Hedge funds with flexible mandates, investors with a view of the future. Form future prices.



- Does NOT take risk
- Exploits differences in pricing

i.e Arbitrageurs, investment banks, market makers, etc

8.1 Derivatives – Forwards & Futures

A **forward** contract is a commitment to buy (sell) at a future date a given amount of a commodity or an asset at a price agreed on today.

- The price fixed now for future exchange is the forward price
- The buyer obtains a “long position” in the asset/commodity

Characteristics:

Traded OTC

Custom

No money changes hands until maturity

Full Flexibility

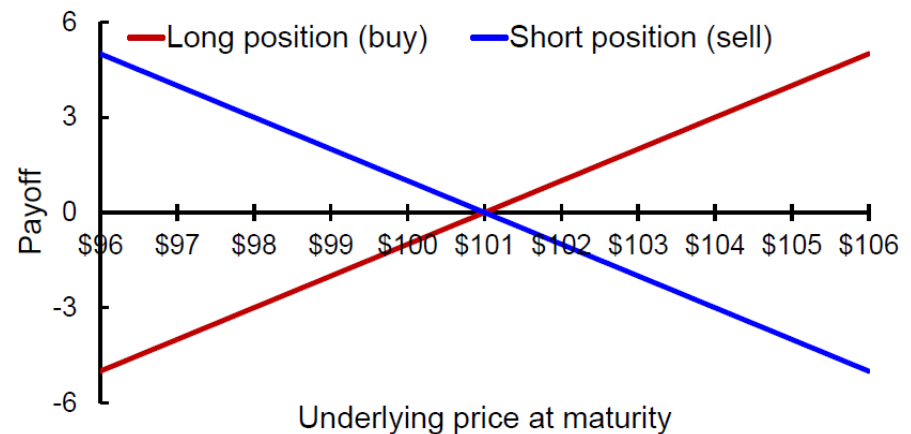
Cons:

Illiquidity

Counterparty risk

High collateral requirements

Payoffs are linear in underlying asset price: $S_T - F_T$.



Links: <https://www.investopedia.com/terms/f/forwardcontract.asp>

8.1 Derivatives – Forwards & Futures (cont.)

A **futures** contract is an exchange-traded, standardized, forward-like contract that is marked to market daily.

Standardized contracts:

- Underlying commodity or asset,
- Quantity,
- Maturity.

Settlement: physical delivery or cash.

Characteristics:

Traded on exchanges

Guaranteed by the *clearing house* – little counter-party risk

Gain/losses settled daily – marked to market

Margin account required as collateral to cover losses



Links: <https://www.investopedia.com/terms/f/futurescontract.asp>

8.1 Derivatives – Forwards & Futures (cont.)

Mark to market: a forward contract

Buyer



Seller



December 12: enter into a forward contract on gold.
Forward price: \$500/oz



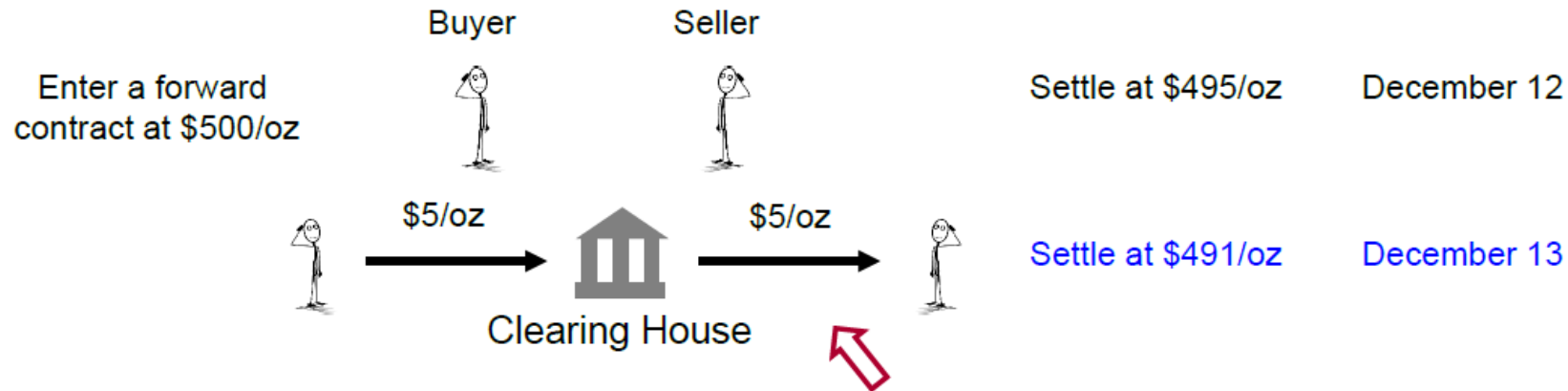
\$500/oz
→
←
1,000 oz
of gold



December 15: settlement

8.1 Derivatives – Forwards & Futures (cont.)

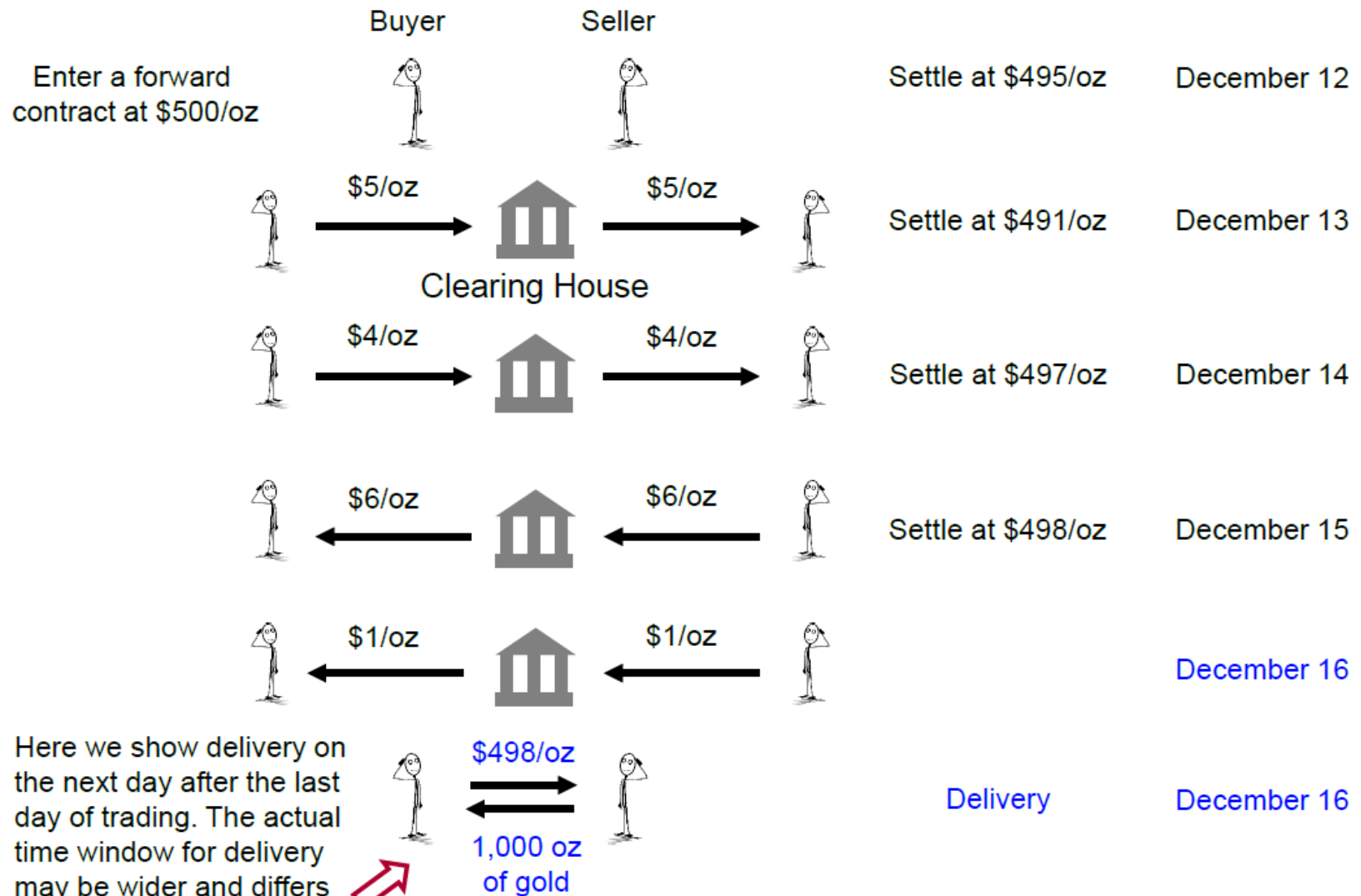
Mark to market: a futures contract



\$5 = \$500 - \$495: settle gains/losses for 12/12.
 This is the timing convention we use in our example. It is also common to assume that \$5 gain/loss occurs immediately when market closes on 12/12 – that's an alternative timing assumption.

8.1 Derivatives – Forwards & Futures (cont.)

Mark to market: a futures contract



8. Options

- Option types:
 - **Call:** The right to buy an asset (the **underlying asset**) for a given price (**strike price, or exercise price**) on or before a given date (**expiration date, or maturity date**).
 - **Put:** The right to sell an asset for a given price on or before the expiration date.

- Exercise styles:
 - **European:** Owner can exercise the option only on expiration date.
 - **American:** Owner can exercise the option on or before expiration date.

Link: <https://www.investopedia.com/terms/o/option.asp>

8. Long Call & Long Put

<< A **CALL** option gives you the **RIGHT to BUY** an asset (underlying, S) at an agreed price (strike, K) during a specific period of time (before expiration)>>

You have **positive PnL** if the price of the **underlying rises** above the strike price

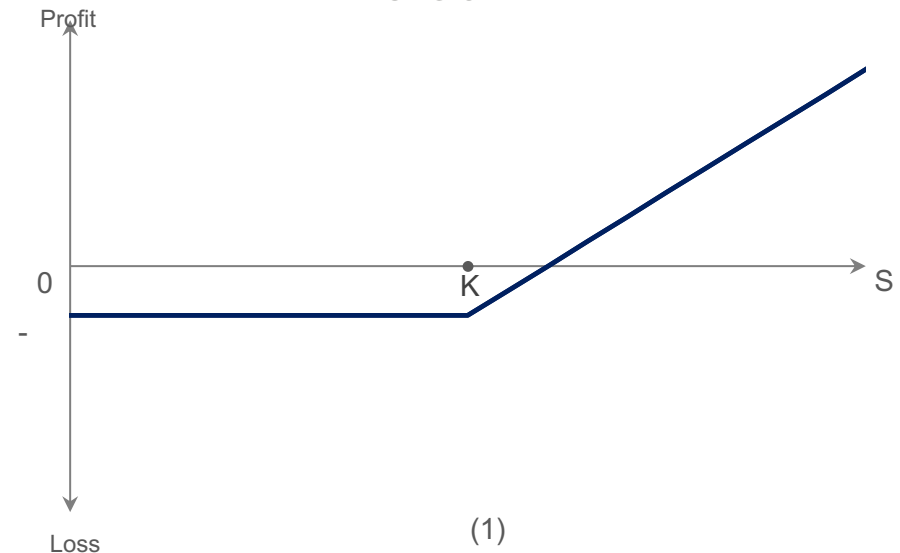
If you are Long a Call, you have **limited downside risk** (max loss = C) and **unlimited upside** (S can rise until infinite)

<< A **PUT** option gives you the **RIGHT to SELL** an asset (underlying, S) at an agreed price (strike, K) during a specific period of time (before expiration)>>

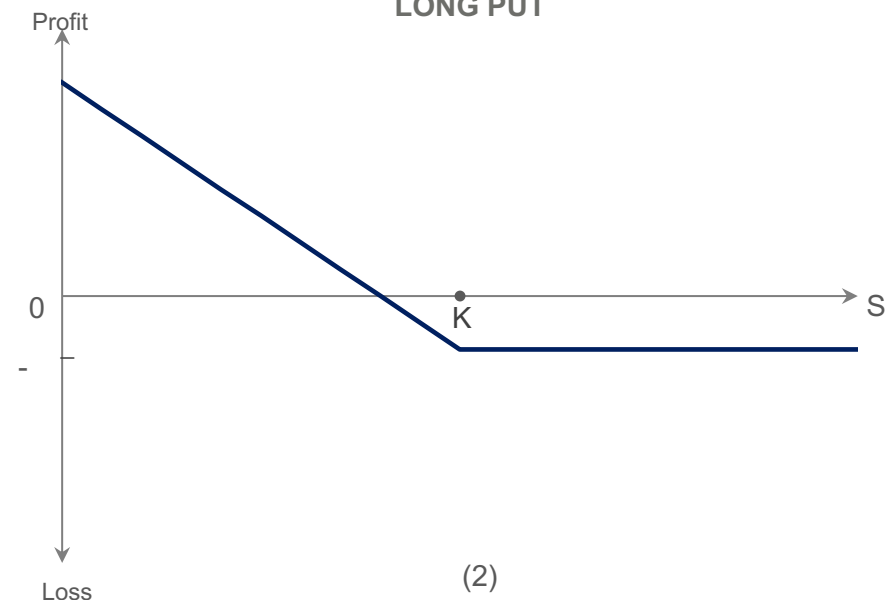
You have **positive PnL** if the **price** of the underlying **falls** below the strike price

If you are Long a Put, you have **limited downside risk** (max loss = P) and **limited upside** (max PnL when underlying = 0)

LONG CALL



LONG PUT



8. Black-Scholes Model

Black-Scholes model is a widely used to value options.

The model assumes: a) no dividends are paid, b) markets are random, c) there are no transaction costs, d) risk free rate and volatility are known and constant, e) call option priced is european and exercised at expiration

$$C = S N(d_1) - X e^{-rt} N(d_2)$$

$$d_1 = \frac{\ln\left(\frac{S}{X}\right) + \left(r + \frac{\sigma^2}{2}\right) t}{\sigma \sqrt{t}}$$

$$d_2 = d_1 - \sigma \sqrt{t}$$

References

C= call-option value

S= underlying asset spot price

X= Precio de ejercicio

r = risk free rate

t = time to expiration

N(.)= normal accumulative function

σ = underlying asset returns volatility



¡MUCHAS GRACIAS!

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