

## Financial Markets and Investments

Raquel M. Gaspar

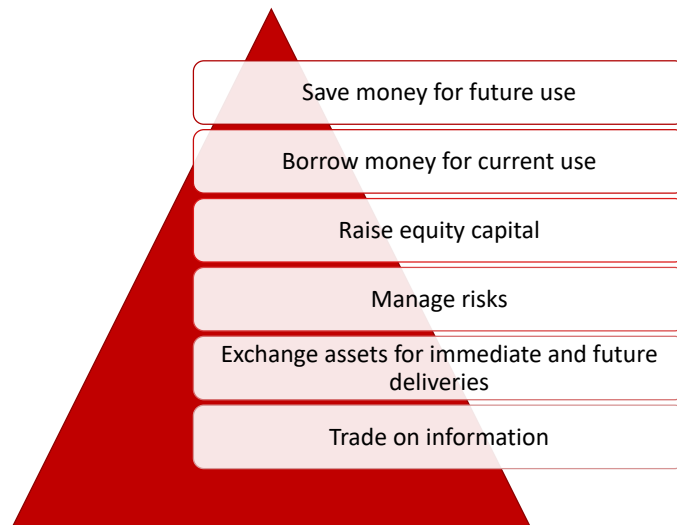
ISEG, Universidade de Lisboa

## PART I FINANCIAL MARKET STRUCTURE AND INSTRUMENTS

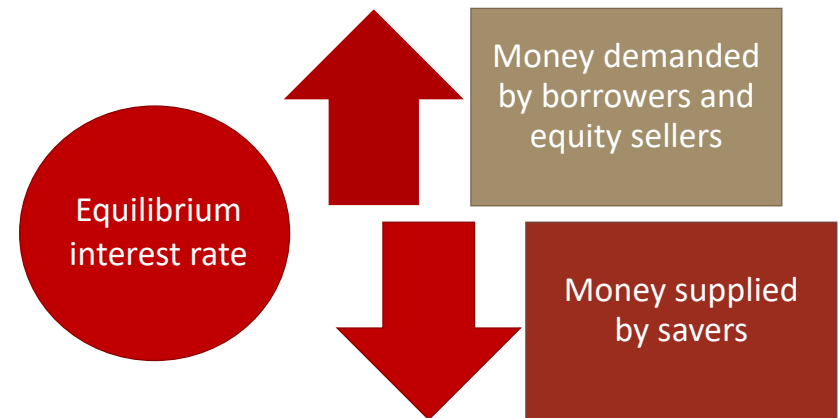
## 1 MARKET ORGANIZATION AND STRUCTURE

## 1.1 FUNCTIONS OF THE FINANCIAL SYSTEM

## WHAT ARE THE MAIN FUNCTIONS OF THE FINANCIAL SYSTEM?



## HOW ARE RATES OF RETURN DETERMINED?

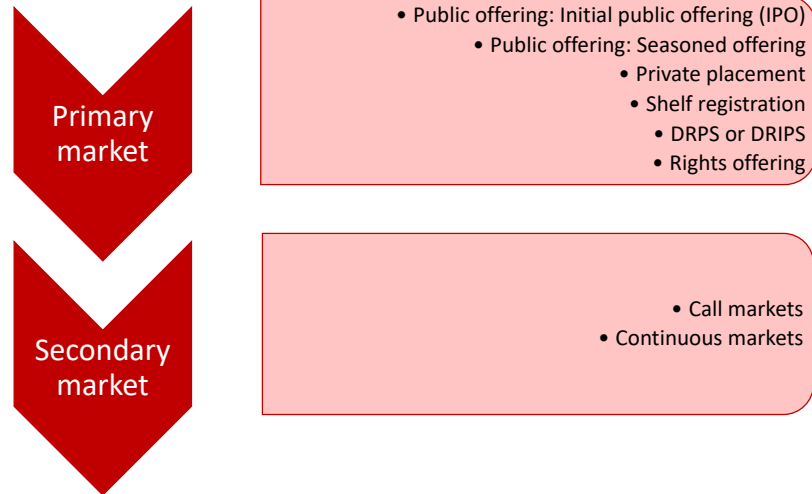


## 1.2 MARKET CLASSIFICATION

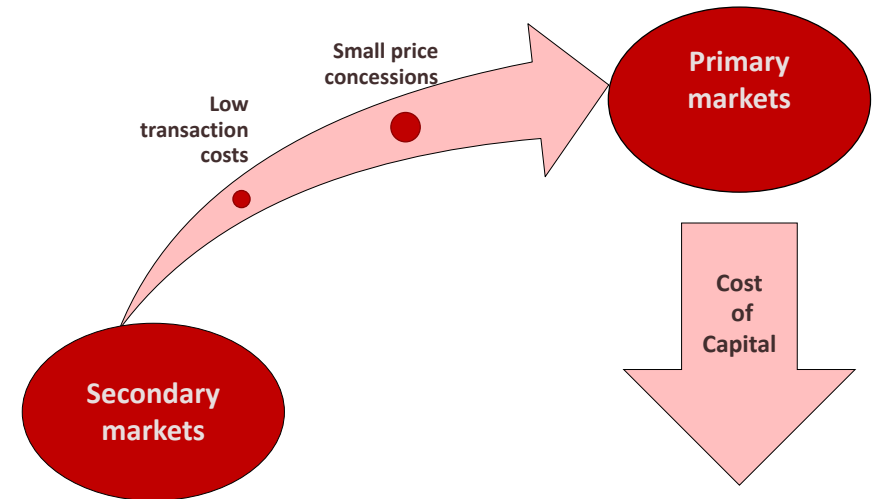
## HOW ARE MARKETS CLASSIFIED?



## PRIMARY AND SECONDARY MARKETS

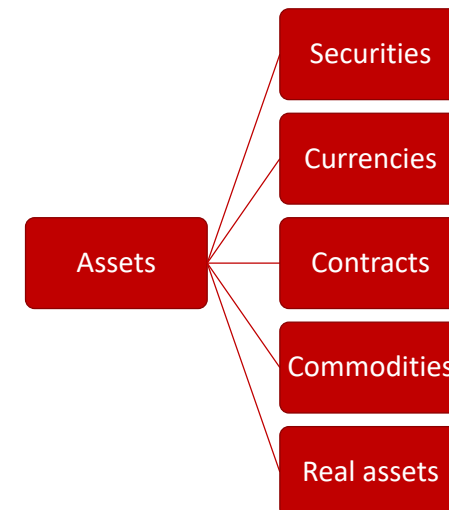


## HOW DO SECONDARY MARKETS SUPPORT PRIMARY MARKETS?

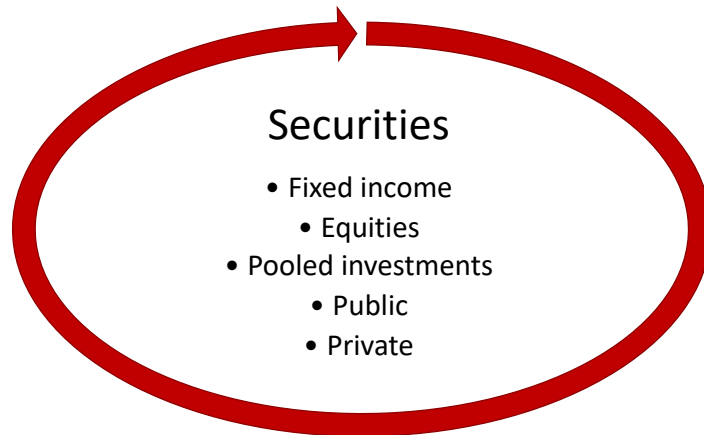


## 1.3 FINANCIAL INSTRUMENTS

## HOW ARE ASSETS CLASSIFIED?



## HOW ARE SECURITIES CLASSIFIED?



## Examples of Securities

- Stocks
- Bonds
- Fund units
- Securitized credit units
- Warrants
- Detached Rights
- Structured Certificates
- Mandatory Convertibles
- Reverse Convertibles
- Credit Linked Notes

## HOW ARE CONTRACTS CLASSIFIED?



## HEDGING WITH FORWARD CONTRACTS

**Farmer needs to sell wheat to the miller at a future date.**

- Risk: the price of wheat decreases.
- The farmer is currently long wheat in the spot market (needs to sell it in the future).
- The farmer hedges the spot market position by selling wheat forward.

**Miller needs to buy wheat from the farmer at a future date to sell to bakers.**

- Risk: the price of wheat increases.
- The miller is currently short wheat in the spot market (needs to buy it in the future).
- The miller hedges the spot market position by buying wheat forward.

## FUTURES VERSUS FORWARD CONTRACTS

### Futures contracts

Standardized

Clearinghouse  
guarantees performance

Strong secondary  
markets

### Forward contracts

Customized

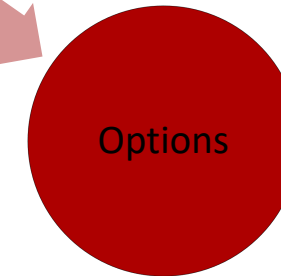
Counterparty risk

Typically held to  
maturity

## OPTIONS

Put: Option to sell.  
Exercised when  
strike or exercise  
price is above  
market price.

Call: Option to  
buy. Exercised  
when strike or  
exercise price is  
below market  
price.



## SWAP CONTRACTS

### Swap contracts

- Interest rate
- Commodity
- Currency
- Equity

## WHY SO MANY DIFFERENT FINANCIAL ASSETS?

### Different risk – return profiles

- The **return** of a financial security is the rate computed based upon what the investment generates during an interval of time. It usually includes two parcels: price evolution (capital gains/losses) and the cash-flows it may generate (e.g. dividends in the case of stocks, coupons in the case of bonds, etc.).
- Expected/potential return should be distinguished from realized return. “Past returns are no guarantee for future returns”.
- The **risk** represents the uncertainty concerning future returns variability. This uncertainty may be connected, for instance, with unpredictable price movements.

## METHODS FOR ESTIMATING RISK AND RETURN



### Historical data

- Average rate of return
- Standard deviation



### Probability distribution of possible returns

- Expected return
- Standard deviation

## 1.4 TRADING IN FINANCIAL MARKETS

## WHAT ARE THE MAJOR TYPES OF FINANCIAL INTERMEDIARIES?

Commercial, mortgage, and investment banks

Brokers and exchanges

Mutual funds and hedge funds

Credit unions

Dealers and arbitrageurs

Insurance companies

Credit card companies

Clearinghouses and depositories

Other finance corporations

## EXCHANGES VERSUS ALTERNATE TRADING SYSTEMS (ATS)

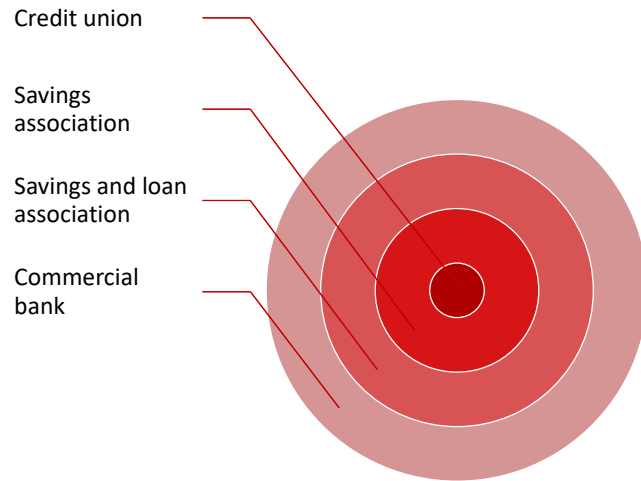
### Exchanges

- Marketplace (physical location) for trading.
- Increasingly arrange trades submitted via electronic order matching systems.
- Regulatory authority derived from governments or through voluntary agreements.

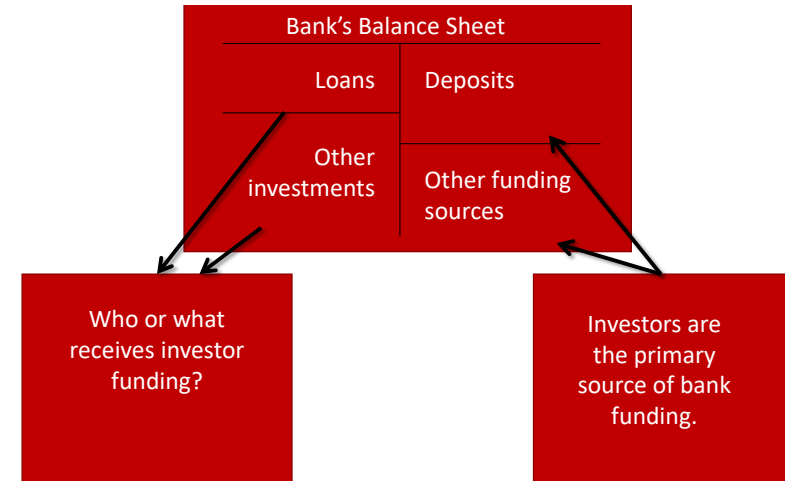
### ATS

- Also called electronic communication networks (ECNs) or multi-lateral trading facilities (MTFs).
- Some offer services similar to exchanges, others offer innovative systems that suggest trades to clients.
- Do not exercise regulatory authority except with respect to trading.
- *Dark pools*—do not display orders.

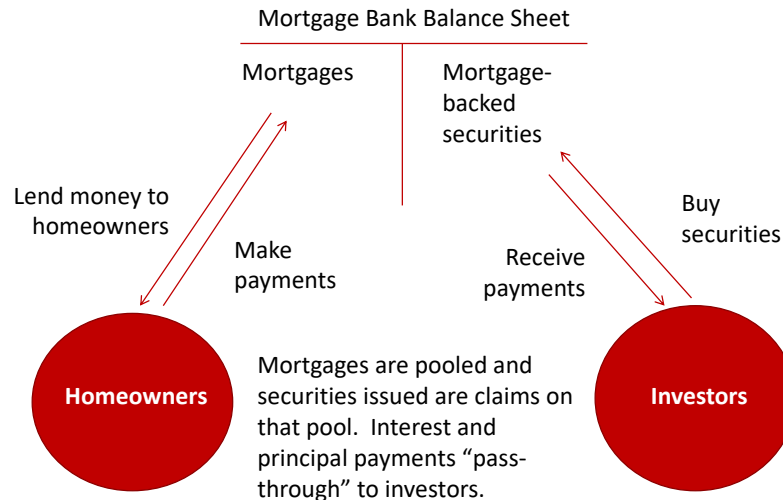
## DEPOSITORY INSTITUTIONS



## HOW DO INVESTORS INFLUENCE A BANK'S INVESTMENT DECISIONS?



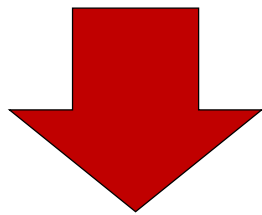
## EXAMPLE OF SECURITIZATION



## INSURANCE COMPANIES

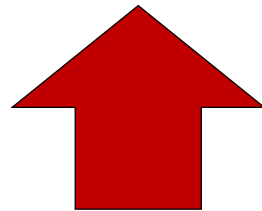


## DEALERS VERSUS ARBITRAGEURS

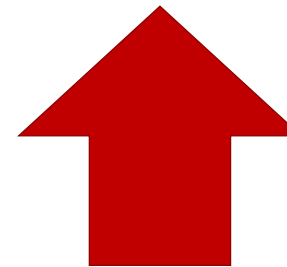


Dealers provide liquidity to buyers and sellers who arrive at the same market at different times.

Arbitrageurs provide liquidity to buyers and sellers who arrive at different markets at the same time.

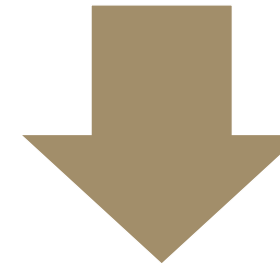


## WHAT POSITIONS CAN I TAKE IN AN ASSET?



### Long positions

- Assets or contracts are owned
- Position benefits from price appreciation



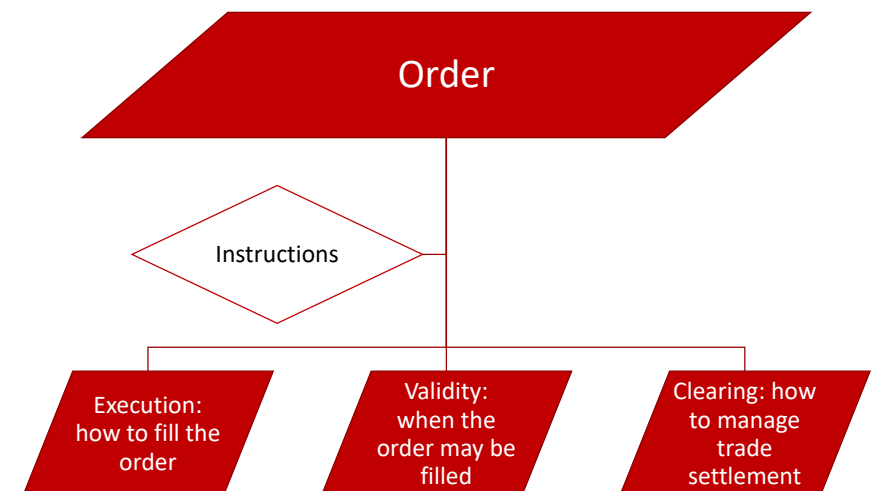
### Short positions

- Assets not owned are sold or contracts are sold
- Position benefits from a decrease in price

## TERMINOLOGY FOR LEVERED POSITIONS

	Buying on margin
	Margin loan
	Call money rate
	Initial margin requirement
	Maintenance margin requirement
	Margin call
	Leverage ratio

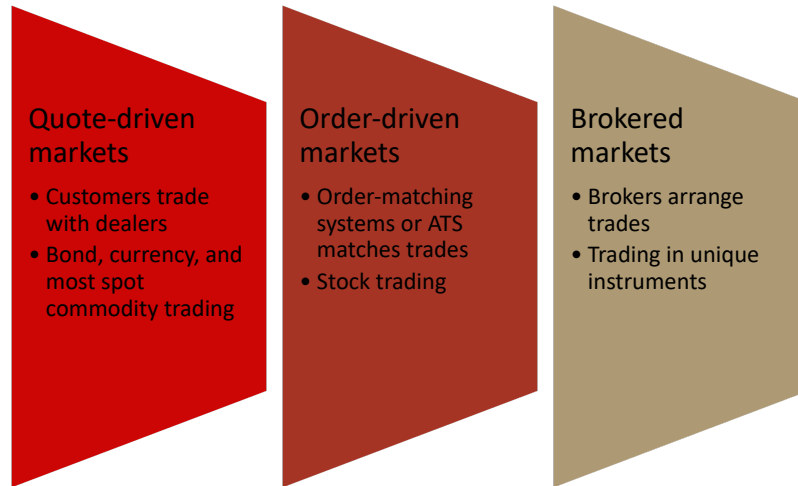
## COMPARE AND CONTRAST EXECUTION, VALIDITY, AND CLEARING INSTRUCTIONS







## EXECUTION MECHANISMS



## ORDER-DRIVEN MARKETS

### Order matching rules

Order precedence hierarchy

- Price priority
- Secondary precedence rules

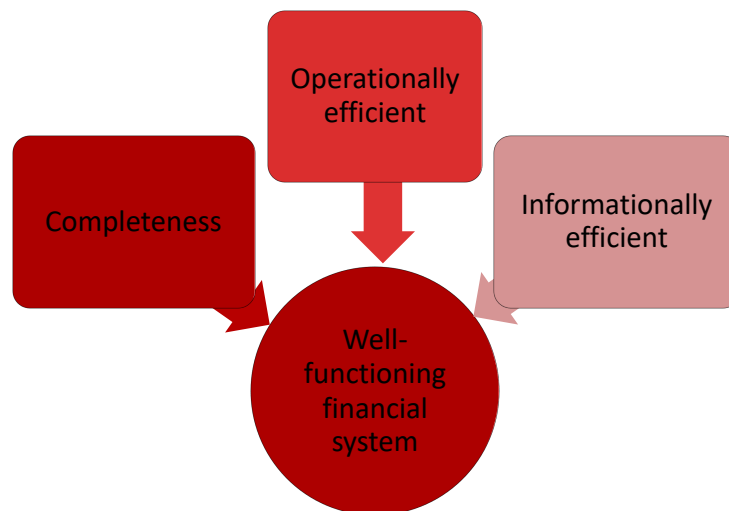
### Trade pricing rules

Uniform pricing rule

Discriminatory pricing rule

Derivative pricing rule

## WHAT ARE THE CHARACTERISTICS OF WELL-FUNCTIONING FINANCIAL SYSTEM?



## WHAT ARE THE OBJECTIVES OF MARKET REGULATION?

Control fraud

Control agency problems

Promote fairness

Set mutually beneficial standards

Prevent exploitation

Insure liabilities are funded

## SUMMARY

- ❖ Main functions of the financial system
- ❖ Classifications of assets and markets
- ❖ Financial intermediaries
- ❖ Long and short positions
- ❖ Leveraged positions
- ❖ Execution, validity, and clearing instructions
- ❖ Market and limit orders
- ❖ Primary and secondary markets
- ❖ Quote-driven, order-driven, and brokered markets
- ❖ Characteristics of a well-functioning market
- ❖ Objectives of market regulation

## 1.5 SECURITY MARKET INDICES

## THE ROLE OF INFORMATION

Information is critical to operate in financial markets. Prices constantly respond to the arrival of new information.

There are two broad classifications

**Public information:** newspapers, companies' announcements of results, experts forecasts, etc. Via the Internet, market's information circulates fast, requiring investors continuous attention to what is happening in the economy and businesses.

**Private information:** not publicly available and hard to pin down, but sometimes revealed by trading activity via indirect "signals" (substantial buy or sell orders).

OBS: Trading based upon inside information is illegal.

### Information and investors

The information that the investor needs to make the decision to invest or to follow the evolution of investment must be provided by:

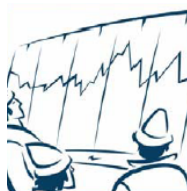
- ❖ **Financial intermediaries** (that are also obliged to assess the risk profile and level of financial knowledge of investors and make sure they are taking an informed investment decision)
- ❖ **Issuers of securities** (on what concerns their specific securities, via periodic reports, business announcements, etc.)
- ❖ **Supervision authorities** (posting on their websites relevant news about any issuer of securities)



## Indices

Indices are numbers or percentages that illustrate the evolution of a given market or of a particular market segment.

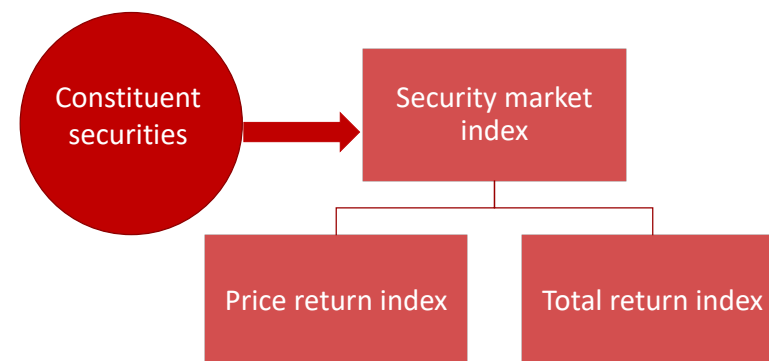
There are price indices and total return indices. Total return indices are computed similarly to price indices but include an additional correction for payment of dividends.



Examples of stock indices:

- ❖ Euronext 50
- ❖ CAC
- ❖ FTSE
- ❖ S&P500
- ❖ IBEX 35
- ❖ PSI 20
- ❖ Hang Seng
- ❖ ...

## DESCRIPTION OF A SECURITY MARKET INDEX



## CHOICES IN INDEX CONSTRUCTION AND MANAGEMENT

Which target market should the index represent?

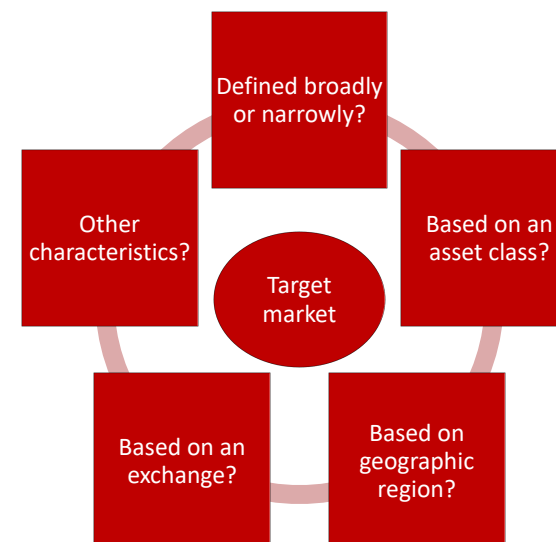
Which securities should be selected from that target market?

How much weight should be allocated to each security in the index?

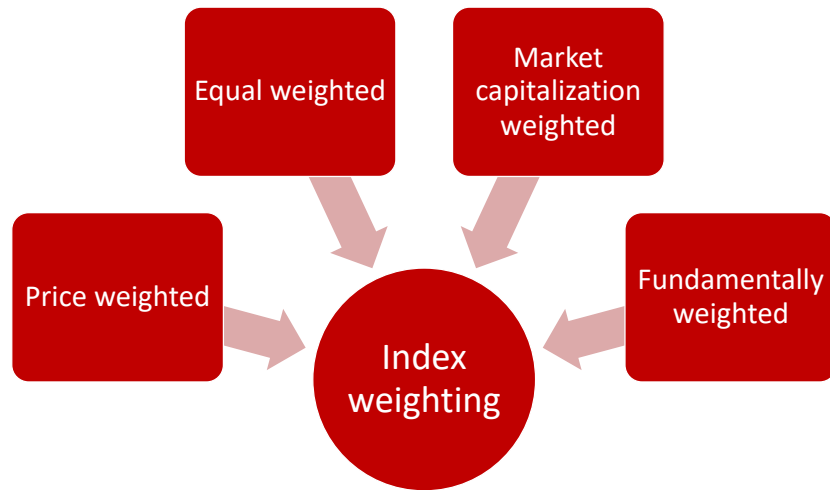
When should the index be rebalanced?

When should the security selection and weighting decision be re-examined?

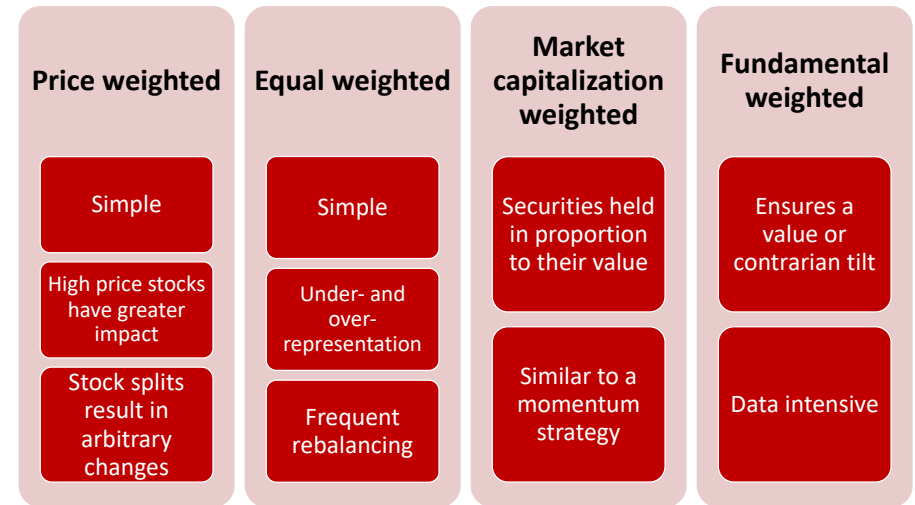
## TARGET MARKET SELECTION



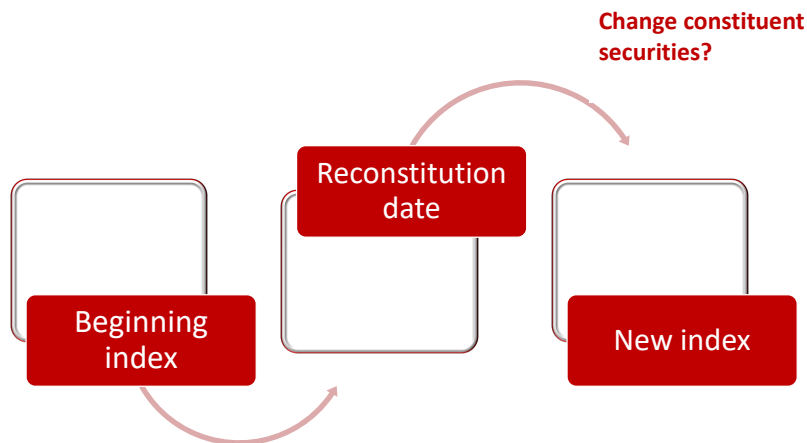
## DIFFERENT WEIGHTING METHODS USED IN INDEX CONSTRUCTION



## ADVANTAGES AND DISADVANTAGES



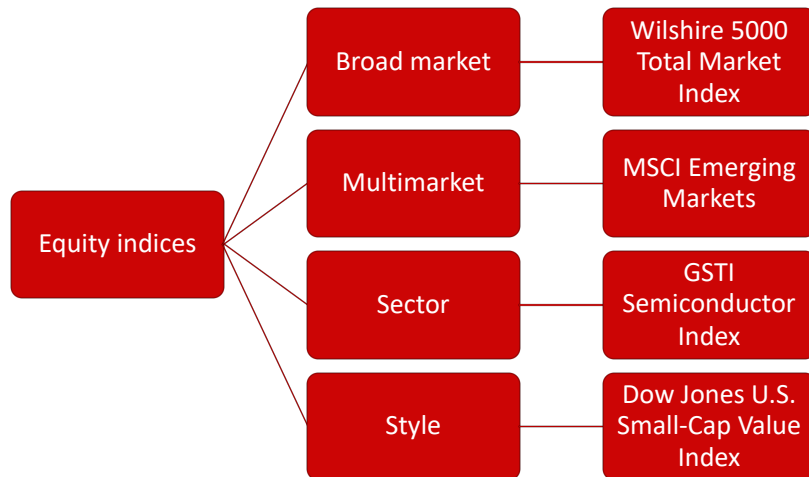
## RECONSTITUTION



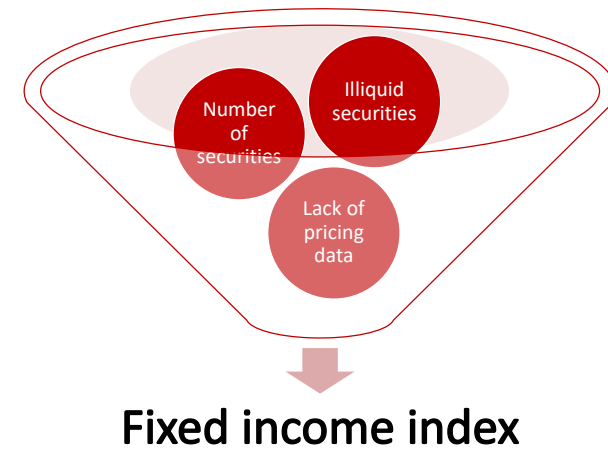
## USES OF MARKET INDICES

- Gauges of market sentiment
- Proxies for measuring and modeling returns, systematic risk, and risk-adjusted performance
- Proxies for asset classes in asset allocation models
- Benchmarks for actively managed portfolios
- Model portfolios for such investment products as index funds and exchange-traded funds (ETFs)

## EQUITY INDICES



## CHALLENGES FACING FIXED INCOME INDEX CONSTRUCTION



## DIMENSIONS OF FIXED-INCOME INDICES

Market	Global			
	Regional			
	Country or currency zone			
Type	Corporate	Collateralized Securitized Mortgage-backed	Government agency	Government
Maturity	For example, 1–3, 3–5, 5–7, 7–10, 10+ years; short-term, medium-term, or long-term			
Credit quality	For example, AAA, AA, A, BBB, etc.; Aaa, Aa, A, Baa, etc.; investment grade, high yield			

## SUMMARY (CONT.)

- ❖ Price return index
- ❖ Total return index
- ❖ Choices in index construction and management
- ❖ Advantages and disadvantages of different weighting schemes
- ❖ Rebalancing and reconstitution
- ❖ Uses of market indices
- ❖ Equity, fixed income, and alternative investment indices

## 2 EQUITY MARKETS

## STOCKS (SHARES)

**Stocks** are financial securities that represent a partial ownership position (called equity) in a corporation.

### Rights

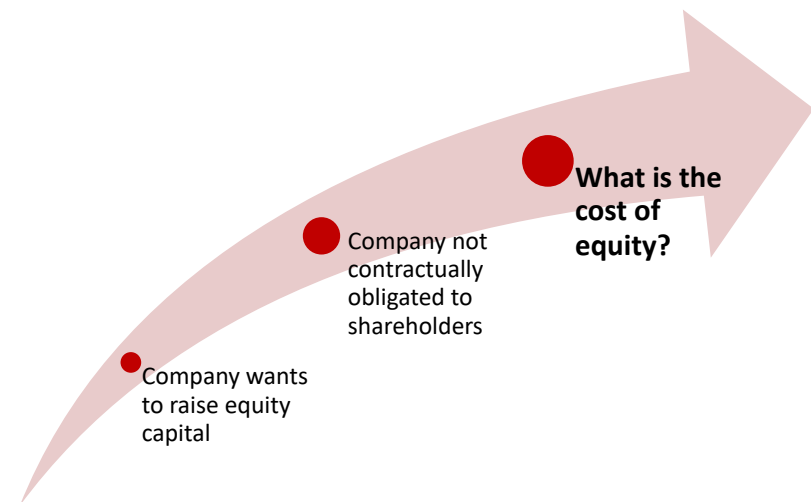
Stocks give investors, in particular, the right:

- To be present at general shareholders' meetings and to vote;
- To be informed about the business of the company, under certain conditions;
- To participate in profits and receive dividends in proportion to the shares held;
- If the company stops to exist, to receive a liquidation share value for the its assets after all creditors are paid, (if it exists).
- In the company's statutes there may also be other rights and obligations of investors, as well as limitations to the exercise of the right to vote.

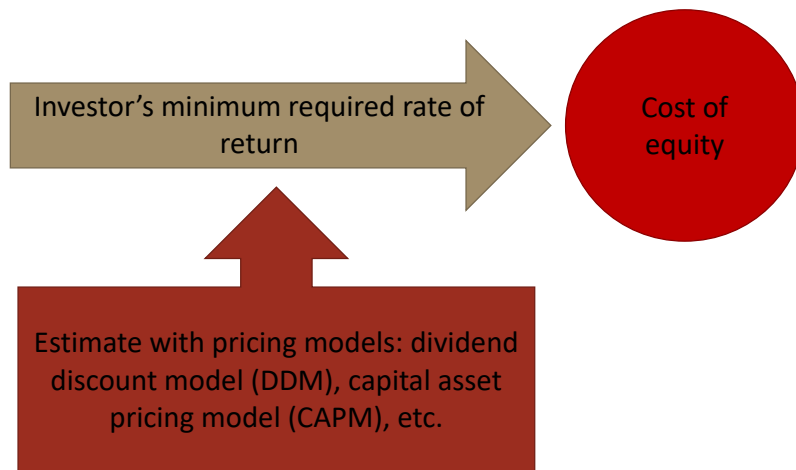
### Valuing Stocks

- Valuing a stock is to determine its "fair price", which should reflect the value of the company.
- The price of shares in a stock market tends to approach the actual value of the company, to the extent that the price incorporates all existing information.
- As any financial asset one should think in terms of **discounting future cash-flows**. In this respect, valuing stocks is a complex task for two reasons:
  - ❖ It is hard to predict the main sources of future returns of stocks traded in financial markets (dividends and capital gain/loses)
  - ❖ The risk differ from stock to stock and depends on a large amount of factors (e.g. interest rate evolution, how other companies perform in the market, etc.), so it is hard to figure out discount factors.

## THE COST OF EQUITY



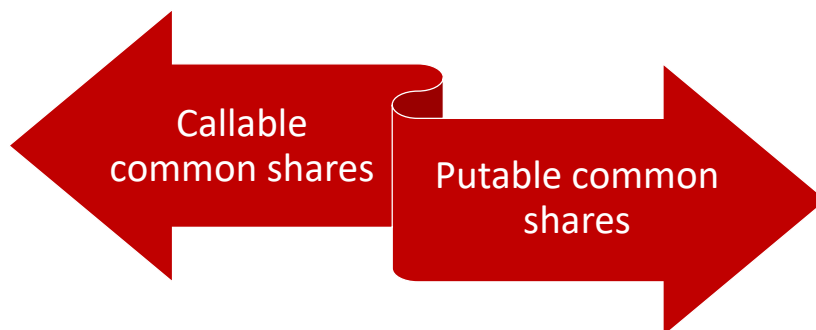
## INVESTOR'S REQUIRED RATE OF RETURN



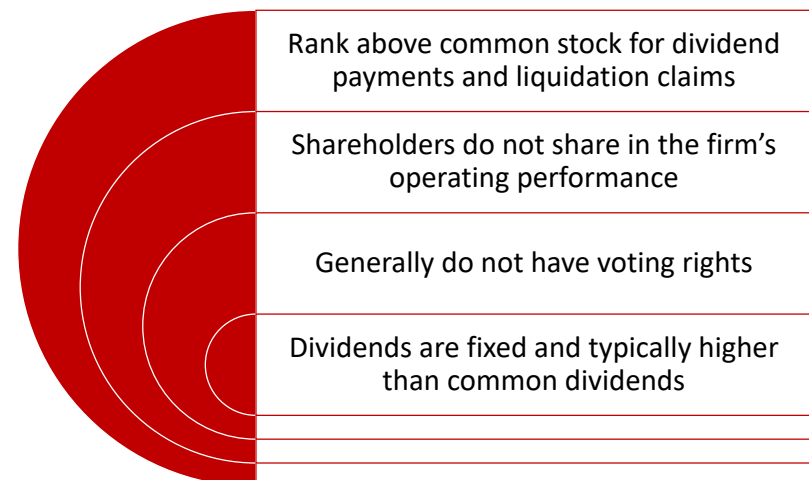
## MARKET CAPITALIZATION

- It is a measure of market size.
- It shows the current stock price times the number of outstanding shares.
- It is often referred to as Market Cap.

## EMBEDDED OPTIONS

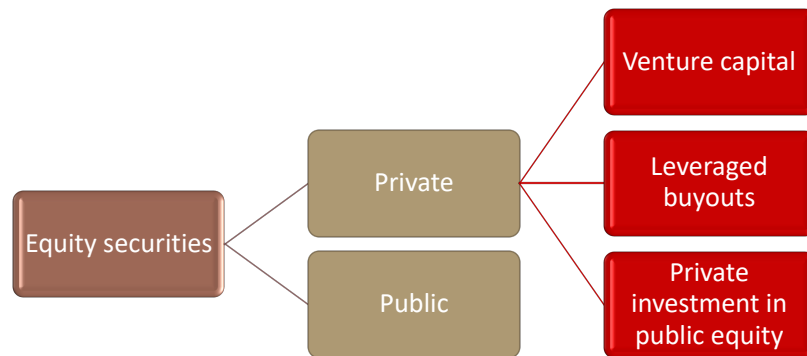


## PREFERENCE SHARES (PREFERRED STOCK)

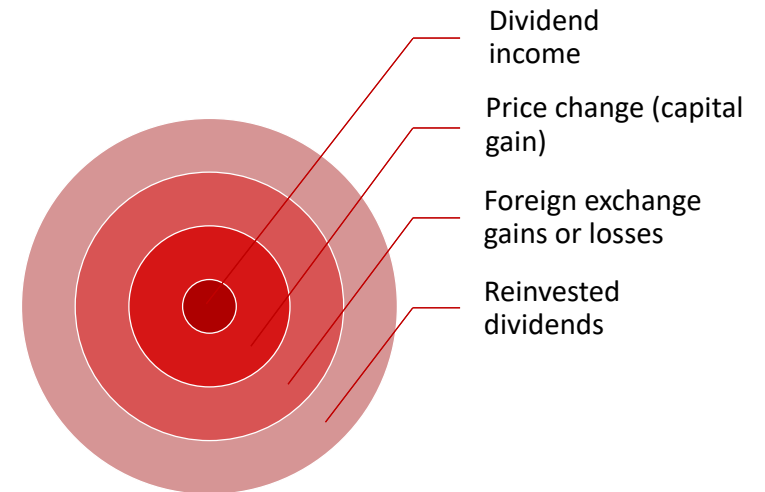




## PRIVATE EQUITY SECURITIES



## RETURN CHARACTERISTICS OF EQUITY SECURITIES



## DETACHED RIGHTS

Some securities (stocks, bonds, etc.) include rights that may be detached and traded separately.

These **Rights** that may be **detached** and become tradable by themselves are also securities per se.

- ✓ Their main characteristic is their typical short lifespan.

Examples from stocks:

- ❖ Subscription rights
- ❖ Capitalization rights

### Subscription Rights

✓ When companies decide to increase their shared capital by **issuing new shares**, investors who already hold shares will have, as a general rule, the right of preference in the purchase of the new shares to be issued.

✓ It is common to detach these subscription rights, from the previously existing shares.

Subscription rights are then traded separately from the shares themselves, for a short period time.

Investors who buy these rights can subscribe the new shares under the same conditions of previous shareholders.

✓ After the period during which rights can be traded or exercised, the subscription rights expire and stop existing.

### Capitalization Rights

- ✓ Companies may assign a portion of each year profits to a reserve account.
- ✓ This reserve may later then be used for the purposes of increasing the subscribed capital by the **capitalization of reserves**, issuing new shares.
- ✓ Existing shareholders have the right to a given ratio of the new shares for free.
- ✓ These capitalization rights may sometimes be tradable separately.

## FUND UNITS

- ✓ **Fund units** are securities that represent parcels of a collective investment fund.
- ✓ The capital of the fund results from savings of various investors. This capital is then invested in a variety of assets.
- ✓ The net value of the underlying assets (allowing for any charges and any accumulated income) is reflected in the fund value and, consequently, on the price of the units.
- ✓ The maturity of fund units is the same as the maturity of the fund.

## WARRANTS

- ✓ **Warrants**, are securities, with a limited lifespan, that concede investors a right over other assets (called the underlying assets).
- ✓ The underlying assets may be other securities (stocks, bonds, etc.), but also, financial indices, interest rates or exchange rates.
- ✓ The investor has always the possibility of not exercising the rights by letting the warrant expire.
- ✓ The **issuing entity** of a warrants takes on the position of guaranteeing those rights, if and when exercised.
- ✓ Only rights (no obligations) change hands when investors resell their positions to other investors.

### Rights

The most common rights warrants give investors are:

- ✓ The right to **buy** the underlying asset (*call* warrants)
- ✓ The right to **subscribe** the underlying asset
- ✓ The right to **sell** the underlying asset (*put* warrants)
- ✓ The right to **receive a difference between two prices** (a price computed based upon the underlying at exercise date and the exercise price)

### Types of Warrants

Warrants may differ according to the timeframe investors are allowed to exercise their rights:

- ✓ Some warrants can only be exercised at the maturity (**European type warrants**)
- ✓ Other warrants can be exercised at any moment since the moment investors buy it until maturity (**American type warrants**)
- ✓ But other exercise schemes also exist as exercise allowed a several pre-established dates (**Bermudan type warrants**)
- ✓ ...

## 3 FIXED-INCOME MARKETS

## 3.1 DEFINING ELEMENTS

### WHAT IS A FIXED-INCOME SECURITY?

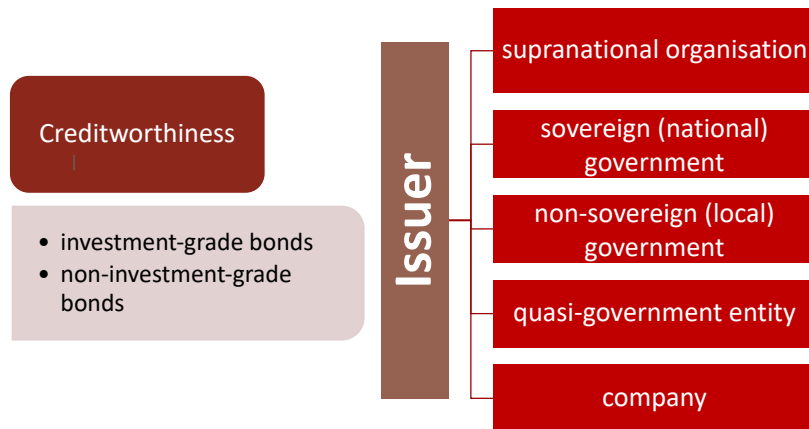
- ❖ A fixed-income security is a financial obligation of an entity (the issuer) that promises to pay a specified sum of money at specified future dates.
- ❖ A fixed-income security is an instrument that allow governments, companies, and other types of issuers to borrow money from investors.  

Any borrowing of money is debt.
- ❖ The terms “fixed-income securities,” “debt securities,” and “bonds” are often used interchangeably.

### OVERVIEW OF A FIXED-INCOME SECURITY

- ❖ There are three important elements when investing in a fixed-income securities:
  - The bond features, including the issuer, maturity, par value, coupon rate and frequency, and currency denomination.
  - The legal, regulatory, and tax considerations.
  - The contingency provisions that may affect the bond’s scheduled cash flows.
- ❖ All bonds, whether they are traditional or securitised bonds, are characterised by the same basic features.

## BASIC FEATURES OF A BOND



## BASIC FEATURES OF A BOND

### Maturity

- The maturity date is the date when the issuer is obligated to redeem the bond.
- The tenor, also known as term to maturity, is the time remaining until the bond's maturity date.
  - Money market securities are fixed-income securities with maturity up to one year.
  - Capital market securities are fixed-income securities with maturity longer than one year.

### Par value (principal) of a bond

- The par value of a bond is the amount the issuer agrees to repay the bondholders on the maturity date.

## BASIC FEATURES OF A BOND

### Coupon rate and frequency

- The coupon or nominal rate (yield) of a bond is the interest rate that the issuer agrees to pay each year until the maturity date.
- The coupon is the annual amount of interest payments and is determined by multiplying the coupon rate by the par value of the bond.
  - Plain vanilla bonds pay a fixed rate of interest.
  - Floating-rate notes (FRNs) or floaters pay a floating rate: a reference rate plus a spread.
  - Bonds that do not pay interest are called "zero-coupon bonds."

## BASIC FEATURES OF A BOND

### Currency denomination

- Bonds can be issued in any currency, mostly US dollars and euros.
- Dual-currency bonds make coupon payments in one currency and pay the par value at maturity in another currency.
- Currency option bonds are a combination of a single currency bond plus a foreign currency option.

## LEGAL, REGULATORY, AND TAX CONSIDERATIONS

### Bond indenture

- ❖ The trust deed is the legal contract that describes the form of the bond, the obligations of the issuer, and the rights of the bondholders.
- ❖ This legal contract is often called the “bond indenture.”
- ❖ The indenture is written in the name of the issuer and references features of the bond issue, such as par value, coupon rate and frequency, maturity date, and the funding sources for the interest and principal repayments, as well as any collaterals, covenants, and credit enhancements.

## BOND INDENTURE

### Legal identity of the bond issuer and its legal form

- ❖ The legal obligation to make the contractual payments is assigned to the bond issuer. The issuer is identified in the indenture by its legal name.

For sovereign bonds

- The issuer is usually the office responsible for the national budget.

For corporate bonds

- The issuer might be a holding company or a subsidiary.

For securitised bonds

- The legal obligation usually lies with special purpose vehicles.

## BOND INDENTURE

### Sources of repayment proceeds

Sovereign bonds

- Sovereign bonds are backed by the “full faith and credit” of the national government and thus by that government’s ability to raise tax revenues and print money.

Non-sovereign government bonds

- The major sources for repayment include the general taxing authority of the issuer, the cash flows of the project the bond issue is financing, and special taxes or fees established specifically for the purpose of funding the payments of interest and principal.

Corporate bonds

- The source of payment for corporate bonds is the issuer’s ability to generate cash flows, primarily through its operations

## BOND INDENTURE

### Asset or collateral backing

- Collateral backing is the way to alleviate credit risk.

Credit risk is affected by

**Seniority ranking:**  
secured, unsecured, or subordinate (junior)

**Credit enhancement:**  
internal or external

**Bond covenants**  
(legally enforceable rules that borrowers and lenders agree on at the time of a new bond issue):  
affirmative (positive) or negative

**Types and quality of collateral backing:**  
mortgages, equipment or other physical assets, financial assets, and others

## BOND COVENANTS

- ❖ Affirmative covenants enumerate what issuers are required to do.  
For example, to comply with all laws and regulations, maintain their current lines of business
- ❖ Negative covenants enumerate what issuers are prohibited from doing.  
For example, restrictions on debt, negative pledges, restrictions on prior claims

## LEGAL AND REGULATORY CONSIDERATIONS

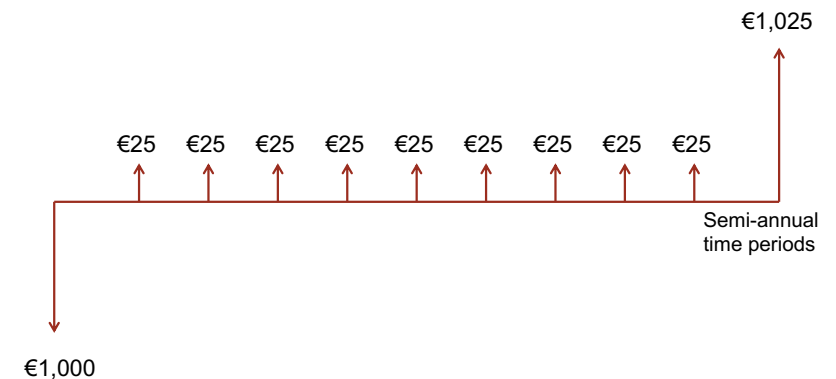
- ❖ Fixed-income securities are subject to different legal and regulatory requirements depending on where they are issued and traded as well as on who holds them.
- ❖ There are no unified legal and regulatory requirements that apply globally.
- ❖ The global bond markets consist of national bond markets and the Eurobond market.

## TAX CONSIDERATIONS

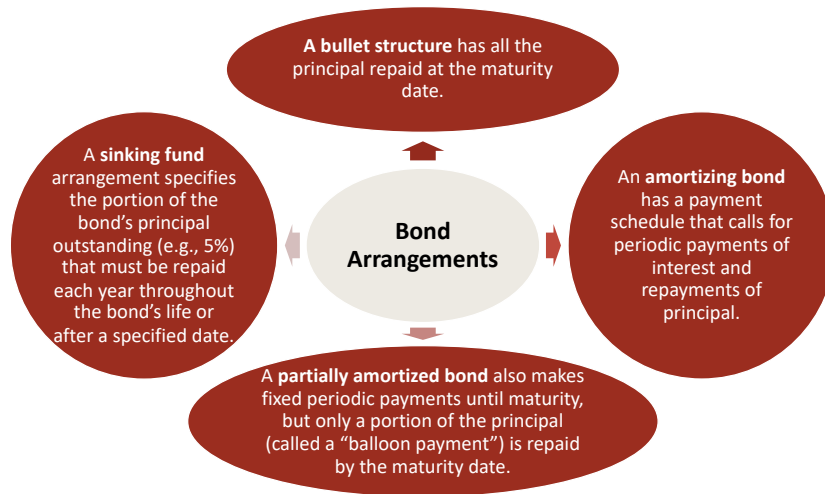
- ❖ Interest payments and capital gains are often subject to taxation. Tax treatment of both varies from jurisdiction to justification.
  - The income portion of a bond investment is typically taxed at the ordinary income tax rate. Tax-exempt securities are the exception to this rule.
  - A tax on capital gains may apply if the bond sale price exceeds the bond purchase price.
  - The original issue discount might be subject to a tax for discount bonds (such as zero-coupon bonds).

## STRUCTURE OF A BOND'S CASH FLOWS

- ❖ The most common payment structure by far is that of a plain vanilla bond, as depicted below.



## PRINCIPAL REPAYMENT STRUCTURES



## Coupon Payment Structures

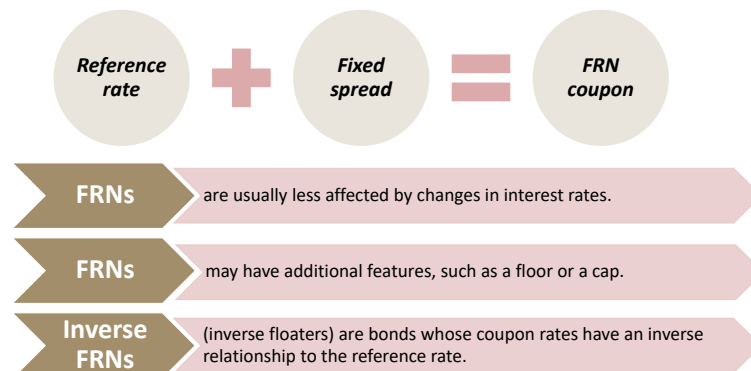
- Conventional bonds pay a fixed periodic coupon over a specified time to maturity, typically annually or semi-annually and occasionally quarterly.

### Instruments with other coupon structures:

- floating-rate notes
- step-up coupon bonds
- credit-linked coupon bonds
- payment-in-kind coupon bonds
- deferred coupon bonds
- index-linked bonds

## Coupon Payment Structures

- FRNs typically pay a quarterly coupon.
- The coupon is determined by the formula



## Coupon Payment Structures

### Step-up coupon bonds

have a fixed or floating coupon, which increases by specified margins at specified dates

offer bondholders some protection against rising interest rates and may be an important feature for callable bonds

### Credit-linked coupon bonds

have a coupon that changes when the bond's credit rating changes

Are attractive to investors who are concerned about the future creditworthiness of the issuer

## COUPON PAYMENT STRUCTURES

### Payment-in-kind (PIK) bonds

typically allow the issuer to pay interest in the form of additional amounts of the bond issue rather than a cash payment

typically are favored by issuers who are concerned that the issuer may face potential cash flow problems in the future

### Deferred coupon (i.e., split coupon) bonds

pay no coupon for the first few years but then pay a higher coupon than they otherwise normally would for the remainder of their life

are also common in project financing when the assets being developed do not generate any income during the development phase

## COUPON PAYMENT STRUCTURES

### Index-linked bonds

have their coupon payments and/or principal repayment linked to a specified index

- Bonds can potentially be linked to any published economic and financial variable/index.

- Bonds linked to a rate of inflation are called “inflation-linked bonds” (e.g., Treasury inflation-protected securities, or TIPS, in the United States).

- ❖ Cash flows of the index-linked bond can be linked to the specified index by linking the interest payments (interest-indexed bonds), the principal repayment (zero-coupon bonds), or both (capital-indexed bonds and indexed annuity bonds).
- ❖ An equity-linked note (ELN) is a fixed-income security that differs from a conventional bond in that the final payment is based on the return of an equity index.

## BONDS WITH CONTINGENCY PROVISIONS

- ❖ A contingency provision is a clause in a legal document that allows for some action if the event or circumstance does occur (i.e., embedded option).
- ❖ Some common types of bonds with embedded options include callable bonds, puttable bonds, and convertible bonds.

## BONDS WITH CONTINGENCY PROVISIONS

### Callable bonds

- Callable bonds give the issuer the right to redeem all or part of the bond before the specified maturity date.
- The primary reason why issuers choose to issue callable bonds rather than non-callable bonds is to protect themselves against a decline in interest rates.

### Puttable bonds

- The bondholder has the right to sell the bond back to the issuer at a pre-determined price on specified dates.
- Puttable bonds are beneficial for the bondholder by guaranteeing a pre-specified selling price at the redemption dates.



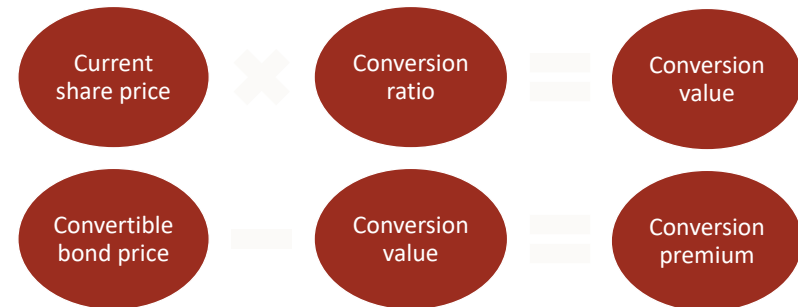
## BONDS WITH CONTINGENCY PROVISIONS

### Convertible bonds

- They are a hybrid security with both debt and equity features.
- The bondholder has the right to exchange the bond for a specified number of common shares in the issuing company.
- They are beneficial to bondholders.
- The bondholder has the ability to convert bonds into equity in case of share price appreciation and thus participate in the equity up side.
- At the same time, the bondholder receives downside protection; if the share price does not appreciate, the convertible bond offers the comfort of regular coupon payments and the promise of principal repayment at maturity.

## BONDS WITH CONTINGENCY PROVISIONS

- ❖ The conversion price is the price per share at which the convertible bond can be converted into shares.
- ❖ The conversion ratio is the number of common shares that each bond can be converted into.



## SUMMARY

### Important elements to consider when investing in a fixed-income security

- the bond's features
- the legal, regulatory, and tax considerations
- the contingency provisions

### The basic features of a bond

- the issuer, maturity, par value (or principal), coupon rate and frequency, and currency denomination

### The bond indenture or trust deed

- The bond indenture is the legal contract that describes the form of the bond, the issuer's obligations, and the investor's rights.
- The indenture is usually held by a financial institution called a "trustee," which performs various duties specified in the indenture.

## SUMMARY

### Bond covenants

- Bond covenants are legally enforceable rules that borrowers and lenders agree on at the time of a new bond issue.
- Affirmative covenants enumerate what issuers are required to do, whereas negative covenants enumerate what issuers are prohibited from doing.

### Legal and regulatory considerations

- An important consideration for investors is where the bonds are issued and traded because it affects the laws, regulations, and tax statuses that apply.

### Bond arrangements

- An amortizing bond is a bond whose payment schedule requires periodic payment of interest and repayment of principal. This differs from a bullet bond, whose entire payment of principal occurs at maturity.

## SUMMARY

### Coupon payment structures

- fixed-coupon bonds
- floating rate notes
- bonds with step-up coupons
- bonds with credit-linked coupons
- bonds with payment-in-kind coupons
- bonds with deferred coupons

### Bonds with embedded options

- Common types of bonds with embedded options include callable bonds, puttable bonds, and convertible bonds.
- These options are “embedded” in the sense that there are provisions provided in the indenture that grant either the issuer or the bondholder certain rights affecting the disposal or redemption of the bond. They are not separately traded securities.

## 4 DERIVATIVES

## 4.1 BASIC ELEMENTS

## WHAT IS A DERIVATIVE?

- ❖ A derivative is a financial instrument that derives its performance from the performance of an underlying asset
- ❖ Common derivatives underlying assets are:
  - Equities,
  - Fixed-income securities,
  - Currencies, and
  - Commodities.

## CLASSES OF DERIVATIVES

- ❖ Forward Commitments – Agreements to transact at a later date
  - Forward Contracts
  - Futures Contracts
  - Swaps
  
- ❖ Contingent Claims – Give the holder the right to make a transaction
  - Options

## DERIVATIVE MARKETS

Derivatives can be traded on an organized exchange or in over-the-counter (OTC) markets.

- ❖ Exchange-traded derivatives are standardized
- ❖ OTC derivatives are customized

## EXCHANGE-TRADED DERIVATIVES

Characteristics of **derivatives traded on an exchange** may include:

- ❖ Standardized contract features such as:
  - Contract size
  - Expiration date
  - Underlying assets
- ❖ Exchange trades are guaranteed by a clearing house:
  - The clearing house requires a margin bond from the contract participants
- ❖ Transparency
- ❖ Regulation

## CHARACTERISTICS OF OVER-THE-COUNTER (OTC) DERIVATIVES

**OTC derivatives** are customized.

Key features may include:

- ❖ Flexibility in contract size and asset specification
- ❖ Flexibility in expiration date
- ❖ OTC derivative markets operate with less regulation and oversight than do exchange-traded derivative markets:
  - Since the financial crisis, OTC derivative activity has come to the attention of lawmakers.
  - Planned regulations may require OTC transactions to be traded through a clearing agency and reported to regulators.

## THE PURPOSES AND BENEFITS OF DERIVATIVES

There are many useful **purposes of derivatives** markets including:

- ❖ Risk allocation, transfer, and management
- ❖ Information discovery
  - Price discovery
  - Implied volatility
- ❖ Operational advantages
- ❖ Market efficiency

## CRITICISMS AND MISUSES OF DERIVATIVES

Arguments **against derivatives** include the ideas that they:

- ❖ Are used for speculation and gambling
- ❖ Are destabilizing and add systemic risk to the financial system
- ❖ Are complex

## INTUITION OF DERIVATIVE PRICING

Derivatives can be valued by constructing a **hedge** portfolio, a hypothetical combination of the derivatives and the underlying that eliminates risk.

- ❖ A portfolio that eliminates risk should earn the risk-free rate.
- ❖ A derivative's value is the price of the derivative that forces the hedge portfolio to earn the risk-free rate.

## INTUITION OF DERIVATIVE PRICING

Derivative valuation relies completely on the ability of an investor **to hold or store the underlying asset.**

- ❖ Storable assets include gold, silver, and financial assets (equities and currencies)
- ❖ Assets with limited storability include grains (wheat, oats, and corn)
- ❖ Holding an asset may incur costs (storage and insurance)
- ❖ Holding an asset may also provide benefits (such as dividends)
- ❖ The consideration of storage costs (and benefits) plays a role in the valuation of derivatives

## ARBITRAGE

*In well-functioning markets with low transaction costs and a free flow of information, identical assets must sell for the same price.*

This is referred to as the **Law of One Price**.

- ❖ If identical assets do not sell at the same price, a trader could buy the cheaper asset and sell it in the more expensive market, earning a riskless profit. This is known as **arbitrage** (capturing price differences on identical assets to earn a riskless profit).
- ❖ The combined action of arbitrageurs continues until the prices of identical assets converge.
- ❖ Arbitrage is a *relative* valuation methodology. It tells us the correct price of one asset or derivative *relative to* another asset or derivative.

## ARBITRAGE AND MARKET EFFICIENCY

The forces of arbitrage in financial markets assure us that:

- ❖ the same asset cannot sell for different prices
- ❖ nor can two equivalent combinations of assets that produce the same results sell for different prices
- ❖ Markets in which arbitrage opportunities are either nonexistent or quickly eliminated are relatively efficient markets.
- ❖ Efficient markets fairly compensate investors for risk.
- ❖ Arbitrage opportunities give investors a return above the risk-free rate without taking risk.
- ❖ The abnormal returns generated by arbitrage are a violation of market efficiency.

## 4.2 FORWARDS AND FUTURES

### EXAMPLE OF DAILY SETTLEMENT

A trader goes long at a futures price of \$1200. The exchange requires an initial margin (IM) of \$150 and a maintenance margin (MM) of \$75. The trader deposits \$150 into a margin account to open a long position at \$1200.

- At the end of the day 1, the futures price settles at \$1180.
  - The account is marked to market at \$1180, and \$20 is withdrawn from the trader's account bringing the balance to \$130.
- At the end of day 2, the futures price settles at \$1120.
  - The account is marked to market at \$1120, and \$60 is withdrawn from the trader's account bringing the balance to \$70.
  - The margin balance is below the MM, so the trader receives a margin call.
  - To keep the long position opened, the trader must deposit enough money to bring the account back the IM. In this case \$80 must be deposited.

### 4.3 OPTION CONTRACTS

### OPTION POSITIONS AND THEIR UNDERLYING RISK EXPOSURES

<u>Strategy</u>	<u>Option position</u>	<u>Exposure to underlying risk</u>
Buy call	Long	Long
Sell call	Short	Short
Buy put	Long	Short
Sell put	Short	Long

### OPTION PAYOFF EXAMPLE

At expiration the underlying asset price  $S_T$  is \$28. If the strike price  $X$  is \$25, what is the payoff of the put and call?

Payoff to the call buyer:

$$c_T = \text{Max}(0, S_T - X) = \text{Max}(0, \$28 - \$25) = \$3$$

Payoff to the put buyer:

$$p_T = \text{Max}(0, X - S_T) = \text{Max}(0, \$25 - \$28) = 0$$

When the option has a positive payoff it is said to be **in the money**. In the example above, the call option is **in the money**. The put option is **out of the money** because  $X - S_T$  is less than 0.

When  $S_T = X$ , the option is said to be **at the money**.

### OPTION PROFIT

Since option buyer must pay a price (or option premium), the profit is computed by subtracting the option premium from the option payoff.

Assumptions and symbol definitions:

$S_T$ : the price of the underlying at the expiration date,  $T$ , and

$X$ : the exercise price of the option

$c_0$ : the price (premium) of the call option

$p_0$ : the price (premium) of the put option

Profit to the call buyer:  $\Pi = \text{Max}(0, S_T - X) - c_0$

Profit to the put buyer:  $\Pi = \text{Max}(0, X - S_T) - p_0$

## OPTION PROFIT EXAMPLE

Assume that a put and call on CBX stock both have a strike price  $X = \$30$ . The call initially costs  $\$1$ , and the put costs  $\$2$ .

What is the profit on the call and put if the price of CBX stock at expiration ( $S_T$ ) is  $\$27.50$ ?

$$\begin{aligned} \text{Profit to the call buyer: } \Pi &= \text{Max}(0, S_T - X) - c_0 = \\ & \text{Max}(0, \$27.50 - \$30) - \$1 = -\$1 \end{aligned}$$

$$\begin{aligned} \text{Profit to the put buyer: } \Pi &= \text{Max}(0, X - S_T) - p_0 = \\ & \text{Max}(0, \$30 - \$27.50) - \$2 = \$0.50 \end{aligned}$$

## FORWARD CONTRACTS VS. CONTINGENT CLAIMS

Both forward contracts and contingent claims derive their values from the performance of an underlying asset.

- ❖ A forward contract represents an *obligation* to trade the agreed upon asset at a future date. The potential loss on a long forward contract can be as great as the full contract price. For a short forward contract, the loss can be infinite.
- ❖ A contingent claim grants the holder the *right* to trade, but he/she is not obligated to do so. The most the buyer can lose on a contingent claim is the premium paid for that claim.

## 4.4 SWAPS

## SWAPS DEFINITION

A swap is an over-the-counter derivative contract in which two parties agree to exchange a series of cash flows whereby one party pays a variable series that will be determined by an underlying asset or rate and the other party pays either (1) a variable series determined by a different underlying asset or rate or (2) a fixed series.

A swap is similar to a forward contract:

- ❖ A swap is an OTC contract
- ❖ A swap is subject to default risk
- ❖ A swap is negotiated between two parties and is customized

However, a Swap is used to hedge multi-period risk, whereas a forward contract hedges only single-period risks.

## THE MARKET VALUE OF A SWAP

- ❖ The market value of a swap is zero at interception.
- ❖ Once the swap is struck, its market value will generally no longer be zero because:
  - Market evolution of prices/rates associated with the cash-flows;
  - to the implicit borrowing and lending.
- ❖ A buyer wishing to exit the swap could enter into an offsetting swap with the original counterparty or whomever offers the best price.
- ❖ The market value of the swap is the difference in the PV of payments between the original and new swap rates.

## INTEREST RATE SWAPS

- ❖ The notional principle of the swap is the amount on which the interest payments are based.
- ❖ The life of the swap is the **swap term** or **swap tenor**.
- ❖ If swap payments are made at the end of the period (when interest is due), the swap is said to be **settled in arrears**.

## FIXED-FOR-FLOATING INTEREST RATE SWAP EXAMPLE

### Example:

Company A borrows \$50,000,000 for 2 years with quarterly interest payments made at 90-day Libor. The firm is worried that Libor (a floating rate) may increase.

Company A enters into a 2-year **fixed-for-floating swap** with Swap Dealer B based on a notional principal of \$50,000,000.

Company A agrees to make quarterly payments based on a fixed rate of 4.5% in exchange for a payment from Dealer B based on 90-day Libor.

- If Libor sets at 6% at the end of a quarter, Company A will **receive** a payment based on the net difference of 1.5%.
- If Libor sets at 3.5% at the end of a quarter, Company A will **make** a payment to Swap Dealer B based on a net difference of 1%.

In either case, by entering the swap, Company A has effectively converted a floating-rate loan based on Libor into a 4.5% fixed rate loan.

## CURRENCY SWAPS

- ❖ A **currency swap** entails an exchange of payments in different currencies.
- ❖ A currency swap is equivalent to borrowing in one currency and lending in another.



## OTHER CURRENCY SWAPS

- ❖ A **diff swap**, short for differential swap, is a swap where payments are made based on the difference in floating interest rates in two different currencies, with the notional amount in a single currency.
- ❖ Standard currency forward contracts cannot be used to hedge a diff swap.
  - We can't easily hedge the exchange rate at which the value of the interest rate change is converted because we don't know in advance how much currency will need to be converted.

## EQUITY SWAPS

- ❖ Agreement between two parties to Exchange cash-flows in future moments in time where, at least one of the cash-flows is based on the price of an equity type asset (a share or a stock index)
- ❖ Types of *Equity Swaps*
  - Equity return by fix rate
  - Equity return by floating rate
  - Equity return by equity return

## AMORTIZING AND ACCRETING SWAPS

- ❖ An **amortizing swap** is a swap where the notional value is *declining* over time (e.g., floating rate mortgage).
- ❖ An **accreting swap** is a swap where the notional value is *growing* over time.

## SWAPTIONS

- ❖ A **swaption** is an *option* to enter into a swap with specified terms. This contract will have a premium.
- ❖ A swaption is analogous to an ordinary option, with the PV of the swap obligations (the price of the prepaid swap) as the underlying asset.
- ❖ Swaptions can be American or European.

## SWAPTIONS

- A **payer swaption** gives its holder the right, but not the obligation, to pay the fixed price/rate and receive the floating price/rate.
  - The holder of a payer swaption would exercise when the fixed swap price/rate is above the strike.
- A **receiver swaption** gives its holder the right to pay the floating price/rate and receive the fixed strike price/rate.
  - The holder of a receiver swaption would exercise when the fixed swap price/rate is below the strike.

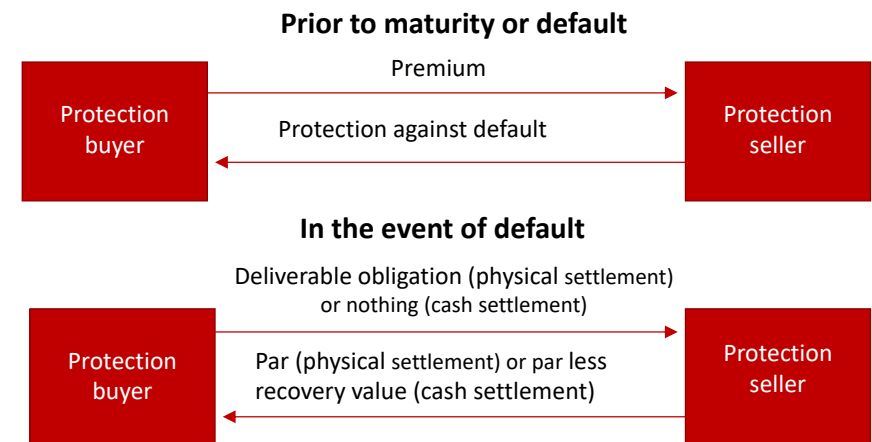
## TOTAL RETURN SWAPS

- ❖ A **total return swap** is a swap, in which one party pays the realized total return (dividends plus capital gains) on a reference asset, and the other party pays a floating return such as LIBOR.
- ❖ The two parties exchange only the difference between these rates.
- ❖ The party paying the return on the reference asset is the **total return payer**.
- ❖ Some uses of total return swaps are:
  - avoiding withholding taxes on foreign stocks,
  - management of credit risk.

## CREDIT DEFAULT SWAPS

- ❖ A **Credit default swap** is a swap, in which the seller makes a payment to the buyer if the reference asset experiences a “credit event” (e.g., a failure to make a scheduled payment on a bond).
  - A default swap allows the buyer to eliminate bankruptcy risk, while retaining interest rate risk.
  - The buyer pays a premium, usually amortized over a series of payments.

## CREDIT DEFAULT SWAPS (CDS)

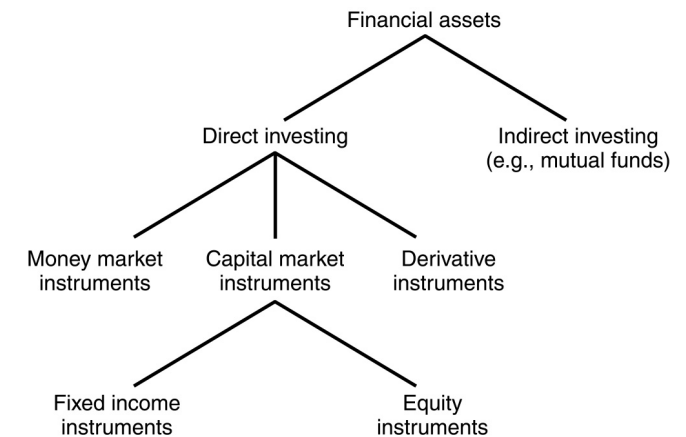


## OTHER TYPES OF SWAPS

- ❖ Floating-for-floating interest rate swaps
- ❖ step up swaps
- ❖ forward swaps
- ❖ constant maturity swaps
- ❖ compounding swaps
- ❖ LIBOR-in-arrears swaps
- ❖ accrual swaps
- ❖ cross currency interest rate swaps
- ❖ extendable swaps
- ❖ puttable swaps
- ❖ commodity swaps
- ❖ volatility swaps
- ❖ Etc.

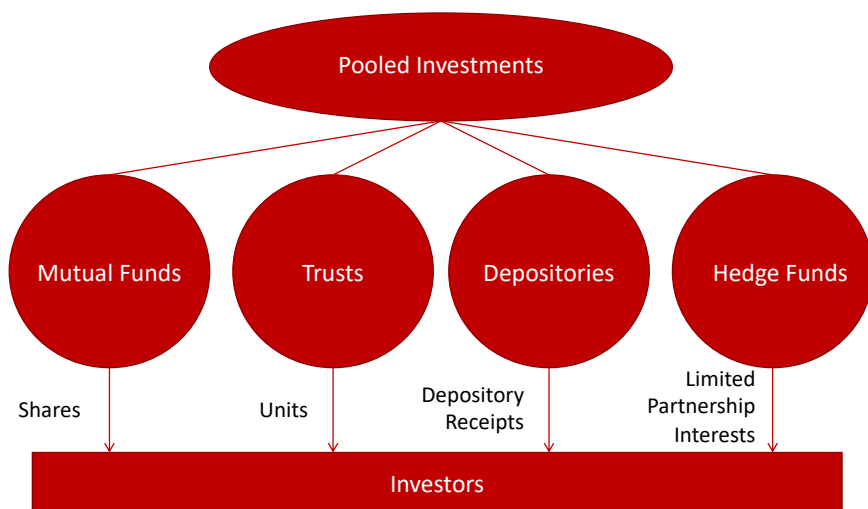
## 5 POOLED INVESTMENTS

## 5.1 INVESTMENT FUNDS



✓ For the investors, they represent alternatives forms of investment.

## POOLED INVESTMENTS



## INVESTMENTS FUNDS

An investment fund is a set of assets belonging to several investors, intended for investment in securities and managed by professionals (managing companies).

- Fund's investors are commonly called **fund participants**.
- The net worth of a fund may be invested in various assets, e.g. stocks and bonds, so as to constitute a diverse set of securities or other financial assets – **mutual funds**.
- There are also funds whose investment strategy is mainly to invest in real estate assets – **real estate funds**.
- The set of assets fund managers invest is called the fund **portfolio**. Fund managers are obliged to give investors information about the portfolio exact composition, at least, on a monthly basis.
- Fund managers are also the ones responsible to compute the **value of fund units**.

### Types of Funds - # of units

- **Open-end funds**, in which investors can subscribe and redeem the units at any time, so the number of fund units under circulation varies;
- **Closed-end funds**, where the number of units is fixed, investors make their subscriptions within a specified time period and their redemption or repayment, as a rule, occurs only at fund's liquidation, in a predefined date.
- **Mixed funds**, differ by the fact that a part of the fund's value is divided by the fixed number of units and the rest by a variable number.

### Types of Funds - Returns

- The returns generated by the funds may be periodic, partially or totally distributed to investors. In this case, they are called **distribution of funds**. Whenever a fund distributes returns, the value of its units is reduced. It is usual to give investors the possibility to choose to receive the return or to reinvest it subscribing more fund units.
- The funds that do not distribute returns and automatically including all income into the fund's capital, are called "**capitalization funds**" or "**cumulative funds**". All returns are thus embedded in the fund unit value so investors will only receive them at redemption time.

## Types of Funds - investments

- **Treasury funds**  
Characterized by the predominance of investment in short-term and extremely liquid products (such as T-bills, etc.).
- **Money market funds**  
These funds are similar to Treasury funds, but should have a greater percentage of their assets invested in short-term applications with high liquidity and in bank deposits.
- **Bond funds**  
Are the funds whose assets are composed mostly by Bonds. These funds have increased risk in comparison to the previous funds, on the other hand, offer greater profitability. The most relevant risk of this category of funds is the credit risk of the bonds they invest in.

Bond funds can also be divided into:

- ✓ **Fixed-rate bond funds**  
Are funds that invest primarily in fixed coupon bonds. These funds are more exposed to interest rate risk. If interest rates increase, the value of bonds held by the Fund will tend to decrease. As a result, the value of units will also decrease, and there is a risk of capital loss.
- ✓ **Floating-rate bond funds**  
Are funds that invest primarily in bonds with floating coupons. Despite also being subject to interest rate risk, they are much less exposed than fixed-rate bonds (if the floating rate is a reference interest rate). If interest rates increase both coupon and discount factors increase, somehow (at least partially) compensating one another. As they are less risky they also tend to have lower expected return.
- **Equity funds**  
Are the funds investing primarily in stocks. These funds have greater risk, as the value of fund units strongly depend on the price changes in the stocks they invest in. Of course some stocks and equity markets are riskier than others.

- **Mixed Funds**  
Are funds that combine characteristics of bond funds and equity funds. The risk and profitability associated with these funds varies as a function of greater or lesser weight that the stocks and bonds have in the fund's assets. Also its risk depends on the particular assets themselves (issuers, countries, etc.)
- **Funds of funds**  
Are the funds that invest primarily in units of other funds. The risk and return profile depends strongly on the funds they choose to invest in.
- **Index funds**  
Are equity and/or bond funds whose investment policy is to replicate all or part of a given stock or bond index. They are called passive funds as the task of managers is reduced to the replication of the index. As a rule, these funds have lower management fees than equity or bond funds.

- **Guaranteed Funds**  
Are funds that have embedded special capital guarantees and/or a particular return profile. Popular guarantee mechanisms are:
  - ❖ Guarantees provided by a third party, although the management of the Fund is to be conducted autonomously to the possible need for its actuation;
  - ❖ Use of financial instruments suitable for that purpose, usually derivative products.
- **Free Funds**  
Are funds that do not assume any commitment regarding the composition of their investment. All advertising or information concerning these funds should include a mention about the degree of flexibility allowed when investing.

### ➤ Hedge funds

The risks to which the investment funds are exposed to can be reduced or increased by the use of derivative financial instruments.

#### ❖ Hedging

Derivatives can be used to cover some of the risk exposure of the fund portfolio – thus the name “hedge”.

#### ❖ Leverage

But they can also be used to increase risk exposure by using derivatives to leverage the underlying risk. Portfolios of hedge funds are perceived as more sophisticated and riskier than those of common mutual funds.

### Costs

- **Subscription/entry fee (Front-end load)** – if it exists, is collected by the holding company at the time the investor underwrites units. The amount is added to the value of the participation units.
- **Redemption/exit fee (close-end load)** – If it exists, is collected by the holding company at the time investor receives the redemption value of units. The amount is subtracted from the value of the units. This fee usually is inversely related to the time of investment.
- **Management fees** – They are withdrawn directly from the fund value (on a yearly basis) and their aim is to pay the services provided by the holding company. The unit value of participation already incorporates this cost.



**OBS:** All these costs make funds adequate mostly for *buy and hold* type investors.

### ETFs

- An exchange-traded fund (ETF) is an investment fund traded on stock exchanges, much like stocks.
- Combine the advantages of diversification, characteristic of investment funds, with the ease of trading of stocks. Are more suitable to investors who have a profile more "active" with regard to their investments.
- Most ETFs replicate the evolution of a given index (passive management as in index funds). More recently, some active management ETFs have also been authorized, but imply total transparency in the portfolio composition and form of management.
- Nowadays, there are also so-called "leveraged ETFs" or "inverse ETFs", which use derivatives so that its performance corresponds to a multiple, or varies in the opposite direction of the daily performance of the given index.

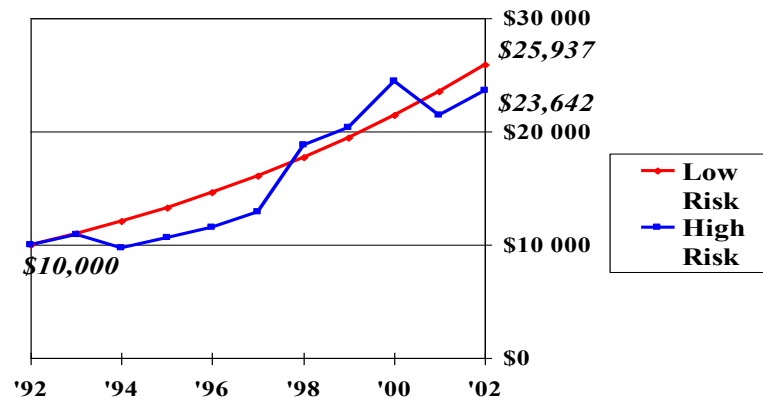
## 5.2 THE PROCESS OF PORTFOLIO MANAGEMENT

## Portfolio Management

- ✓ Literature supports the **efficient markets paradigm**
  - ❖ On a well-developed securities exchange, asset prices accurately reflect the tradeoff between relative risk and potential returns of a security
    - Efforts to identify undervalued securities are fruitless
    - Free lunches are difficult to find
  - ❖ A properly constructed portfolio achieves a **given level of expected return** with the **least possible risk**
    - Portfolio managers have a duty to create the best possible collection of investments for each customer's unique needs and circumstances

## Purpose of Portfolio Management

- ✓ Portfolio management primarily involves **reducing risk** rather than increasing return
    - ❖ Consider two \$10,000 investments:
      - 1) Earns 10% per year for each of ten years (**low risk**)
      - 2) Earns 9%, -11%, 10%, 8%, 12%, 46%, 8%, 20%, -12%, and 10% in the ten years, respectively (**high risk**)
- ↓
- 1) Earns 10% per year for each of ten years (**low risk**)
    - Terminal value is \$25,937
  - 2) Earns 9%, -11%, 10%, 8%, 12%, 46%, 8%, 20%, -12%, and 10% in the ten years, respectively (**high risk**)
    - Terminal value is \$23,642



- ✓ The lower the dispersion of returns, the greater the terminal value of equal investments

## STEP ONE: PLANNING

- ✓ A person cannot be an effective portfolio manager without a **solid grounding in the basic principles of finance**
- ✓ The **two key concepts** in finance are:
  - 1) A dollar today is worth more than a dollar tomorrow
  - 2) A safe dollar is worth more than a risky dollar

↓

These two ideas form the basis for all aspects of financial management

✓ Other important concepts/ideas:

- ❖ The economic concept of **utility**
- ❖ There is a distinction between “good companies” and “good investments”
  - The stock of a well-managed company may be too expensive
  - The stock of a poorly-run company can be a great investment if it is cheap enough

## THE INVESTOR AND THE IPS

✓ Begins with a **Investment Policy Statement**, which outlines:

- ❖ Return requirements
- ❖ Investor’s **risk tolerance**
- ❖ **Constraints** under which the portfolio must operate

### Investors Constraints

- ✓ Constraints are the kind of financial circumstances imposed on an investor’s choice.
- ✓ Five common types of constraints are:
  1. **Liquidity**: refers to how easy an asset can be converted to cash
  2. **Investment horizon**: is the planned liquidation duration of investment.
  3. **Regulations**: Professional and institutional investors are constrained by regulations- investors who manage other people’s money have fiduciary responsibility to restrict investment to assets that would have been approved by a prudent investor.
  4. **Tax considerations**: special considerations related to tax position of the investor. The performance of any investment strategy are always measured by its rate of return after tax.
  5. **Unique needs**: often centre around the investor’s stage in the life cycle such as retirement, housing and children’s education.

## STEP TWO: CONSTRUCTION / EXECUTION

- ✓ **Formulate an investment strategy** based on the investment policy statement
- ✓ Portfolio managers must understand the basic elements of capital market theory
  - ❖ Informed diversification
  - ❖ Naïve diversification
  - ❖ *Beta*



✓ **Setting objectives**

- ❖ It is difficult to accomplish your objectives until you know what they are
- ❖ Terms like **growth** or **income** may mean different things to different people

✓ **Investment policy**

- ❖ The separation of investment **policy** from investment **management** is a fundamental tenet of institutional money management
  - Board of directors or investment policy committee establish policy
  - Investment manager implements policy

✓ **International investment**

- ❖ Emerging markets carry special risk
- ❖ Emerging markets may not be informational efficient

✓ **Stock categories and security analysis**

- ❖ Preferred stock
- ❖ Blue chips, defensive stocks, cyclical stocks, ...

✓ **Security screening**

- ❖ A **screen** is a logical protocol to reduce the total to a workable number for closer investigation

✓ **Debt securities**

- ❖ Pricing
- ❖ Duration + Convexity + Credit modeling
  - Enables the portfolio manager to alter the risk of the fixed-income portfolio component
- ❖ Bond diversification

✓ **Pension funds**

- ❖ Significant holdings in gold and timberland (*real assets*)
- ❖ In many respects, timberland is an ideal investment for long-term investors with no liquidity problems

**Risk**

vs

**Safety**

**1) Stocks**

- a) Company risk
- b) Market risk
- c) Macro risk
- d) Historic 11.1% return

**2) Mutual Funds**

- a) Diminished company risk
- b) Still has market & macro risk
- c) Could return 8-10%

**3) Variable Annuities**

- a) Uses sub-accounts
- b) Can be more expensive
- c) Returns of 6-9%

**4) Long-Term Bonds**

- a) Subject to interest rate risk

**1) CD's**

- a) Temporary parking spot 4 - 5%
- b) After tax and inflation, results in minimal returns

**2) Short Term – Medium Term Government Bonds**

**3) Fixed Annuities**

- a) Tax-deferred
- b) Earnings add up
- c) Higher interest rates paid

**4) Equity Indexed Annuities 5 – 8**

- a) Over Time - No Market Risk
- b) Links to major indexes Usually S&P 500
- c) With "No Risk of Loss" of Principal due to market decline

## STEP THREE: MANAGEMENT / FEEDBACK

✓ Subsequent to portfolio construction:

- ❖ **Conditions change**
- ❖ Portfolios need **maintenance**

## Passive vs. Active Management

✓ **Passive management** has the following characteristics:

- ❖ Follow a predetermined investment strategy that is invariant to market conditions or
- ❖ Do nothing
- ❖ Let the chips fall where they may

✓ **Active management**

- ❖ Requires the periodic changing of the portfolio components as the manager's outlook for the market changes

## Performance Evaluation

✓ **“Did the portfolio manager do what he or she was hired to do?”**

- ❖ Someone needs to verify that the firm followed directions

✓ **Interpreting the numbers**

- ❖ How much did the portfolio earn?
- ❖ How much risk did the portfolio bear?
- ❖ Must consider return in conjunction with risk

✓ **More complicated when:**

- ❖ there are cash deposits and/or withdrawals
- ❖ the manager uses derivatives to enhance the portfolio yield

✓ **Fiduciary duties**

- ❖ Responsibilities for looking after someone else's money and having some discretion in its investment

## STEP FOUR: PORTFOLIO PROTECTION

✓ **Portfolio protection** also known as portfolio insurance

- ❖ A managerial tool to reduce the likelihood that a portfolio will fall in value below a predetermined level.

## Stages of Portfolio Management

- ❖ Learn the basic principles of finance
- ❖ Set portfolio objectives
- ❖ Formulate an investment strategy
- ❖ Have a game plan for portfolio revision
- ❖ Evaluate performance
- ❖ Protect the portfolio when appropriate

