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# Finance Jobs

## For me

* I want to work in a fast-paced, challenging environment, that enables steep opportunity for growth. I want to work in trading on the sell side for a couple of more years, before eventually (if at all) circling back to Portfolio Management in a Fixed Income related role. That way I can focus on one asset class and the skills required for it.
  + Previous experience in asset management and CFA are a good start
  + Now do the trading thing for a couple of years and try to get the CFA done somehow along the way
* Focussing in fixed income makes so much more sense for someone like you. Its macro driven, your economics background helps you there, the skills between trading and portfolio management are more transferable, so the transition is more realistic. For equity, its more valuation, accounting, the overlaps are between equity research, corporate finance and portfolio management. All things not as interesting to you.

## Within Banks

* **Investment Banking**
  + M&A
    - Mergers & Acquisitions
  + Debt Capital Markets
    - Accompanying bond issues of governments or corporations
  + Equity Capital Markets
    - Accompanying IPOs
  + Advisory
    - For ECM, DCM or M&A
  + Equity Research
    - Creating equity research for e.g. Asset Management companies
  + Sales, Trading & Structuring
    - Working with retail or institutional clients to create, issue and trade products
    - Might be simple equities or bonds, or complicated structured products
* **Corporate Finance**
* **The many other functions banks have**
  + Retail banking
    - Savings accounts
    - Small loans
    - Online broking services
  + Corporate Banking
    - Loans
    - Trade finance and what not
    - Treasury services
  + Private Banking
    - Wealth Management & Private Banking

## Within Asset & Wealth Management

* Legal & Compliance
* Marketing
* HR
* Risk Management
* Analyst
* Client Portfolio Manager
* Relationship Manager
* Portfolio Manager

## Within illiquid and non-bank finance companies

* Private Equity & Venture Capital
* Private Debt
* Hedge Funds
* Alternatives
  + Commodity trade
  + Infrastructure financing
* Real Estate
* FinTech’s

## Within Companies

* Corporate Development
  + Strategic planning for the company
* Controlling/Treasury
  + Accounting for the company
* Financial planning
  + Cash-flow management

## Within the BIG 4

* Tax & Audit
* Transaction Services
  + Advise big banks on M&A deals, support specific steps of the process
* Many more specific ones, but frankly not interesting anyway, so why list them

# Financial instruments

## Equity

* **Common stocks (Ordinary shares)**: Ownership shares in a corporation entitling the holder to dividends, voting rights, and potential capital appreciation.
* **Preferred stocks (Preference shares)**: Equity securities with preferential rights to dividends and assets over common stock, typically with no voting rights.
* **American Depositary Receipts (ADRs)**: Certificates representing ownership of shares in a foreign company traded on U.S. stock exchanges, simplifying trading for U.S. investors.
* **Global Depositary Receipts (GDRs)**: Similar to ADRs but traded on exchanges outside the United States, facilitating international investment.
* **Exchange-Traded Funds (ETFs)**: Investment funds traded on stock exchanges, holding assets like stocks, bonds, or commodities, providing diversification and liquidity.
* **Real Estate Investment Trusts (REITs)**: Companies that own, operate, or finance income-generating real estate, distributing a majority of their income to shareholders in the form of dividends.

## Fixed Income

* **Government bonds**: Issued by governments to finance public spending, considered low-risk.
* **Quasi-sovereign bonds**: Issued by entities with implicit government backing but aren't directly sovereign.
* **Municipal bonds, agency bonds, supranational bonds**: Issued by local governments, government-sponsored enterprises, or international organizations, respectively.
* **Zero coupon bonds**: Sold at a discount and pay no periodic interest, instead, the investor receives the face value at maturity.
* **Perpetual bonds**: No maturity date, pay periodic interest indefinitely.
* **Islamic bonds (Sukuk)**: Compliant with Islamic finance principles, avoiding interest payments.
* **Corporate Bonds**: Issued by corporations to raise capital.
* **Investment Grade**: Bonds with high credit ratings indicating lower risk.
* **High Yield Bonds**: Bonds with lower credit ratings, offering higher yields but higher risk.
* **Senior Secured Loans**: Loans with collateral securing repayment and senior payout status in case of default
* **Convertible Bonds**: Bonds that can be converted into a predetermined amount of the issuer's equity.
* **AT1 Bonds (Additional Tier 1)**: Hybrid instruments used by banks to meet regulatory capital requirements. Can be written down into equity if banks so chooses to.
* **Coco Bonds (Contingent Convertible Bonds)**: Convertible bonds that convert to equity or face write-down under predetermined conditions, often the CET ratio.
* **Commercial paper**: Short-term unsecured debt issued by corporations.
* **Certificates of deposit**: Time deposits with fixed terms and interest rates, issued by banks, often traded in the interbank market
* **Repurchase agreements (Repos)**: Short-term borrowing secured by collateral, typically government securities, often between banks overnight or for a few days, often involving a haircut as a means of payment
* **Reverse repurchase agreements (Reverse Repos)**: Sale of securities with an agreement to repurchase them at a higher price in the future (just the other side of a Repo really).

## Derivatives

* **Futures contracts**: Agreements to buy or sell assets at a predetermined price on a specified future date, traded on organized exchanges.
  + Involves daily mark-to-market adjustment of posted margin
* **Forward contracts**: Similar to futures contracts but traded over-the-counter (OTC) and customized between two parties.
* **Interest rate futures**: Derivative contracts based on interest rates, used to hedge or speculate on changes in interest rates.
* **Currency futures**: Futures contracts based on currency exchange rates, used for hedging or speculation in foreign exchange markets.
* **Commodity futures**: Futures contracts based on the prices of physical commodities like oil, gold, or agricultural products.
* **Stock futures**: Futures contracts based on the prices of individual stocks or stock indexes.
* **Equity options**: Contracts giving the holder the right, but not the obligation, to buy or sell a specified quantity of shares at a predetermined price within a set time frame.
* **Fixed income options**: Contracts giving the holder the right, but not the obligation, to buy or sell a specified quantity of bonds at a predetermined price within a set time frame.
* **Currency options**: Options contracts based on currency exchange rates, providing the right to buy or sell currencies at predetermined rates.
* **Commodity options**: Options contracts based on the prices of physical commodities, offering the right to buy or sell commodities at specified prices.
* **Caps and floors**: Caps and floors are derivative contracts used to hedge against fluctuations in interest rates. A cap is a series of interest rate call options that provide protection against rising interest rates, while a floor is a series of interest rate put options that provide protection against falling interest rates. Caps and floors are often used by borrowers or investors to manage interest rate risk on loans or investments.
* **Collars**: Options strategy involving the purchase of a put option a covered call (owning the underlying + selling a call). Gives some level of downside protection abut also limited upside participation.
* **Barrier options**: Options contracts with predefined price levels, where the option's payoff depends on whether the underlying asset's price reaches or exceeds the barrier level.
  + Kick in option for options that kicks in when certain price level is reached
  + Knock-out option if option disappears if certain price level is reached
* **Binary options**: Options contracts with a fixed payoff determined at the contract's expiration, based on whether the underlying asset's price meets specified conditions.
* **Exotic options**: Non-standard options contracts with complex features, offering customized payoffs based on various conditions.
* **Swaps**: Contracts between two parties to exchange cash flows or other financial instruments, such as interest rates, currencies, or commodities.
* **Interest rate swap:** Derivative contracts where two parties agree to exchange fixed-rate and floating-rate cash flows based on a notional principal amount
* **Currency swaps**: Agreements between two parties to exchange principal and interest payments denominated in different currencies.
* **Commodity swaps**: Contracts where parties agree to exchange cash flows based on the price of a commodity or a commodity index.
* **Variance swaps**: Variance swaps are derivative contracts based on the volatility of an underlying asset. In a variance swap, one party agrees to pay the other party a fixed amount multiplied by the difference between the realized variance of the underlying asset and a predetermined strike variance.
* **Total return swaps**: Agreements between two parties to exchange the total return on an underlying asset or portfolio, often used in synthetic financing or hedging strategies.
* **Credit default swaps**: Contracts providing protection against credit default events for a specified asset or portfolio, used for hedging credit risk.
* **Weather derivatives**: Derivative contracts whose payoff depends on weather-related events, used by businesses to hedge against weather-related risks.

## Structured Products

* **Structured notes**: Debt securities with embedded derivatives, offering customized risk-return profiles often linked to the performance of an underlying asset or index.
  1. Stock or Bond along with long put. If price falls below strike price, sell stock/bond for k, if it rises, put is worthless, but you participate upwards.
* **Mortgage-backed securities (MBS)**: Securities backed by a pool of mortgage loans, where payments from borrowers are passed through to investors.
* **Asset-backed securities (ABS)**: Securities backed by pools of various types of assets, such as loans, leases, or receivables, generating cash flows for investors.
* **Collateralized Debt Obligations (CDOs)**: Securities backed by pools of debt instruments, often divided into tranches with varying levels of risk and return.
* **Collateralized Loan Obligations (CLOs)**: Securities backed by pools of corporate loans, often structured into tranches based on credit risk.
* **Inflation-linked bonds (TIPS, ILBs)**: Bonds whose principal and interest payments are adjusted based on changes in inflation, providing protection against inflation.
  1. Thus, if inflation rises, so does the coupon and also the bond´s value
  2. For an investment in an inflation-linked bond to be more profitable than an investment in a regular bond, the realized inflation must exceed the expected inflation
  3. Why is that?
     1. The market prices the expected increase in inflation in leading to an increase in price
     2. If the realized inflation exceeds this, the price will rise further, if it is lower than anticipated, the price will adjust downwards
     3. So, if inflation exceeds expectations, I profit of the value increase, if it decreases I lose
  4. We in our case assume that the inflation will decrease in 2024 yes. But markets have been overoptimistic we think in their assessment of how fast this will happen. Thus, we assume actually within the next months, inflation will still be higher than currently expected, hence making inflation-linked bonds currently an attractive tactical bet
* **Insurance-linked Bonds**: Securities linked to insurance risks, where investors receive payments based on insurance-related events such as natural disasters (e.g. Cat-Bonds).
* **Principal protected notes**: Debt securities offering protection of the principal investment, typically combined with exposure to other assets or indices for potential returns.
  1. Zero coupon bond, two call options, one at and one out of the money, the one out the money is sold short, I have to buy it back if it comes into the money, so this cost eats in the profit of the other option, hence my limited upside. Downside protection through the zero-coupon bond. I sell the one option short, to generate some income, to ensure the structure does not become too expensive
* **Auto callable notes**: Structured notes with a callable feature, allowing the issuer to redeem the notes early under specified conditions.
* **Putable bonds**: Bonds that give the holder the right to sell the bond back to the issuer at a predetermined price before maturity.
* **Callable bonds**: Bonds that allow the issuer to redeem the bond before maturity, typically when interest rates decline.
* **Equity-linked securities**: Securities whose returns are linked to the performance of one or more underlying equities or equity indices.
* **Reverse Convertibles**: Structured products that combine a fixed-income investment with an embedded option, typically offering enhanced yield but with the risk of loss of principal.
* **Credit-linked notes**: Debt securities whose payments are linked to the credit performance of a reference entity or portfolio of reference entities.
* **Range accrual notes**: Structured notes whose coupon payments depend on whether an underlying variable remains within a specified range.
* **Constant maturity swaps**: Derivative contracts that exchange fixed-rate payments for floating-rate payments based on a specified maturity.
* **Participation certificates**: Securities that give investors the right to participate in the performance of an underlying asset or index.
* **Basket options**: Options contracts whose underlying asset is a portfolio of securities, commodities, or currencies rather than a single asset.
* **Spread options**: Options contracts where the payoff depends on the difference in prices or yields between two underlying assets.

# Finance knowledge

## Bank knowledge

**Repo trading**

* Part of Money market, very liquid
* Temporary selling of a security for cash -> helps to satisfy temporary funding need of a bank
* The seller agrees to repurchase at a later date (couple of days, or weeks later, also longer time) at a slightly higher price (repo rate). Subject to haircuts depending on the risk of counter party and of underlying

**Securities lending**

* Temporary exchange of a security by a lender to a borrower for collateral (cash or other security), lender might use cash to invest into the money market
  + Done to generate additional income by lender on a portfolio, and by borrower to cover shorts or obtain security
  + Can be recalled before expiry, as the transfer includes voting rights

**Liquidity Coverage Ratio**

* The Liquidity Coverage Ratio (LCR) is a regulatory requirement that mandates banks to maintain enough high-quality liquid assets (HQLA) to cover their short-term liquidity needs. The LCR aims to ensure that banks have enough liquidity to withstand a 30-day stress scenario, such as a run on the bank or other market shocks.

**Common Equity Tier 1 (CET1)**

* Common Equity Tier 1 (CET1) is a regulatory requirement that mandates banks to hold a minimum amount of high-quality capital to absorb losses and maintain solvency in times of stress. CET1 is the highest quality form of capital, consisting of a bank's common stock and retained earnings.

## Economics

**Central Banks Reserves**

* Major central banks typically hold reserves in multiple currencies, with the exact composition of their reserves varying depending on a variety of factors, including the country's economic needs, trading partners, and foreign exchange market conditions. However, the US dollar is generally considered the dominant currency in central bank reserves due to its widespread use in global trade and finance. It's worth noting that the specific composition of central bank reserves can change over time, depending on a variety of factors such as currency fluctuations, economic conditions, and geopolitical events.

**Sources central banks can get their money from**

* Government deposits: In many countries, the government holds accounts with the central bank and may deposit funds into those accounts.
* Open market operations: Central banks can create money by buying assets such as government bonds or foreign currencies. The money created by these transactions is deposited into the central bank's account.
* Reserve requirements: Commercial banks are required to hold a certain percentage of their deposits in reserve with the central bank. The central bank earns interest on these reserves, which provides another source of revenue.
* Foreign exchange reserves: Central banks may also hold reserves of foreign currencies, which can generate income through interest payments and capital gains or losses.

**Sources of central bank reserves**

* A central bank is like a normal bank in some ways, but its clients are typically limited to other banks and the government. The central bank provides services such as managing the money supply, regulating the banking system, and maintaining financial stability.
* Central banks can create money, in some cases "out of thin air," through a process called "monetary operations" or "open market operations." When a central bank buys an asset, such as a government bond or a foreign currency, it creates money to pay for the asset. This new money is added to the central bank's balance sheet as an asset, and the asset purchased is added as a liability.

**Interest on reserves rate (IOR)**

* The IOR rate is set by the central bank and is usually used as a tool to influence short-term interest rates in the economy. When the central bank wants to encourage banks to lend more money and stimulate economic activity, it may lower the IOR rate, which reduces the cost of holding reserves and makes it more attractive for banks to lend. Conversely, when the central bank wants to slow down lending and reduce inflationary pressures, it may raise the IOR rate, which increases the cost of holding reserves and makes it less attractive for banks to lend.
* In some cases, the central bank may charge banks for holding reserves, rather than paying them interest. This is known as a negative interest rate policy and is typically used when the central bank is trying to stimulate borrowing and investment by making it costly for banks to hold onto excess reserves.
* Overall, the interest rates that central banks pay or charge on commercial bank deposits are an important tool for managing the money supply and influencing economic activity in the broader economy.

**Quant Easing**

* **Open Market Operations**: Central banks buy government securities (such as bonds) from banks and other financial institutions, injecting money into the economy.
* **Asset Purchases**: Besides government securities, central banks may also buy other assets like corporate bonds or mortgage-backed securities to increase liquidity and lower long-term interest rates.
* **Forward Guidance**: Central banks communicate their intention to keep interest rates low for an extended period, providing certainty to investors and borrowers.
* **Discount Window Lending**: Central banks may offer loans to commercial banks at a discounted rate, encouraging banks to lend more to businesses and consumers.
* **Term Auction Facility**: Central banks conduct auctions to provide loans to banks for longer durations, ensuring stability in the financial system.
* **Credit Easing**: In addition to purchasing securities, central banks may provide credit directly to specific sectors of the economy, such as small businesses or troubled industries.

**Monetary Policy**

* Generally, all “landings” refer to a situation where an economy experiences inflation and the central bank tries to engineer some sort of way out of the situation, some sort of landing
* **Soft Landing**
  + A soft landing describes a scenario where the economy and inflation gradually cools down without triggering a harsh recession
    - Central banks will always aim to achieve this if possible by
      * Gradually increasing or lowering rates always weighing off effects on inflation versus on the economy
      * Forward guidance and clear communication are an essential part of steering the direction and engineering a landing
* **Hard Landing**
  + A central bank may weight off effects of its actions on the economy versus inflation, but ultimately what it is mandated to do is ensure stable prices
  + Thus, if a situation leaves it no other choice, it may aggressively hike rates and leave them high if necessary, sacrificing a hard recession, which constitutes a hard landing
  + Tax increases or reduced government spending all also decrease company earnings, thus increasing the likelihood of this scenario
* **No Landing**
  + Sideways movement, no increase or decrease in inflation and no boom or recession
  + Unlikely to be sustainable over long period of time, more like delay of what going to happen ultimately
  + May be the result of a mix of policies

**How do interest rates affect exchange rates?**

* You get more interest when investing so money flows into this currency thus making it appreciate against others.

## Corporate Finance / Accounting / Equity

* Primarily valuation and accounting from an equity research perspective
* Look at this only if necessary and via the CFA books

**What constitutes stock performances?**

* Generally speaking, a stock’s value is the discounted value of all future dividends
* So, since this should already be priced in, what makes a stock rise could be
  + Earnings growth
  + Increase in dividend yield
  + Mergers & acquisitions
  + Optimism beyond these fundamentals which may lead to multiplier effects
* Moreover, macroeconomic factors may have an effect (however, if you maintain that all is priced in, only new macroeconomic outlooks that affect the dividend yield or earnings growth of a company, should have the power to move it and if you analyze different indicators, you should make sure to use a coherent mix of signals
  + Anyway, political stability, GDP growth forecast, consumer confidence, interest rates, exchange rates and the expectation thereof might all influence the development of stock performances
  + Of course, there are generally stocks or sectors more and less affected by macroeconomic developments, generally growth industries such as the tech sector in the US seems to be largely immune to whatever else is going on in the world

**Index ein mal eins (grob wissen wo die stehen vor jedem Interview)**

* DAX, MDAX => Deutschland
* CAC40 => Frankreich
* FTSE100 => UK
* FTSE MIB => Italien
* IBEX 35 => Spanien
* AEX => Niederlande
* BEL20 => Belgien
* SMI => Schweiz
* EUROSTOXX 50 => 50 größte Unternehmen in Eurozone
* Euronext 100 => 100 größte Unternehmen in Niederlande, Belgien, UK, Frankreich
* STOXX Europe 50 => 50 größte Unternehmen Europas
* Dow Jones => 30 größte Unternehmen auf dem NYSE & NASDAQ
* NASDAQ => größte Technologieunternehmen
* S&P 500 => größte Unternehmen aus NYSE
* CBOE Volatility Index => bildet zukünftige kurzfristige Volatilität des S&P500 ab, invers mit S&P500 korreliert
* Russel2000 => US Small Cap Index
* Russel3000 => Bildet gesamte US Marktkapitalisierung ab
* Nikkei225 => Japan
* RTS => Russland
* KOSPI => Südkorea
* CSI 300 => China
* SZSE => China
* Shanghai Composite Index => China

## Fixed Income

* **Inverse bond yield Relationship**
* Coupons are fixed, so if interest rates decrease, new bonds get issued with lower coupons, suddenly, mine is more valuable in comparison, thus its price rises, and hence the yield falls
* If the price falls, then the yield decreases as well, up to the point where they equal the yield of comparable newly issued bonds
* This is less so the case for variable coupon bonds, whose coupon is often tied to the LIBOR or EURIBOR. In their case, their coupon should rise, so the price should fall by less. However, they are not entirely immune to this mechanic either
* **Duration**
  + - How sensitive is a bond to changes in interest rate?
    - Longer maturity means longer duration
    - Longer duration bonds are more volatile
    - Often (assuming a normal yield curve) they also have higher yields
* **Convexity**
  + - Measures the curvature of the price-yield relationship of a bond
    - How does the duration change when yields change?
* **Spreads**
  + - Difference between different bonds or maturities
    - Determined by economic outlook and inflation expectations
    - Spreads widen in times of uncertainty and narrow in times of economic flourish
* **Credit spread**
  + - Spread between similar maturity treasury bill and credit instrument (corporate), T +350 -> 3,5% above T-bill
* **T-spread**
  + - Yield spread between one and the other instrument
* **I-spread (interpolated)**
  + - Yield spread of a bond over the standard swap rate of same tenure and currency.
* **G spread**
  + - Spread between corporate and government bonds
* **Z-spread**
  + - Yield spread of a bond over the standard swap rate of same tenure and currency.
* **Option-adjusted spread**
  + - Z-spread – option value
    - If it is a callable bond, the option benefits the issuer (as they can redeem the bond if interest rates goes down, i.e. bond price goes up), therefore option cost > 0, and OAS < Z spread for callable bonds.
    - If it is a putable bond, the option benefits the bondholder (as they can sell the bond back to the issuer at a pre-agreed price if interest rates goes up, i.e. bond price goes down), therefore option cost < 0, and OAS > Z spread for putable bonds.
    - A way to think about it is that the option cost is the additional yield that the issuer has to pay for the option.
    - For a callable bond, the issuer buys the call option, so he has to pay for it with a higher yield; the option cost is positive.
    - For a putable bond, the issuer sells the put option, so he is paid for it with a lower yield: the option cost is negative.
* **Yield curve**
  + - Maps yields of different maturities
    - Tells a lot about state of economy and where it came from
    - Trade idea generation
    - A lot of people look at it
* **Shape of the yield curve**
  + - Concave
      * Normal market expectations
      * Short term borrowing cheaper than long-term
    - Flat
      * Uncertainty concerning future market developments
    - Inverted
      * Happens in recessions, and times of economic turmoil, where short term borrowing is more costly than long-term, as the long-run is more predictable
* **What does steepening/flattening/inverted YC tell you?**
  + - **Steepening**
      * Beginning expansion
      * During previous recession/stagnation central bank increased rates and the curve got flatter, now central bank is lowering rates, short term finance becomes cheaper and longer-term financing thus relatively more expensive -> normalization
    - **Flattening**
      * Insecurity in short term leads to increasing short term borrowing cost
* **Putable bond**
  + - Bond with possibility to sell bond pack before maturity
    - Investor has flexibility if he needs money, or if market conditions change, downside protection
    - To compensate issuer for risk, involves lower coupon and higher yield
* **Callable Bond**
  + - Opposite case, issuer can redeem early
    - Reinvestment risk for investor, thus higher coupon and higher yield (higher yield since it trades for cheaper due to the added risk)
* **What are benchmark treasuries?**
  + - Highly rated and liquid bonds from governments, that are used to assess other Fixed income instruments
* **What is a flat price of a bond/clean price of a bond?**
  + - Flat bond: no accrued interest
    - Clean price: price of a flat bond
* **Bond math**
  + - **Bond Price**
      * Bond price change = duration x yield change + convexity adjustment
    - **Current yield**
      * Annual cash coupon payment divided by bond price
    - **YTM**
      * Average yield an investor earns if you buy bond at market price and hold it to maturity
      * Calculate YTM
        + Coupon + (FV – Current value)/Current value
    - **Yield to call**
      * Rate of return on callable bond if bond is held until first call date.
    - **Yield to worst**
      * The lowest between all YTC and YTM scenarios.
    - **Implied forward rate**
    - **How much do you lose if 1% rates increase on 1mrd 10y Bond?**
      * 100m: 1%\*1mrd\*10
* **Seniority payout**
  + - In a nutshell
      * Secured debt > Senior debt > Subordinated debt > CoCos > AT1 > Preferred stock > Common stock
    - Secured debt: Secured debt is backed by specific assets or collateral, which gives lenders a first claim on those assets in the event of default. Examples include mortgages, car loans, and equipment financing.
    - Senior debt: Senior debt is typically unsecured debt that has priority over other forms of unsecured debt in the event of default. Examples include corporate bonds and bank loans.
    - Subordinated debt: Subordinated debt is debt that has a lower priority than senior debt in the event of default. This means that subordinated debt holders will only be paid after senior debt holders have been fully paid. Examples include subordinated bonds and junior debt.
    - Convertible Debt
      * Cocos before AT1
    - Preferred stock: Preferred stock is a form of equity that has a higher priority than common stock in the event of liquidation or bankruptcy. Preferred stockholders have a preferential claim on the company's assets and are typically paid before common stockholders.
    - Common stock: Common stock represents ownership in a company and is the most junior form of financing. In the event of liquidation or bankruptcy, common stockholders are typically the last to be paid, after all other claims have been satisfied.

## Derivatives

* **What influences an option price?**
* Volatility, Time to expiry, strike price, Dividend (if in the option interval), underlying asset price, implied (expected) volatility, interest rates
* For an FX option it is volatility, time to expiry, strike price, underlying FX rate, implied volatility, interest rate differential
* Writer of an option has the short position
* **Put-Call parity**
  + C- P = S – K\*e^-rt
* **Differences forwards and futures**
  + Futures are traded on exchanges, involve clearinghouse and thus reduced counterparty risk, daily settlement of gains and losses, marked to market
  + Forwards traded OTC, involve counterparty risk, more individual
* **Option Greeks**
  + **Delta**
    - How much in % does the option price move if the underlying moves by 1$
    - For call is 0 to 1 and for put is -1 to 0
    - **Delta hedging?**
      * For call short sell underlying to get negative delta exposure
      * For put buy underlying to get positive delta exposure
  + **Gamma**
    - Rate of change in delta if the underlying moves by 1$
    - The larger, the shorter the time to expiration and the closer the option value to being at the money
  + **Theta**
    - Time decay
    - How much option loses in value each day over time
  + **Vega**
    - Rate of change in price, in % per 1% price change volatility
    - Also highest for options close to being at the money
  + **Rho**
    - Rate of value change of price with respect to interest rate
* **Reasons for corporate client FX trade?**
  + Hedging of debt in one country and transfer payments to another currency
  + Hedge FX rate in forward market
  + Hedge future project cost in a different country & currency
* **FX Options**
  + Buying a call on EUR to USD, always includes buying a put on USD, as you buy EUR and sell USD
  + Otherwise similar to options, with strike, exercise date and premium payable
* **Currency Swap (fixed fixed)**
  + Agreement of principle amount that will be exchanged, and at what rate
* **FX Basis Swap (floating floating)**
  + Agreement to change floating vs floating interest payments in different currencies

## Portfolio Management

**Factor Investing**

* Value
  + Underpriced to fundamental value, low PE, PB, FCF, dividends
  + Use dividend discount model to determine fair value of stock and see if underpriced, also fundamental analysis, then buy and hold
* Growth
  + High growth potential, indicated by earnings growth, profit margins, and ROE
* Size
  + Small cap companies
* Momentum
  + What performed well in the past
* Volatility
  + Low volatility companies have better risk adjusted returns
* Mixed factors
  + Quality/Growth
  + Growth/Value => Growth at a reasonable price
  + Quality/Value => Quality at a reasonable price

**What influences ideal duration?**

* Bonds with greater duration are more sensitive to yield changes and might fluctuate more in economic recessions
  + So, if I expect interest rates to fall I should increase duration, if I expect them to rise, I should lower it
    - That´s what we´re doing in anticipation of falling rates in 2024, increasing duration. However, if one expects that this has been priced in too much by markets one might decrease it temporarily due to tactical reasons.
* Also, greater duration often implies greater yields, so if I need more cash and am more willing to take more risks, higher duration is a good idea

**What influences spreads?**

* First of all there are credit spreads (spread between US treasury and your security of choice) and yield spreads (difference between yields of two debt securities)
* Spreads narrow in times of economic booms and dovish times and widen in times of uncertainty and hawkish times
* Generally speaking anything that makes life more uncertain, increases spreads because then there is a flight to safety
* Yield curve => time to maturity vs yield

**Bond Math**

* Hawkish central banks that want to fight inflation => rising rates => increasing yields => lower prices
* Spreads widen in recessions and narrow in boom
* When we are talking about bid ask spread of course (e.g. in the fx market, they are affected by liquidity, so number of trades and the depth of the order book

**Using derivatives to manage your portfolio**

* Short treasury bonds and futures if you expect rates to rise => then they´ll fall in price
* Interest rate swaps to convert fixed to floating rates
* Put options to hedge against decline => you can still sell at previous price
* Buying CDS protection to hedge against default of bond
* Commodity futures to hedge against volatility => you receive/pay previous price
* VIX futures to hedge future volatility
* Hedging FX exposure via futures
  + I hold a portfolio in USD, but I am a Euro investor
  + So, my performance derives from selling my USD stocks and then converting the liquidity into EUR
  + Now, if my stocks make 10% but the USD depreciates against the EUR by 15%, I still will have made a 5% loss
  + I can hedge against these FX movements via futures
  + The idea here is to sell a future which means to go short
  + So, I sell a EUR future by which I obligate myself to sell a set amount of liquidity in EUR for the current FX rate in the future
    - If in the future the FX rate by then will be lower, i.e. the EUR will have depreciated, that´s good for me because I get the old higher value for it, if it has appreciated, that´s bad for me because then I miss out in its increase

**How to hedge against FX risk?**

There are several ways to hedge against foreign exchange (FX) risk when investing in foreign currency-denominated securities:

1. Currency hedging through derivatives: Currency forwards, futures, and options are commonly used derivatives that can help to hedge against currency risk. By entering into a currency hedging contract, investors can lock in a specific exchange rate for a future transaction, which can help to reduce the impact of currency fluctuations on investment returns.

**Trading strategies based on the yield curve**

1. **Flatteners**:
   * A flattener is a trading strategy designed to profit from a decrease in the slope or steepness of the yield curve. This typically involves taking positions that benefit from short-term interest rates rising more than long-term interest rates or long-term rates falling more than short-term rates.
   * Common strategies used to implement a flattener include:
     + Selling longer-dated bonds while buying shorter-dated bonds.
     + Implementing yield curve spread trades, such as selling the spread between short-term and long-term interest rates.
   * Flattener strategies are often employed when investors anticipate a tightening of monetary policy by central banks, which tends to raise short-term interest rates relative to long-term rates, resulting in a flatter yield curve.
2. **Steepeners**:
   * A steepener is a trading strategy designed to profit from an increase in the slope or steepness of the yield curve. This typically involves taking positions that benefit from long-term interest rates rising more than short-term rates or short-term rates falling more than long-term rates.
   * Common strategies used to implement a steepener include:
     + Buying longer-dated bonds while selling shorter-dated bonds.
     + Implementing yield curve spread trades, such as buying the spread between short-term and long-term interest rates.
   * Steepener strategies are often employed when investors anticipate easing monetary policy or economic conditions that are expected to drive long-term interest rates higher relative to short-term rates, resulting in a steeper yield curve.