Econ 4905
Financial Fragility and the Macroeconomy

Credit Instruments – Part 2

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Agenda

1. OTC vs. ETD Derivatives
2. Forwards, Futures, Options, and Swaps

DERIVATIVES

- A **derivative** is a type of security; it is a contract between parties whose price is derived from the value of at least one underlying asset.

- Underlying assets: **stocks, bonds, currencies, commodities, interest rates and market indices.**

Derivatives can be traded either Over-The-Counter or on an Exchange:

Over-the-counter (OTC)	Exchange traded derivatives (ETD)
Also known as off-exchange trading, OTC trading does not require an exchange.	Standardized derivative contracts traded through an organized futures exchange.
Typically riskier than ETD's due to counterparty risk.	Require a margin payment later settled through a clearing house.
Forwards and swaps are typically traded OTC.	Futures and options are typically traded on an exchange.

Over-The-Counter (OTC)

- Securities that are traded **Over-The-Counter** are any securities that are not traded on an official exchange such as the NYSE.
- The reason companies trade OTC securities is usually because the company is too small to meet **listing requirements** for exchanges.
- These "unlisted stocks" are usually traded through brokers who create "markets" by phone or online, via the **Over-The-Counter Bulletin Board (OTCBB)**, or on **pink sheets**.
- Because most debt instruments (i.e. bonds) are traded through the banks they are offered from and not on an exchange, they are also considered OTC.

The OTC Market

- OTC markets created by dealers primarily trade debt securities, derivatives, and currencies, but they can also sell equities.
- OTC markets that sell equities: **OTCQB**, **OTCQX**, and **OTC Pink**.
- There are two main types of OTC markets:
  - **Customer Markets**: dealers trade with their clients (i.e. institutions and corporations).
  - **Interdealer Markets**: dealers trade with each other.
- The bid-ask spread in the Customer Market is generally much larger than that in the Interdealer Market.

OTC MARKETS GROUP INC.

- Established in 1993, **OTC Markets Group Inc.** replaced the National Quotation Bureau as the owner of the U.S. OTC trading structure
- Overseeing the exchange of over 10,000 OTC securities, OTC Markets Group Inc. is the third largest equity trading platform in the U.S.
- OTC Markets Group not only provides the trading platforms, but also provides market information and other issuer services.
- Because it handles exclusively risky OTC securities, and in an attempt to increase transparency and efficiency, the OTC Markets Group Inc. divides the securities it offers into three risk categories, creating three tiers based on availability of the company's financial information.
- 3 tiers, in increasing order of riskiness: **OTCQX**, **OTCQB**, and **OTC Pink**

OTCQX

- The uppermost tier in the OTC marketplace, the **OTCQX** offers the OTC securities of the most stable/least risky companies.

- The regulations for the OTCQX are the strictest among the three tiers:
  - Companies on this forum must uphold high financial standards, present current and consistently updated disclosure statements, and prove sponsorship by an authorized third-party advisor, all of which are in place to ensure against risk for customers.

- Many foreign/domestic blue chip stocks are traded on the OTCQX.
  - Benefits for such companies: fees are low, as well as the potential for eligibility for the **OTCQX Premier Tier** (U.S. companies), or the **International Premier** (international companies).

OTCQB

- The middle tier in the OTC marketplace, the **OTCQB** offers a "venture stage" for OTC securities of small and/or new companies.
- The OTCQB requires their companies to be regulated by either the SEC or the FDC.
- Unlike the OTCQX, with no minimum financial standards, the OTCQB is the most frequently used marketplace for OTC securities of small companies (both foreign and domestic), as well we penny stocks.
- As do all of the OTC tiers, OTCQB trades through the platform of the **OTC Link**, operated by OTC Markets Group Inc. and registered with the SEC as an authorized broker-dealer under the category of **Alternative Trading Systems (ATS)**.

OTC PINK

- The lowest tier in the OTC marketplace, **OTC Pink** offers OTC securities from companies in any financial standing, including default and panic, and for obvious reasons is the most risky forum.

- Due to the extremely high levels of associated risk, in an attempt to mitigate the potential for disaster, the OTC Markets Group Inc. separates companies in this tier into three main categories: companies with **Current Information**, **Limited Information**, and **No Information**.

- The **National Quotation Bureau** publishes **Pink Sheets**, providing information about OTC stocks, and **Yellow Sheets**, providing information about OTC corporate bonds.

Listing Requirements

- Companies would rather offer their stocks on an exchange (and not Over-The-Counter) must meet certain **listing requirements**.
- Different stock exchanges, have different listing requirements, most of which are very strict and often expensive to maintain.
- Though requirements vary, the two most important categories are:
  - **Company Size**: Defined either by Annual Income or Market Cap.
  - **Share Liquidity**: A certain proportion of authorized shares must already have been issued.
- Ex: the NYSE requires public companies to have at least 1.1 million shares outstanding valued at over $100 million.

Exchange Traded Derivatives

- An **exchange** is a regulated marketplace for authorized securities and derivatives that ensures "fair and orderly" trading, as well as high levels of transparency in regard to pricing and other information.
- Some examples of the most popular exchanges around the globe include the **New York Stock Exchange (NYSE)** and the **NASDAQ**.
- **Exchange Traded Derivatives (ETDs)** are derivatives that are traded on an exchange.
- Some advantages of ETDs over OTC securities include but are not limited to: **liquidity**, **standardization**, and mitigated **default risk**.
  - ETDs are exceptionally popular among **retail investors** (individual investors with personal accounts).

Benefits Of ETDs

STANDARDIZATION

- Unlike the OTC marketplace, exchanges standardize each individual derivative, specifying price, quantity, and individual contract size.

LIQUIDITY

- Exchanges set a minimum and maximum liquidity level for each derivative, in an attempt to allow for a consistent availability of the derivative without causing price spikes.

ELIMINATION OF DEFAULT RISK

- In the event that the derivative's **counterparty** defaults, the exchange acts as a replacement counterparty, ensuring that every buyer has a guaranteed seller, and vice versa.

Limitations of ETDs

- The exact features of ETDs that are benefits to small investors are limitations for large investors.
- **Standardized contracts** are unattractive to large investors who wish to trade large quantities of ETDs at one time, as they limit both quantity and quality of the derivative, decreasing **notional value**.
  - **Notional value** includes leverage value in its calculation of the derivative's total value.
- High levels of transparency (which ensures security for small investors), turn off some large investors who wish to keep their intentions private.
- The **Mark-To-Market** feature of ETDs requires a daily price update, which could be disastrous to investors who paid a large **margin**.

Why do derivatives exist?

- **Hedging:** Derivatives are mainly used by corporations to insure or protect against the risk of an asset. They act as a vehicle to hedge against unwanted risks.

- **Leverage:** It refers to techniques which can be used to multiply gains or losses. Derivatives are particularly volatile securities and as a result, leverage is greatly enhanced by derivatives. Options are particularly profitable in a volatile market and the movement of the price of an underlying asset in a favorable direction magnifies the movement of the option.

- **Speculation:** Betting on future prices of an asset to make gains

Forwards Contract

- Commitment to purchase a given amount of a commodity or an asset at a date in the future but at a price agreed upon today
- The price fixed now for the future exchange is called the **forward price**
- In the case, the buyer is said to be assuming a 'long' position in the asset/commodity

Features of a forward contract

- Traded over-the-counter (OTC)
- Customized contracts (more flexible than futures)
- No exchange of money until the maturity period
- Subject to counter-party risk

Examples of forwards contract

- Consider a 3-month forward contract for 1000 tons of tofu at a forward price of $500 per ton.
- In this case, we say that the long side is committed 1000 tons of tofu from the short side 3-months from now at a price of $500/ton.

Buyer A Seller B

Agree to forward price of $500/ton

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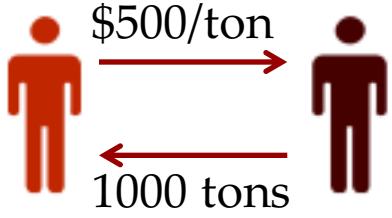

Buyer A Seller B

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Risks associated with forwards contract

- The two limitations that are associated with a forward contract are:
  - Liquidity risk: risk that a purchased item will be difficult to resell. Buyers of forward contracts can encounter liquidity risk, as the purchase price agreed on in the contract may differ from the market price at the time of purchase.
  - Counter-party risk: risk of the counter-party in a derivative transaction will default before the maturity date of the trade. As a result, the party will be unable to make the current and future payments associated with the trade.

Futures Contract

- It is an exchange-traded, standardized, forward like contract, that is marked to market daily.
- Unlike a forward contract, this contract can be used to establish a long or short position in the underlying asset or commodity.
- A futures contract helps eliminate both liquidity and counter-party risks. Unlike a forward contract, it is guaranteed by a clearing house.

Features of future contract

- It is a standardized contract
  - Underlying commodity/asset
  - Quantity
  - Maturity
- These contracts are exchange traded (lower risk, higher regulation)
- Able to reduce counter-party risk as they are guaranteed by a clearing house
- Require an initial margin (small percentage of contract size as collateral to cover losses)

Examples of futures contract

NYMEX crude oil (light) futures with delivery in Dec. 2007 at a price of $75.06 / bbl. on July 27, 2007 with 51,475 contracts traded

- Each contract is for 1,000 barrels
- Tick size: $0.01 per barrel, $10 per contract
- Initial margin: $4,050
- Maintenance margin: $3,000
- No cash changes hands today (contract price is $0)
- Buyer has a “long” position (wins if prices go up)
- Seller has a “short” position (wins if prices go down)

*Source: Forward and Futures Contract, MIT Sloan Program

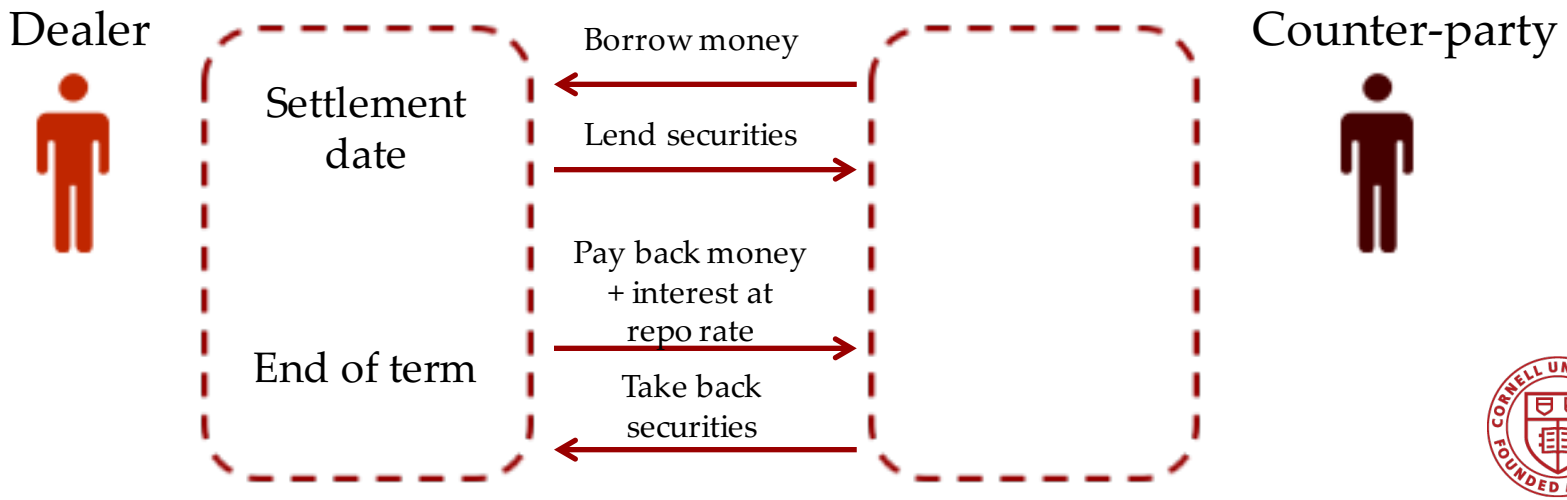
Comparing forward and future contracts

- Why is this contract superior to a forward contract?
  - Standardization makes futures liquid
  - Margin and marking to market reduce default risk
  - Clearing-house guarantee reduces counter-party risk

Repos- a type of forward contract

- Repo can be defined as an agreement in which one party sells securities or other assets to a counterparty, and simultaneously commits to repurchase the same or similar assets from the counterparty, at an agreed future date or on demand, at a repurchase price equal to the original sale price plus a return on the use of the sale proceeds during the term of the repo.

- A repo is essentially a loan secured against a collateral. However, repo collateral is not pledged but sold and then repurchased at maturity



Repurchase agreement vs. buy/sell-backs

- Repurchase agreements and buy/sell-backs share the same basic legal and operational mechanisms (i.e. selling of an asset along with a commitment by the seller to repurchase those assets at a later date)
- However, some important differences exist between the two:
  - Repurchase agreements are always documented while traditional buy/sell-backs are not
  - Two legs of a repurchase agreement are part of a single legal contract whereas two legs of a traditional buy/sell-back agreement are implicitly separate contracts
  - There also exists a number of legal and operational drawbacks of undocumented buy/sell-backs as compared to repo agreements

General Collateral Repo

General Collateral or GC repo

- GC repo is a collateralized transaction that is driven by the need to borrow or lend cash.
- This implies that the buyer does not insist on the seller providing a particular securities issue as collateral, but he/she will accept any of a range of similar quality issues.
- In this case, the buyer has a 'general' requirement for collateral and the seller has some choice about precisely which securities to deliver. This type forms the majority of repo transactions
- Compared to other means of borrowing or lending, GC repo is an alternative to unsecured money market instruments such as deposits and Commercial Paper (CP)

Specials

- Sometimes, buyers seek a specific security as collateral in the repo market. In order to get the desired security, buyers try to offer cheaper cash to the seller and as a result, the repo rate for a security in demand is forced below the GC repo rate
- When this divergence of repo rates becomes apparent, the security concerned is said to have 'gone on special'.
- When compared to the GC repo rate, the repo rate on a 'special' represents an opportunity cost for the buyer because he/she chooses to sacrifice interest on cash in order to acquire a particular security

Alternative types of collateral

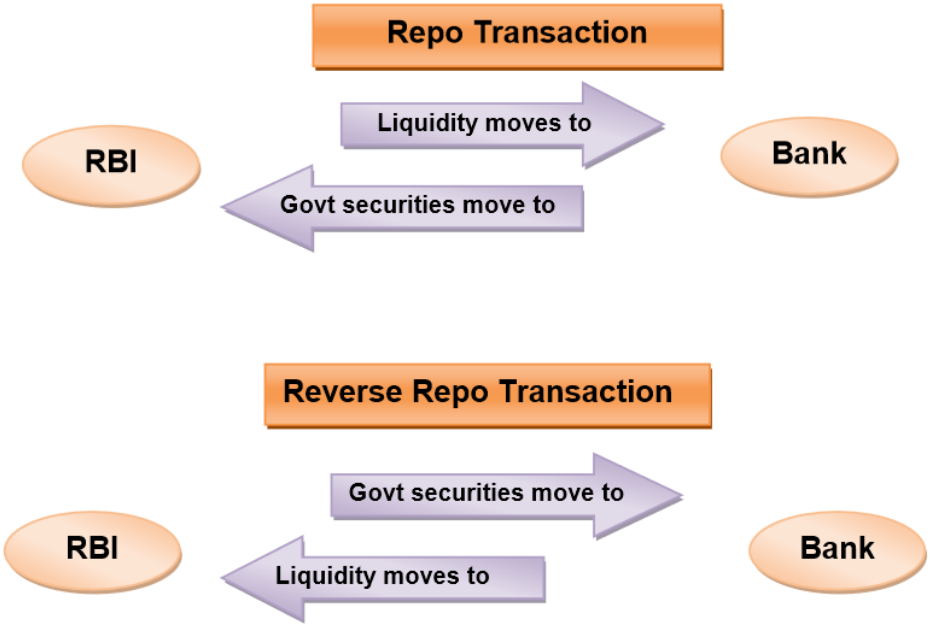
- **Credit repo:** Mortgage backed securities, asset backed securities and collateralized debt obligations are all types of credit repo. MBSs, ABSs and structured credit securities can serve as good collateral, if they are secured against high-quality underlying assets.

- **Equity repo**: This is largely in securities that are included in the main equity indices. However, equity poses several challenges when used as collateral such as lack of equity valuation models, increased credit and liquidity risk when compared to fixed income securities, etc.

- **Emerging market repo**: This refers to repos on emerging market instruments. Defining this type of repo is tough because emerging market indices are distorted, as their composition is dictated by the availability of securities from emerging market issuers. However, they provide access to a new class of credit risk for reasons of portfolio diversification by investor. Thus, they usually have higher yields compared to developed markets.

Reverse repo

- A reverse repurchase agreement is the purchase of securities with the agreement to sell them at a higher price at a specific future date.
- For the party selling the security (and agreeing to repurchase it in the future) it is a repo; for the party on the other end of the transaction (buying the security and agreeing to sell in the future) it is a reverse repurchase agreement.



Swaps

- A **swap** is an agreement between two or more parties to exchange one or more cash flows for some predetermined intervals of time.
- A swap's value is based on the uncertain value of an underlying asset.
  - Underlying assets could be interest rates, foreign exchange rates, stock, bond, and commodity prices. Different underlying assets comprise different derivatives.
- A swap is essentially a portfolio made of some **long position forwards contracts** and some **short position forwards contracts**.
- Swaps are traded **OTC**, allowing for potential default risk. As a result, very few individuals invest in swaps; most swaps are owned by firms.

Types of Swaps

1. **Plain Vanilla Interest Rate Swaps**
2. Plain Vanilla Foreign Currency Swaps
3. Commodity Swaps
4. Total Return Swaps
5. Other Types of Fixed-For-Floating Swaps

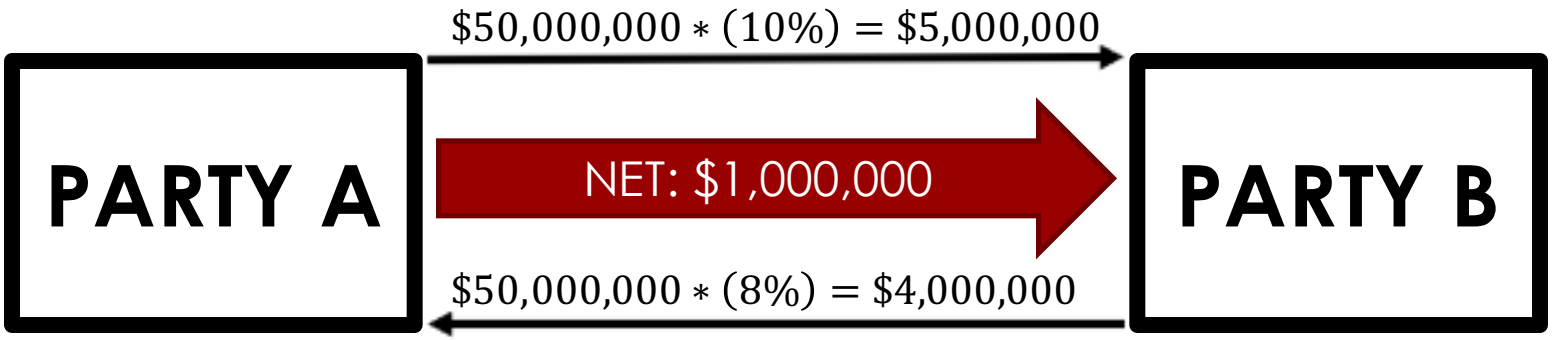
1. Plain Vanilla Interest Rate Swaps

- A basic **Fixed-For-Floating Swap**: one fixed interest rate, one floating.
- At the time of purchase, two parties agree to several terms:
  - **Party A** pays a **fixed** interest rate
  - **Party B** pays a **floating** interest rate
    - **Floating Interest Rates** are often based on the **London Interbank Offer Rate (LIBOR)**.
  - On a fixed principal amount
    - **Notional Principal** implies that the principal itself does not change hands.
  - To be paid at fixed dates (**Settlement Dates**)
    - Settlement Dates may be annual, quarterly, or any other length of time.
  - For a fixed length of time (**Settlement Period**)

EXAMPLE #1: Interest Rate Swaps

- **Purchase Date:** December 31st, 2015
- **Principal Amount:** $50 million
- **Settlement Dates:** annual; **Settlement Period:** 5 years
- **Party A Fixed Interest Rate:** 10%
- **Party B Floating Interest Rate:** one-year LIBOR +2%; was 6% (+2 = 8%)

At the end of one year:



Types of Swaps

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2. Plain Vanilla Currency Swaps

- Fixed **settlement period**

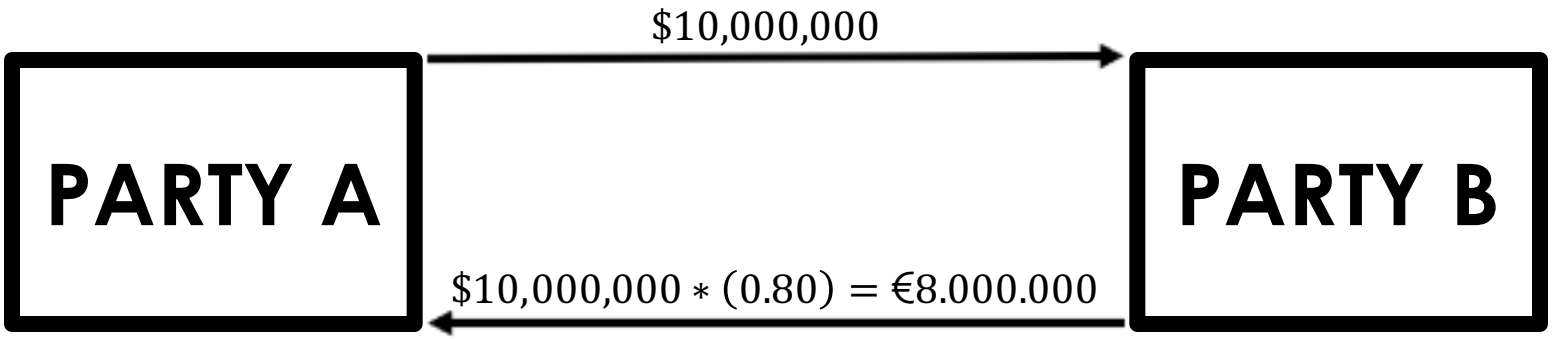
- STEP ONE: Two fixed **principal amounts**, different for each party(based on the relative value of their respective country's currency), paid at the initial time of purchase.
  - Parties swap currencies because they need to operate in the opposite currency, which is why the first step is a direct currency exchange based only on current exchange rates.

- STEP TWO: Fixed **settlement dates** at which each party will pay **interest payments** on their respective principal amounts, based on:
  - An interest rate for Party A in Currency B
  - An interest rate for Party B in Currency A

EXAMPLE # 2: Currency Swaps

STEP ONE: PRINCIPLE PAYMENT

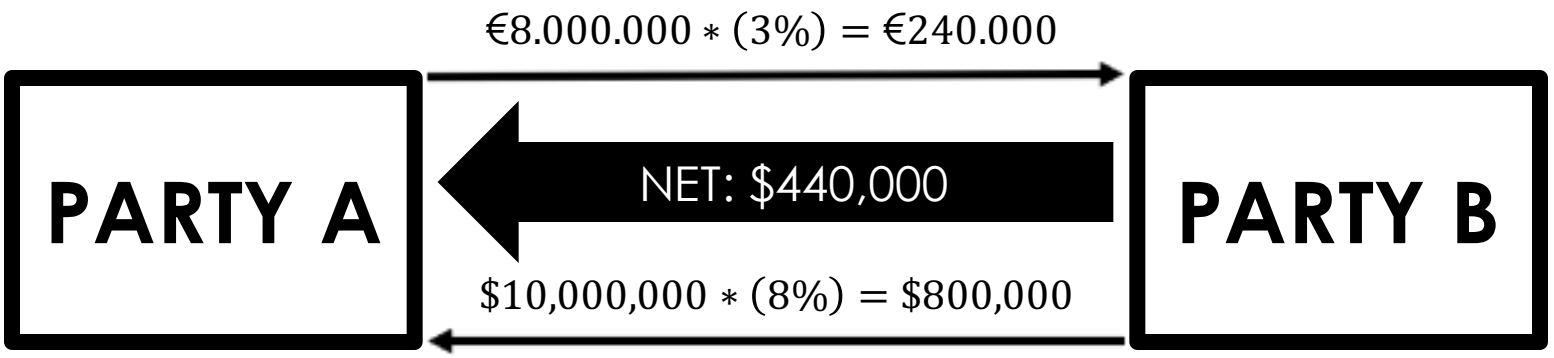
- **Purchase Date:** December 31st, 2015
- **Swap Total Principal:** $10,000,000
- **Party A Currency:** Dollars ($); **Party B Currency:** Euros (€)
- **Exchange Rate** (on purchase date): € 0,80 = $1.00
- **Principal Payment A:** $10,000,000; **Principal Payment B:** € 8.000.000



EXAMPLE # 2: Currency Swaps

STEP TWO: ANNUAL INTEREST PAYMENT (cont'd)

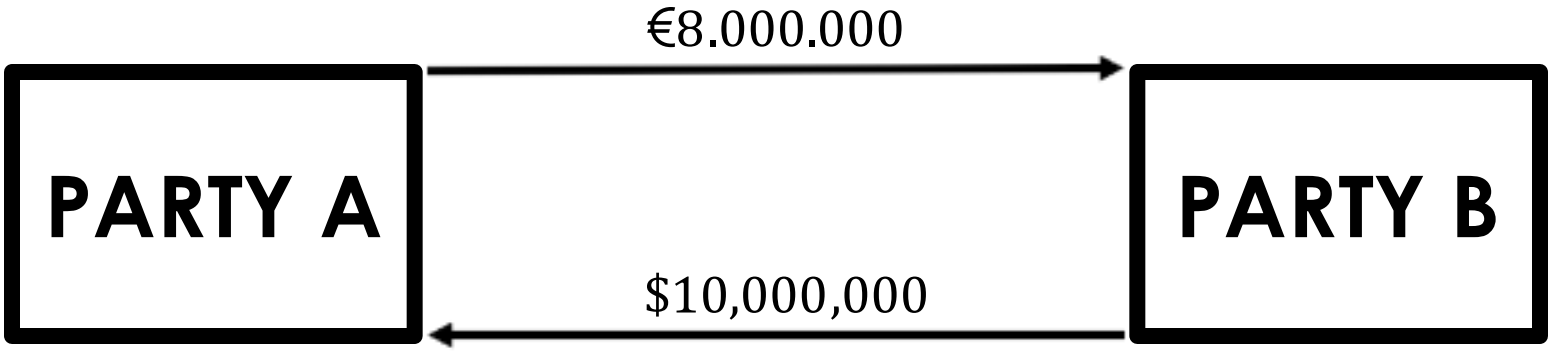
- **Net Payment**: based on exchange rate at time of interest payment.
- **Interest Rate** on December 31st, 2016: €1,00 = $1.50
- Convert both payments to the same currency:
  - **Conversion**: $€240.000 * (1.50) = \$360{,}000$
  - **Net Payment**: $\$800{,}000 - \$360{,}000 = \$440{,}000$



EXAMPLE # 2: Currency Swaps

STEP THREE: REPAYMENT OF PRINCIPAL AMOUNT

- After the settlement period, each party repays the original principal amount in full, unaffected by interest rates.
- **Settlement Period:** 5 years
- **Party A Currency:** Dollars ($); **Party B Currency:** Euros (€)
- **Principal Payment A:** $10,000,000; **Principal Payment B:** € 8.000.000



Types of Swaps

1. Plain Vanilla Interest Rate Swaps
2. Plain Vanilla Foreign Currency Swaps
3. **Commodity Swaps**
4. Total Return Swaps
5. Other Types of Fixed-For-Floating Swaps

3. Commodity Swaps

- A swap in which the underlying asset is the price of a commodity.
- Primarily used to hedge against the price of a commodity, the majority of commodity swaps involve oil.
- If an industrial company uses a lot of oil, there is a potential risk in the fluctuating oil prices. To secure their price, the company may purchase a commodity swap against the price of oil, granting them interest payments based on the market price of oil.

Types of Swaps

1. Plain Vanilla Interest Rate Swaps
2. Plain Vanilla Foreign Currency Swaps
3. Commodity Swaps
4. **Total Return Swaps**
5. Other Types of Fixed-For-Floating Swaps

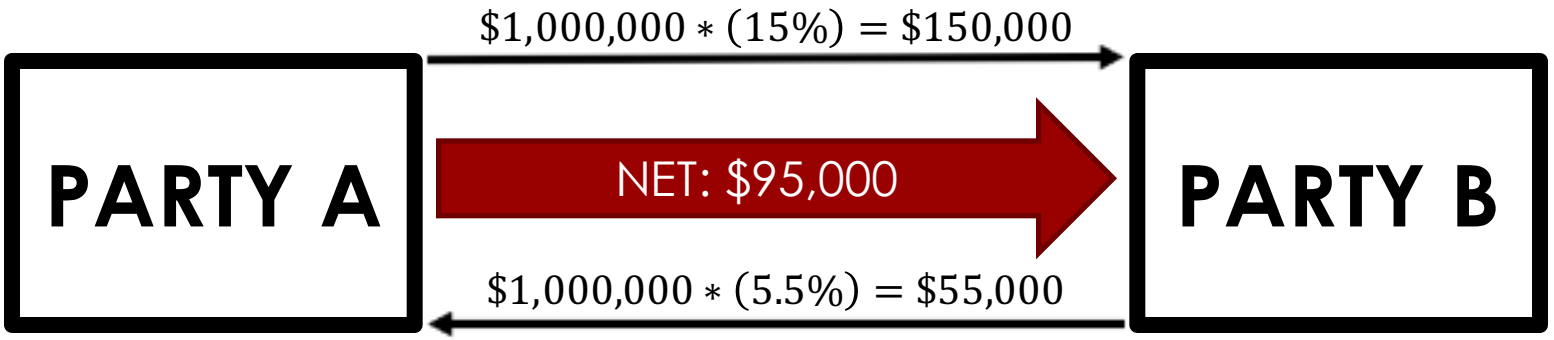
4. Total Return Swaps

- **Total Return Swaps** are swap agreements in which one party makes payments based on a set interest rate (either fixed or floating), while the other party makes interest payments based on the return of an underlying asset, including both the income it earns as well as any capital gains or losses.
  - The underlying asset used by the second party is known as the **reference asset**.
- Primarily used by hedge funds, total return swaps allow owners to reap the benefits of the reference asset without expending a large amount of cash.
- When agreeing on a total return swap contract, two parties set the following:
  - **Interest Rate for Party A**, **Reference Asset for Party B**, a **principal amount**, **settlement dates**, and a **settlement period**.

EXAMPLE #3: Total Return Swaps

- **Purchase Date:** December 31st, 2015
- **Principal Amount:** $1,000,000
- **Settlement Dates:** annual; **Settlement Period:** 1 year
- **Party A Fixed Interest Rate:** 5.5%
- **Reference Asset for Party B:** Total Return for the S&P 500 = appreciates 15%

At the end of one year:



Types of Swaps

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Other Types of Fixed-For-Floating Swaps

BOND MARKET ASSOCIATION (BMA) SWAPS

- A **Bond Market Association Swap (BMA)** allows two parties, (one with a fixed rate and one floating), to exchange bond interest rates. The floating interest rate in this type of a swap is determined by the bond market association's swap index.

DELAYED RATE SETTING SWAPS

- Also known as a "spread lock," a **Delayed Rate Setting Swap** implies that the spread between two rates (one fixed and one floating) is predetermined, but the actual interest rates are not set until the settlement period is over. An investor chooses this swap if he/she believes the rate will change in their favor, but wishes to take advantage of the current spread.

Why Swaps?

- **Commercial Needs**: Company A, based in the United States, is looking to purchase supplies from a company in Europe.
- In order to complete this purchase, Company A needs two things:
  - Euros to pay the European company in
  - To ensure against the risk associated with a fluctuating exchange rate.
  - Both of these needs can be solved through swaps.
- **Comparative Advantage:** Company A, based in the United States, wishes to benefit from a favorable exchange rate between the Euro and the Dollar by expanding its business into Europe.

Exiting a Swap Agreement

1. **Counterparty Buyout:** At any given time during the life of a swap, it has a calculable market value. *If both parties agree* to it, one party may pay the other this value in order to exit the swap.

2. **Purchasing a Reverse Swap:** A company may purchase a **reverse swap** based on the current market value, offsetting the terms of the original swap.

3. **Sell the Swap:** Swaps can be sold on a market to other investors based on its current market value, given both parties consent.

4. **Swaptions:** Similar to an option, this would set up the opportunity for an offsetting swap for the party without the obligation to purchase it, mitigating risk.

Optional Swap Features

- **Reversible Swap:** allows one party to use a swaption to switch the roles of each party – the party paying fixed rates now receives floating ones, and vice versa.
- **Callable Swap:** allows the party paying the fixed rate (and receiving the floating rate) to exit the swap early; usually accompanied by an early termination fee.
- **Putable Swap:** allows the party paying the floating rate to exit the swap early.
- **Extendable Swap:** allows the party paying the fixed rate (and receiving the floating rate) to extend the length of the swap, if for example interest rates are rising and they wish to continue paying their current, lower rates.
- **Bilateral Netting:** consolidates multiple swaps between parties into one.

Options

- An extremely versatile and customizable security, **options** give investors the *opportunity* to purchase an underlying an asset, but does *not require* them to do so.

- Two Main Types of Options:
  - **Calls**: options that give investors the opportunity to ***buy*** the underlying asset. Similar to investors with ***long*** positions on stocks, owners of calls hope the price will ***increase*** after the purchase date.
  - **Puts**: options that give investors the opportunity to ***sell*** the underlying asset. Similar to investors with ***short*** positions on stocks, owners of puts hope the price will ***decrease*** after the purchase date.

Going Long or Short

- **Long Call**: A trader who expects a stock's price to increase can buy a call option to purchase the stock at a fixed price ("strike price") at a later date, rather than purchase the stock outright. The trader would have no obligation to buy the stock, but only has the right to do so at or before the expiration date.
- **Long Put:** A trader who expects a stock's price to decrease can buy a put option to sell the stock at a fixed price ("strike price") at a later date. The trader will be under no obligation to sell the stock, but only has the right to do so at or before the expiration date.

Going Long or Short (contd.)

- **Short Call:** A trader who expects a stock's price to decrease can sell the stock short or instead sell, or "write", a call. The trader selling a call has an obligation to sell the stock to the call buyer at a fixed price ("strike price"). If the seller does not own the stock when the option is exercised, he is obligated to purchase the stock from the market at the then market price.

- **Short Put:** A trader who expects a stock's price to increase can buy the stock or instead sell, or "write", a put. The trader selling a put has an obligation to buy the stock from the put buyer at a fixed price ("strike price").

Options Holders and Writers

- Individuals who **buy** options are called **holders**. There are two types of holders:
  1. Call Holders
  2. Put Holders
  - Holders have the opportunity to call (buy) or put (sell) the asset, but are not required to do so.
- Individuals who **sell** options are called **writers**. There are two types of writers:
  1. Call Writers
  2. Put Writers
  - Writers are required to either call (buy) or put (sell).

Options

- When an options contract is established, the **strike price** is the price at which the underlying asset can be bought or sold.
- If it is a call option, the stock price must go *above* the strike price in order for the option to be lucrative. If it is a put option, the stock price must fall *below* the strike price in order for the option to be lucrative. If either scenario happens, the option is said to be "in-the-money." If neither happen before the **expiration date**, the owner does not make any money off of the option.
- The option **premium**, (purchase/sale price), is determined by the price of the underlying asset, the strike price, the expiration date, and other risk factors.

EXAMPLE #4: Plain Vanilla Options

- **Purchase Date**: January 1st, 2015
  - **Expiration Date**: February 1st, 2015
  - **Stock Price**: $50
  - **Premium**: $3.00
  - **Type**: Call Option (for 100 shares)
  - **Strike Price**: $65
  - This means that the price of the contract is $300 ($3.00 x 100 shares = $300).
  - This means that the break-even price is $68 ($65 strike price + $3 premium).
  - The owner's current total is –$300.
- **Date**: January 15th, 2015
  - **Stock Price**: $75
  - **Premium**: $10
  - The contract is now worth $1,000 ($10 x 100 shares = $1,000).
  - The owner's current total is now $700 ($1,000 – $300 = $700).

EXAMPLE #4: Plain Vanilla Options (cont'd)

- **Date**: January 15th, 2015
  - **Stock Price**: $75
  - **Premium**: $10
  - The contract is now worth $1,000 ($10 x 100 shares = $1,000).
  - The owner's current total is now $700 ($1,000 – $300 = $700).
  - If the owner chooses to close his/her position, the total profit is $700.
- Let's say the owner chooses to take a risk…
- **Expiration Date**: February 1st, 2015
  - **Stock Price**: $60
  - **Premium**: $2.00
  - As a reminder, **Strike Price**: $65
  - The stock price dropped below the strike price, and time has run out. The option contract is now worthless. Owner's final total is –$300.

Plain Vanilla Options

- There are two main types of options:
  - **American Options** allow owners to exercise, (call – buy; put – sell), at any time from the purchase to expiration date as long as they are above/below (respectively) the strike price.
  - **European Options** only allow owners to exercise their options when they expire.
- **Long-Term Equity Anticipation Securities (LEAPS)** are essentially identical to regular options, but their expiration dates are years after their purchase dates.

Exotic Options

- Most exotic options can be placed into one of two categories:
  1. The payoff of **Barrier Options** is decided based on whether or not the underlying asset has hit a certain price.
  2. The payoff of **Path Dependent Options** is determined by the path of the price of the underlying asset.

- **Asian (Average) Options:** also known as have ending payoffs that are determined by taking the average price of the underlying asset over a set length of time.

- **Chooser Options:** also known as **As-You-Like-It** and **Call-Or-Put**, these options allow the investor to choose whether or not the option will be a put or a call at some set date during the life of the option.

More Exotic Options

- **Lookback Options**: allow investors to "look back" on the price of the underlying asset, and select the price that gives the optimal payout. **Russian Options** are similar, except they have no expiration date.
- **Knock-Out Options**: limit the maximum potential profit by earning zero profits and expiring when the cap is reached.
- **Digital Options**: are similar to knock-out options, except when the cap is reached, the owner is still able to earn that profit, but no more.
- **Compound Option**: an option who's underlying asset is another option.

Options Table

OpSym	Bid	Ask	Volume	Open Interest	Strike
AMZN JUL15 100 C	17.3	17.9	20	581	100.0000
AMZN JUL15 115 C	14.8	15.2	194	923	115.0000
AMZN JUL15 130 C	11.1	11.4	406	1,389	130.0000
AMZN JUL15 145 C	9.9	10.2	632	2,467	145.0000
AMZN JUL15 160 C	8.0	8.08	2,080	5,890	160.0000

Questions?

THANK YOU!

Appendix

Appendix A

Over-The-Counter Bulletin Board

- The **Over-The-Counter Bulletin Board** is an electronic service regulated by the **National Association of Securities Dealers (NASD)**, on which traders can look up quotes, recent sale prices, and volume information for OTC securities, all updated in real-time.

- Even though there are no listing requirements, the NASD regulates the OTCBB by requiring companies that list securities on it to update their financial statements with the SEC regularly.

- Regardless of NASD regulations, securities traded on the OTCBB remain very risky, because many of them are listed by either new, very small, or financially unstable companies that cannot meet the listing requirements necessary for trading on an **exchange**.

Appendix B

Relevant SEC/FINRA rules

- The **Securities and Exchange Commission (SEC)** and the **Financial Industry Regulatory Authority (FINRA)** regulations uphold the best interest of investors, and consequently, the best interest of an efficient market.

- **Best Execution** laws make brokers/dealers responsible for providing the best available price for the shortest contract.

- **Firm Quotes** are security price quotes made by brokers/dealers that guarantees a minimum bid/ask price. This is safer for an investor than a **nominal quote**, which does not set a guaranteed price or quantity of the bid.

Appendix B

Relevant SEC/FINRA Rules (cont'd)

- **Limit Order Protection** ensures that investors will not pay more than the agreed price for the set number of shares they purchased.
  - **Buy Limit Order**: Buyer will not pay more than $X for the shares.
  - **Sell Limit Order**: Seller will not sell if the share price is less than $X.
  - **Fill or Kill (FOK) Order**: Investor will only buy/sell if the order is filled immediately, otherwise it will be cancelled.
  - **All or None Order**: Investor will only buy/sell if all shares can be executed at once.

Appendix C

Derivatives: a brief History

- Derivatives were originally used to settle fair and balanced exchange rates for internationally traded goods.
- Given the often stark differences between different national currency values, individuals who traded internationally needed a way to compensate for the differences in prices that these discrepancies caused.
- Today, derivative use has expanded to include a variety of different assets, including even obscure speculations, such as professional sports scores and weather data.

Appendix D

Collateralized Debt Obligations (CDO)

- A CDO is backed by portfolios of assets that may include a combination of bonds, loans, securitized receivables, asset-backed securities, tranches of other collateralized debt obligations, or credit derivatives referencing any of the former.
- Where assets are bonds, these are usually high-yield bonds that provide a spread of interest over the interest liability of the issued notes; where the assets are loans, the CDO acts as a mechanism by which illiquid loans can be pooled into a marketable security or securities
- Another type of CDO is a synthetic CDO and refers to a structure in which credit derivatives are used to construct the underlying pool of assets

Appendix D

Three Types of CDOs

- A **collateralized loan obligation** (CLO) is a type of collateralized debt obligation. CLOs are backed by a portfolio of loans. The term CLO is reserved for a securitization that is exclusively backed by loans. In 1990, the first rated CLO backed by U.S. bank loans was brought to market.
- A **collateralized bond obligation** (CBO) is another type of collateralized debt obligation. In 1988, the first rated collateralized bond obligation backed by high yield bonds was brought to market. CBOs are backed by a portfolio of secured or unsecured senior or junior bonds issued by a variety of corporate or sovereign obligors
- A **collateralized mortgage obligation** (CMO) is backed by mortgage-backed securities (MBSs) also called mortgage pass through securities. CMOs and the individual tranches of CMOs are also called mortgage-backed securities

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