1. Definition, evolution and elements of the national monetary system

**Definition:** The monetary system represents the totality of laws and decisions adopted by national authorities which aim to secure the proper functioning of money by regulating the circulation of money.

A national monetary system has five important components:

*A. The base of the monetary system*

*B. Categories of money*

*C. Money creation (money supply)*

*D. Money demand*

*E. External monetary relations*

**A. The base of the monetary system**

The base of the monetary system refers to two strong related notions: the monetary standard and the monetary unit.

The *monetary standard* is the material representation of money or the value beyond the money and is used in defining the monetary unit. Depending on the monetary standard adopted we can identify three types of monetary systems:

a). monetary systems based on monetary metals: the monometallic system (silver standard system, gold standard system) and the bimetallism system (silver and gold).

b). monetary systems based on a combined standard called gold exchange standard which was a mixed system consisting of a reserve currency standard and a gold standard.

c). purchasing-power-based monetary system was set up in 1976 at the Conference in Kingston when the gold was removed from the base of the monetary system.

Most monetary systems of the world at the present time are *fiat* systems. In the current system money is intrinsically useless. The value of the money is set by the supply and demand for money and by the supply and demand for other goods and services in the country. The price for those goods and services, including gold and silver, are allowed to fluctuate based on market forces.
**Purchasing power and purchasing power parity**

The purchasing power of the money is determined on the basis of the price indexes. There is a negative correlation between these indicators. The advantage of the current system is that it uses floating exchange rates, which reflect the objective level of the currency on the market.

Purchasing power parity (PPP) states that exchange rates between currencies are in equilibrium when their purchasing power is the same in each of the two countries. This means that the exchange rate between two countries should equal the ratio of the two countries’ price level for a fixed basket of goods and services.

When a country’s domestic price level is increasing, that country’s exchange rate must depreciate in order to return to PPP. The basis of PPP is the “law of one price”, which states that any good that is traded on world markets must sell for the same price in every country engaged in trade, when prices are expressed in a common currency.

For example, a jacket that sells for 252 lei in Bucharest should cost 60 euro in Rome when the exchange rate between lei and euro is 4.2 lei/EUR. If the price of jacket in Bucharest is only 210 RON, consumers in Rome would prefer buying the jacket in Bucharest at the price of 50 Euro.

If this process (called “arbitrage”) is carried out at a large scale, we should expect to see three things happen:

- Italian consumers desire RON in order to buy jackets in Romania, which will cause the RON to become more valuable relative to the Euro.

- The demand for jackets sold in Italy decreases, so the price Italian retailers charge goes down.

- The demand for jackets sold in Romania increases, so the price Romanian retailers charge goes up.

Eventually, these three factors should determine the exchange rates and the prices in the two countries to change such that we have purchasing power parity and the goods have again the same prices.

In the long run, having different prices in two countries is not sustainable because an individual or a company will be able to gain an arbitrage profit by buying the good cheaply in one market and selling it for a higher price in the other market.

Since the price for any good should be equal across markets, the price for any combination or basket of goods should be equalized. That’s the theory, but it doesn’t always work in practice since anything that limits the free trade of goods will limit the opportunities people have in taking advantage of these arbitrage opportunities (e.g. import and export restrictions, travel costs, perishable goods, location, etc.).
PPP describes long run behavior of exchange rate and doesn’t determine the short term exchange rate, which is influenced by several factors, such as the interest rate changes, changes in the perception of economic growth evolution and the like. The PPP between two currencies can be calculated by comparing the price of a “standard” good, that is in fact identical across countries.

**Absolute PPP versus relative PPP**

a). Absolute PPP refers to the equalization of price levels across countries. The exchange rate between Romania and Italy is equal to the price level in Romania divided by the price level in Italy.

Assuming that the price level ratio implies a PPP exchange rate of 3.3 lei/EUR and if today’s exchange rate is 3.5 lei/EUR, PPP theory implies that the leu will appreciate against Euro (get stronger) and in turns the Euro will depreciate against leu (get weaker) to equalize the PPP exchange rate.

b). Relative PPP refers to the rates of changes in the price levels. The rate of appreciation of a currency is equal to the difference in inflation rates between the foreign and the home country.

For example, if Romania has an inflation rate of 3% and Italy has an inflation rate of 1%, the leu will depreciate against the Euro by 2% per year.

**Exchange rate**

The exchange rate represents the price of one currency expressed in other currency (how much one currency is worth in terms of the other). An exchange rate quotation is given by stating the number of units of “term currency” (“price currency”) that can be bought in terms of 1 “unit currency” (also called “base currency”). For example, in a quotation that says the EURUSD is 1.3 (1.3 USD per EUR), the term currency is USD and the base currency is EUR.

There are two kinds of quotations:

1. **Direct quotation** – uses country’s home currency as the term currency: 1 foreign currency unit = X home currency units (e.g. in Bucharest, quotations are: 1 USD = 2.5 RON or 1 EUR = 3.6 RON)

2. **Indirect quotation** – uses country’s home currency as the unit currency: 1 home currency unit = X foreign currency units (e.g. in London, quotations are: 1 GBP = 2 USD, or 1 GBP = 1.3 EUR)

Majority of countries use direct quotation, indirect quotations being specifically for the Anglo-Saxon countries (Great Britain, Australia, New Zealand) and the Euro zone.
B. Categories of money

B1. Banknotes

Banknotes originated in two forms: drafts which were the receipts attesting the value held in an account and bills which were issued with a promise to covert at a later date.

The perception of banknotes as money has evolved over time. Originally, money was based on precious metal. When banknotes appeared they were seen as essentially promissory notes and as they became more widely used, they were accepted as equivalent to precious metals. With the gradual removal of precious metals from the monetary system, banknotes evolved to represent fiat money.

**Convertible** represents the ability to exchange a note for some other kind of value (gold or other currencies). If a note is payable on demand for a fixed unit, it is said to be fully convertible to that unit.

Limited convertibility occurs when there are restrictions in the time, place, manner or amount of exchange. Under the gold standard, banknotes were payable in gold coins. Similarly, under the silver standard, banknotes were payable in silver coins. Under the bimetallic standard, banknotes were payable in either gold or silver coins at the option of the debtor (issuing bank). Under the gold exchange standard, banks of issue were obliged to redeem their currencies in gold bullion or in US Dollars, which in turn were redeemable in gold bullion at the rate of $35/ounce. The US abandoned the gold standard, and thus bullion convertibility, in 1971.

In a broad sense, convertibility represents the legal feature of a currency to be freely exchanged on market in other currencies without restrictions regarding the purpose, the solicitant, and the amount of exchange.

The IMF statute groups the member countries’ currencies in:

a). **Convertible currencies**: Each member shall buy balances of its currency held by another member if the latter, in requesting the purchase, demonstrates that the balances to be bought have been recently acquired as a result of current transactions; or their conversion is needed for making payments for current transactions.

The buying member shall have the option to pay either in special drawing rights, or in the currency of the member making the request.

b). **Inconvertible currencies**: currencies of the countries which maintain restrictions on payments and transfers for current international transactions.
c). Freely usable currencies: a freely usable currency means a currency that 1) is widely used to make payments for international transactions, and 2) is widely traded in the principal exchange markets.

The convertibility adoption in Romania took place in several stages:

1. 1991: the adoption of internal current account convertibility
2. 1997: the adoption of external current convertibility (Article VIII of IMF statute)
3. 1999: liberalization of long and medium term of capital inflows
4. April 2005: operations in ROL denominated deposits accounts opened by foreigners with resident financial institutions
5. June 2005: operations in current and deposits account opened by residents abroad
7. The last liberalization of capital flows represented the full liberalization of capital account and, thus, full convertibility of RON.

B2. Credit money

Credit money is any future claim against a physical or legal person that can be used for the purchase of goods and services. In terms of the money supply credit money is generally associated with that part of M2 which is not M0 and it is the most important component of money supply. Credit money is reflected in liabilities of the bank’s balance sheet.

Credit money can be used for the payment of the goods and services or for the settlement of debts through the banking transfer.

B2.1. Types of accounts

Banks offer customers three major types of accounts: checking accounts, saving accounts and loan (credit) accounts.

a). A checking account (transactional account in North America, current account in other countries) is a deposit account held at a bank or other financial institutions for the purpose of securely and quickly providing frequent access to funds on demand, through a variety of different channels. Because money is available on demand these accounts are also referred to as demand accounts or demand deposit accounts.

Checking accounts are primarily meant for businessmen, firms, companies, public enterprises etc. that have numerous daily banking transactions. They are opened for convenience of the business, hence they are non-interest bearing accounts.
In a checking account, a customer can deposit any amount of money. These accounts allow unlimited number of withdrawals subjected to availability of funds. Even if checking accounts have usually credit balance, they can have debit balance in the case of overdrafts.

An **overdraft** occurs when withdrawals from a checking account exceed the available balance, which gives the account a negative balance. If there is a prior agreement with the account provider for an overdraft protection plan, and the amount overdrawn is within this authorized overdraft, then interest is normally charged at the agreed rate. If the balance exceeds the agreed terms, then fees may be charged and higher interest rate might apply.

A checking account can be linked to another account, such as a savings account, or to an existing line of credit such as a credit card. Once the link is established, when an item is presented to the account that would result in an overdraft, funds are transferred from the linked savings account or linked credit account to cover the overdraft. A nominal fee is usually charged for each overdraft transfer, and if the linked account is a credit card or other line of credit, the consumer may be required to pay interest under the terms of that account.

b). **A saving account** is an account mainly used for savings, the interest being earned on the amount deposited. The interest is normally higher than on a current account.

A saving account is reflected in the liabilities of the bank’s balance sheet.

There can be different types of saving accounts: saving account for demand deposits; saving account for time deposits; saving accounts for collateral deposits: for letters of credit, bank letters of guarantee, certificate cheques, etc.

c). **A loan account** is an account which is set up for a customer once her/his loan is approved. Such an account is used for the loan granted for precise purposes (a car, a house, an investment, etc.). It is reflected in the assets of a bank’s balance sheet.

**B2.2. Methods of payment**

A method of payment represents the way in which the settlement is organized in terms of assurance in advance or lack of assurance of the payment.

There are two main methods of payment:

**B2.2.1. Methods which assure the payment in advance:**

1.1 **The letter of credit** - a contractual agreement between a bank, known as the issuing bank, on behalf of one of its customers, authorizing another bank, known as the advising or confirming bank, to make payment
to the beneficiary. The issuing bank, on the request of its customer, opens the letter of credit. It makes a commitment to honor drawings made under the credit. The beneficiary is normally the provider of goods and/or services, being entitled to payment as long as he can provide the documentary evidence required by the letter of credit. An advising bank, usually a foreign correspondent bank of the issuing bank, will advise the beneficiary.

The confirming bank (the correspondent bank) may confirm the letter of credit for the beneficiary.

**Types of letters of credit**

a). **Confirmed Letter of Credit**: a letter of credit, issued by a foreign bank, which has been verified and guaranteed by a domestic bank in the event of default by the foreign bank or buyer. Typically, it will be sought when a domestic exporter seeks assurance of payment from a foreign importer.

b). **Commercial Letter of Credit**: assures the seller that the bank will provide payment for any goods or merchandise shipped to the bank’s customer, assuming the seller provides any required documentation of the transaction and its shipment of the purchased goods.

c). **Irrevocable Letter of Credit**: includes a guarantee by the issuing bank that if all of the terms and conditions set forth in the letter are satisfied by the beneficiary, the letter of credit will be honored.

d). **Revocable Letter of Credit**: may be cancelled or modified after its date of issue, by the issuing bank.

e). **Standby Letter of Credit**: in the event that the bank’s customer defaults on a payment to the beneficiary, and the beneficiary’s documents prove of its loss consistent with any terms set forth in the letter, a standby L/C may be used by the beneficiary to secure payment from the issuing bank.

1.2 **Bank letter of guarantee** - a guarantee made by a bank on behalf of a customer (usually an established corporate customer) making the bank a co-signer for one of its customer’s purchases in case that the customer fails to deliver the payment.

A guarantee is a written contract stating that in the event of the borrower being unable or unwilling to pay the debt with a merchant, the bank will act as a guarantor and pay its client’s debt to the merchant. The initial claim is still settled primarily against the bank’s client, and not the bank itself. Should the client default, then the bank agrees in the bank guarantee to pay for its client’s debts. This is a type of contingent guarantee.

**B2.2.2. The acceptance** is the second method of payment which does not assure the payment in advance. It requires the consent of the payer regarding the payment given either through the acceptance of some
payment instruments issued by the beneficiary or through the issuing from its own initiative of the payment instruments.

**B2.3. Payment instruments**

**B2.3.1 The payment order** is an unconditional order given by the issuer to a credit institution to put an amount of money at a beneficiary’s disposal. To put a certain amount of money at the beneficiary’s disposal, on the basis of a payment order, means to pay or cause the payment of the specified amount of money.

Payment order shall include the following legal provisions: number and series of document; order of payment; payer’s name and bank; payer’s account; beneficiary’s name and bank; beneficiary’s account; amount and purpose of payment; payer’s signature.

**B2.3.2 The bill of exchange** is the document through which a person, the drawer or the issuer, gives an order to another person, the drawee, to pay at maturity, an amount of money to a third person, the payee, or upon his order.

**B2.3.3 The promissory note** is a document through which the issuer undertakes to pay to the payee, or upon his order, an amount of money, at maturity, in a certain place. Consequently, the promissory note intervenes between two and not three persons, as is the case of the bill of exchange. It does not contain the payment order addressed to another person, but only the acknowledgment of issuer’s own payment obligation.

**B2.3.4 The check** is a document through which the drawer gives an unconditional order to a bank, the drawee, where the drawer has available funds to pay another person, the payee, upon presenting the writ.

**B2.4. Payment system**

A payment system comprises the procedures and associated computer networks used to settle financial transactions in money and capital markets, and to transfer funds between financial institutions. Payment and settlement systems have been growing in importance over the past two decades in the majority of the countries.

This is a result of an increase in both the volume and the value of transactions resulted from money and foreign exchange markets and from financial markets in general.

A payment system usually comprises the following *components*:

**a). RTGS system** settles the large-value payments on one to one basis. The acronym “RTGS” stands for Real Time Gross Settlement. RTGS system is a funds transfer mechanism where transfer of money takes place from one bank to another on a “real time” and “gross” basis. This is the fastest possible money
transfer system through the banking channel. Settlement in “real time” means payment transaction is not subjected to any waiting period. The transactions are settled as soon as they are processed.

Under normal circumstances the beneficiary branches are expected to receive the funds in real time as soon as funds are transferred by the remitting bank. “Gross settlement” means the transaction is settled on one to one basis without bunching with any other transaction. The RTGS system is primarily for large-value transactions and minimum amount stipulation varies from country to country.

**b). Clearing House** settles low-value payments through clearing system on a net basis. Netting represents setting mutual obligations at the net value of the contract. Netting avoids the gross settlement and, thus, allows reducing of the transfer of funds between subsidiaries to a net amount.

In essence, only an automated netting system can work without placing undue stress on the human factor.

Individual clearing systems may be owned and operated by a consortium of local banks or they may be operated and controlled by a country’s central bank.

In essence, the function of the clearing house, from where the clearing system operates, is to allow each member bank to settle daily all monies payable to and receivable from all other members of that payment clearing system. Rather than physically make hundreds of payments to each other every day, the net position (funds receivable against funds payable) is calculated for each bank with each other member and each bank would then either receive or make only payment to every other member of the clearing.

Each country has its own local payment clearing system and its own rules and regulations devised to ensure fair and efficient running.

**c). Securities settlement system** settles transactions with securities. Securities settlement system is a system which allows the holding and transfer of securities, either free of payment or against payment (delivery versus payment) or against another asset (delivery versus delivery). It comprises all the institutional and technical arrangements required for the settlement of securities trades and the safekeeping of securities.

The system can operate on a real-time gross settlement, gross settlement or net settlement basis. A settlement system allows for the calculation (clearing) of the obligations of participants.

The Central Bank also uses the settlement system in its own transactions with securities, which makes it an important tool in monetary policy implementation. The securities settlement system plays a key role for the domestic securities market, financial system and financial stability.
B3. Payment cards

A payment card is backed by an account holding funds belonging to the cardholder, or offering credit to the cardholder. A card is defined as a bank-issued plastic card with a magnetic stripe that holds machine readable identification code. Bank cards are used for electronic commerce (with magnetic stripe readers or via Internet) and for banking transactions through automatic teller machines (ATMs).

An ATM is a computer terminal activated by a magnetically encoded bank card, allowing consumers to make deposits, obtain cash from checking or savings accounts, pay bills, transfer money between accounts, and do other routine transactions as they would at a bank teller window.

Some ATM machines cash checks to the penny, accept deposits, and print monthly statements for mortgage, brokerage, or regular banking accounts. Some banks have programmed their machines to offer ATM customers access to all of the banking services available on the bank’s Internet Web site, effectively duplicating the bank’s Web site on the ATM display screen.

B3.1 Debit cards

Debit cards are also called asset card (in the US), or payment card (in the UK). A debit card is a card issued by a bank to allow customers access to their funds electronically.

Debit cards can replace checks as a method of payment for goods and services, and are more convenient because they are more widely accepted than checks.

A credit card allows drawing of funds up to the available balance in cardholder’s account. If the available funds are insufficient, the transaction is not completed. Many debit cards combine the features of credit cards. They can allow an overdraft.

A type of a debit card is the cash card, which allows the customer to draw money from Automated Teller Machines (ATMs or cash machines). Many banks set a daily limit as to how much you can take out, even if your account contains funds.

A cash card is often issued as part of a basic account package.

B3.2 Credit cards

A credit card allows drawing of funds up to an approved credit limit.

There are two main types: charge card (though this name is sometimes used by the public to describe credit cards) and credit card proper. Many people are not aware of this distinction, and often the two terms are used interchangeably to describe any card which can be used as payment.
A charge card is a means of obtaining a very short term (usually around 1 month) loan for a purchase. It is similar to a credit card, except that the contract with the card issuer requires that the cardholder must each month pay charges made to it in full - there is no “minimum payment” other than the full balance. Since there is no loan, there is no official interest. A partial payment (or no payment) results in a severe late fee (up to a certain rate of the balance) and the possible restriction of future transactions and risk of potential cancellation of the card.

A credit card is a revolving credit instrument which does not need to be paid off in full. No late fee is charged as long as the minimum payment is made, which carries a balance forward as a loan charging interest. Credit card can have a grace period, when the customer has to pay only the interest.

**B3.3 Cards for cheque guarantees**

A card for cheque guarantee is used to back up any cheque written by the customer, usually up to a specified value. The arrangement works only for cheques drawn on an account provided by the bank that issued the card.

The most popular cards for cheque guarantee are those issued in the EUROCHEQUE system.

**B3.4 Store cards**

Store cards can be a tempting way to secure a discount on shopping but shoppers often end up paying extra through high interest charges. The merchant offers a discount on everything - if only you’ll sign up to use the shop’s handy store card. Despite the discounts and convenience they offer, store cards usually have a higher interest rate than the credit cards.

As the use of cards rather than cash becomes increasingly widespread, shoppers are comfortable with the idea of using credit to boost their buying power. Buying things on credit used to be looked down upon - but nowadays the “buy now, pay later” mentality is widespread and considered acceptable. If the customer is disciplined enough to pay off the balance within the interest-free period (typically between 35 and 55 days) store cards don’t pose a problem. Instead, if they can’t pay the outstanding balance each month, the interest due on the unpaid debt can soon mount up. Charges vary between retailers.

**B3.5 Smart cards**

A smart card is a plastic card with embedded microprocessor chip that can be loaded with data, used for telephone calling, electronic cash payments, and other applications, and then periodically refreshed for additional use. It can be used to:

- Dial a connection on a mobile telephone and be charged on a per-call basis;
- Establish your identity when logging on to an Internet access provider or to an online bank;
- Pay for parking at parking meters or to get on subways, trains, or buses;
- Give hospitals or doctors personal data without filling out a form;
- Make small purchases at electronic stores on the Web (a kind of cybercash).
- Buy gasoline at a gasoline station.

It looks like, works like, and is of the same size as a bank or credit card but may not have a magnetic stripe on its back.

A smart card contains more information than a magnetic stripe card and it can be programmed for different applications. Some cards can contain programming and data to support multiple applications and some can be updated to add new applications after they are issued.

The microprocessor on the smart card is there for security. The host computer and card reader actually “talk” to the microprocessor. The microprocessor enforces access to the data on the card.

C. Money creation (money supply)

In a broad sense, money creation is the process by which money is produced or issued. There are two different ways to create money:

1. physically manufacturing a new monetary unit, such as paper currency or metal coins (money issue). Coins are produced by manufacturing metal in a factory (mint). Banknotes and bank account balances are financial securities issued by a banks.

2. loaning out a physical monetary unit multiple times through fractional-reserve lending (money creation). The banking system creates and destroys money by posting amounts in a computer file.

Money creation by banks is made possible because the public readily accepts claims on bank deposits in payment for goods and services. The law requires individual banks to hold only a fraction of the amount of deposits received from the public as reserves, thus freeing up of majority of incoming funds for making loans and purchasing securities.

Each bank’s legal reserves may be divided into two categories:

a). Required reserves – are equal to the legal reserve requirement ratio times the volume of deposits subject to reserve requirements. For example, if a bank holds 500 million RON in deposits and the law requires it to
hold 10% of its deposit accounts in legal reserves, the reserve requirement for this bank would be 50 million RON.

b). Excess reserves – which equals the difference between the total legal reserves held by a bank and the amount of its required reserves. For example, if a bank is required to hold legal reserves of 50 million RON, but it has 500,000 RON in cash and 50 million RON on deposit with the central bank, it holds 500,000 RON in excess reserves.

As the legal reserves usually earn no interest income (though they may be used to help offset some service fees the central bank charges), most banks try to keep their holdings of excess reserves as close to zero as possible.

The distinction between excess and required reserves plays a key role in the growth of credit in the economy and the creation of money.

Assume that the central bank has set a basic legal reserve requirement \((r)\) of 20% behind the public’s deposits. Suppose that a deposit of 1,000 is made by a customer at bank A. Bank A is required to place 200 aside as legal reserves, leaving excess reserves of 800. Since the 800 in cash earns no interest income, the bank will loan out these excess reserves. Bank makes loan by simple bookkeeping entry, creating a checking account in the borrower’s name. When the borrower spends his/her funds, money flows to another bank B, creating a new deposit. Bank B must place 160 of this deposit in required reserves and it has excess reserves of 640, which is quickly loaned out.

As the new borrower spends its funds, the 640 in loan will appear into deposit at bank C. After setting aside required reserves of 128, bank C has excess reserves of 512 and will loan up these funds. And the process can continue. By making loans whenever excess reserves appear, banks create total deposits and total loans several times larger then the original volume of funds received by bank A.

The total amount of money created by the banking system can be estimated using a concept known as the money multiplier. It is the most common mechanism used to measure the increase in the money supply.

The money multiplier, \(m\), is the inverse of the reserve requirement: \(m = 1/r\).

For example, with the reserve ratio \(r = 20\%\), the money multiplier, \(m\), will be calculated as: \(m = 1/0.2 = 5\). This number is multiplied by the initial deposit to show the maximum amount of money it can be expanded to. In our example: \(1,000 \times 5 = 5,000\). Although no new money was physically created in addition to the initial 1,000 deposit, new commercial bank money is created through loans.

If there are withdrawals in cash \((c)\) from deposits, then the money multiplier will be calculated by the formula: \(m = 1/(r + c - r*c)\). Suppose that the demand for cash represents 10%, in our example the money
multiplier will be smaller: \( m = \frac{1}{0.2 + 0.1 - 0.2 \times 0.1} = 3.5714285 \). The total amount of money creation would be 3,571.

There is a close link between the money multiplier and monetary base (cash and bank’s reserve with the central bank), which is one of the principal determinants of the money supply: \( m \times M_0 = M_1 \). The process of fractional-reserve banking leads to a cumulative effect of money creation by banks.

There are two types of money in a fractional-reserve banking system (a financial system in which some fraction of the deposits can be used to finance investments by making loans):

- \( M_0 \): central bank money (coins, paper money)
- \( M_1 \): commercial bank money (money created through loans) – sometimes referred to as checkbook money.

When a loan is supplied with central bank money, new commercial bank money is created. As a loan is paid back, the commercial bank money disappears from existence.

The monetary base – money multiplier relationship identifies the most important factors that explain changes in the money supply and shows how a central bank can influence the money supply creation process.

Money destruction is the reverse of money creation and it can occur in two different ways, depending on how the money was created:

1. The destruction of physically created money occurs when coins are scrapped to recover their precious metal content, or when the issuer redeems the securities.

2. The destruction of money created by banking system through loans occurs as the loans are paid back.

In a growing economy money supply is always increasing because the volume of the credits granted by the banks is higher than the volume of the credits paid back.

The money creation can be:

a). Temporary – when it is realized through the lending activity. In this case the credits will be paid back, which leads to money destruction.

b). Definitive – when the balance of payment has a surplus. In this case the inflows of foreign currencies are higher than the outflows, which leads to the increase in money supply.
D. Money demand

Money demand represents the people’s tendency to hold a specified quantity of money. It depends on the choice of different destinations which people give to their incomes. Each person tries to hold a quantity of money, which principally depends on her/his income and the volume of transactions which she/he wants to realize. Money demand is determined by the functions fulfilled by money. There are some theories regarding money demand, each of them being influenced by the role played by money in the period in which it was formulated: Classical Quantity Theory; Keynesian Theory; Tobin’s Theory; Friedman’s Theory (Monetarist Theory).

The Monetarist Theory is based on the Quantity Theory of Money. Friedman uses the theory of asset demand and his concept of permanent income to make money demand a function of wealth and the relative return of other assets.

Friedman considers that the money demand is similar to the demand for any other goods. He distinguishes five types of wealth: money, bonds, shares, equities, and people’s capacity of work, each of them carrying out a specified return. Money demand depends on the permanent income, price evolution, money return, securities return, equities return, expected level of inflation (return on equities), and preference for holding diverse types of wealth and earning diverse types of income.

Characteristics of Friedman’s Money Demand as different from Keynes’:

1) People hold other assets besides money and bonds, namely equities and real goods.

2) The return on money is not constant as banks offer: more services for checking account owners and higher interest on interest earning checkable accounts

3) Given 2), interest rates have little effect on money demand.

4) Given 3) and the fact that permanent income is stable over the business cycle, both money demand and velocity are stable.

5) If current income fluctuates around permanent income, the relationship between them is predictable. Combining this with 4) implies that velocity is predictable. This leads to the Quantity Theory of money view that changes in money supply lead to predictable changes in nominal income (P*Y).

6) Holding (buying) real goods as an alternative to other assets, especially money, implies that the quantity of money has a direct effect on spending (aggregate demand).
E. External monetary relations

International monetary relations imply transfers of money abroad.

They refer to some important issues: the currency in which they are expressed (domestic money with international functions: freely usable currencies and international money: euro, SDRs (special drawing rights)); exchange rates between currencies; methods of payment: cash in advance, letter of credit, documentary collection or drafts, bank letter of guarantee, open account; international payment instruments: bill of exchange, promissory note, order of payment, cheque issued in foreign currency.

2. Central banks and central banks design

Central banks are crucial to the functioning of any economy. Virtually every country has one. In 1900, there were 18, but today there are more than 170 central banks throughout the world. The earliest central banks, such as the Bank of England, started as commercial banks that did some business with the government, which, over time, took on more and more functions of a central bank. Other central banks, such as the European Central Bank and the United States Federal Reserve were created as central banks right from the start.

Central banks act as both the government's bank, which was their original purpose, and as the bankers' bank, providing services to commercial banks, such as check clearing, electronic payment systems, and providing liquidity when necessary. However, what distinguishes central banks from other banks is their primary objective of maximizing economic efficiency through monetary policy, by increasing or decreasing the supply money or interest rates and overseeing the financial system to maintain soundness of financial institutions and markets. Central banks are not beholden to owners nor do they seek profits. Any profits made by central banks are generally turned over to their government.

Central banks became necessary to help manage the economy — without interference from politicians — since financial problems can easily destroy the economy and problems in one area or country can easily spread, as demonstrated in the recent Credit Crisis of 2008 – 2009.

Central banks use monetary policy to regulate the economy. Increasing the supply of money promotes both growth and inflation over the short run while decreasing it restricts both. However, central banks do not make fiscal policy, which is the policy to determine how public money will be raised and spent – a purview of the politicians.

One problem that all banks have — except for the central bank — is the potential to collapse if all of its depositors withdraw their money within a short time, which often happens when people become afraid that their bank will go under. To prevent these so-called runs on the bank, the central bank stands ready
as a lender of last resort. Because the central bank can create money, it can lend financially stressed banks all the money necessary for them to continue functioning.

Central banks oversee the financial system and may also monitor other banks to ensure that they are financially sound and are following wise management practices, since the collapse of any bank can have serious financial repercussions throughout the economy, especially the local economy.

Central Bank Objectives

The economic objectives of most central banks are to maintain financial stability in the economy, while maximizing growth and employment. Stability is important because financial instability is a systemic risk that affects the economy as a whole and cannot be diversified away. For instance, booms and busts in the past, most often brought about by individual banks, have caused the entire economy to expand and contract. Such events characterized the history of the United States before the creation of the Federal Reserve in 1913.

Consequently, central bank objectives have adopted objectives to accomplish their purpose, including: low and stable inflation, high growth, high employment, and stable financial markets and institutions. These factors must be optimized to achieve maximal effect.

Low Stable Inflation

When the amount of money increases faster than the economy, then inflation results. That high inflation is bad for growth is evident from history, such as Germany after World War I, the Ukraine in 1983, or Bolivia in 1985. The result of these cases of hyperinflation was economic contraction.

Low stable inflation and price stability are desirable so that money can be useful as a means of exchange, unit of account and as a store of value. If inflation is not stable, then money cannot function as money: the use of barter will increase, and assets will be purchased, even when they are not needed, to preserve value. Neither businesses nor individuals can plan for the future; prices no longer indicate supply and demand of products and services, causing economic inefficiency and stress. Higher inflation also varies more than low inflation, creating greater uncertainty about the future. An uncertain future will cause businesses to be reluctant to undergo long-term projects.

High inflation makes it difficult to plan for retirement. Indeed, it could be almost impossible, since there is no way to know what the purchasing power of any given amount will be 30, 40 or 50 years from now. People on fixed incomes will suffer.

Borrowing and lending will become difficult. Lenders would demand a higher rate of return both because the nominal interest rate generally equals the real interest rate plus expected inflation and because there is a risk premium for uncertainty. Hence, interest rates can never be low when inflation is high.
Greater uncertainty about the future causes both people and businesses to be cautious. They will not borrow money nor invest in long-term projects. Higher interest rates impede the economy, and uncertainty increases interest rates further, since greater risk increases the risk premium demanded by lenders to compensate them for their increased risk. Hence high inflation has the same result as high interest rates — both hinder the economy, causing it to become less efficient. Indeed, the Federal Reserve was created in 1913 because of the numerous financial panics that plagued the United States in the 30 or 40 years before.

Although inflation should be low, it should not be negative because deflation makes loans difficult to repay, which increases the default rate and people would hold on to their money rather than spend it to let it increase in value. The government also profits from the inflation — since the government creates money, it is the 1st to profit from it. Employers can also benefit since wages always lags inflation, allowing them to collect higher revenues for their products or services, thereby earning more profits before they increase wages.

One objective of the central banks is to maintain low interest rates. However, low interest rates are frequently a secondary concern, because the manipulation of interest rates is a main tool that central banks use to moderate the economy. When the economy is running hot, and inflation threatens, the central bank raises the interest rate to decrease demand, and when the economy is sluggish, interest rates are lowered to stimulate the economy.

Growth and Employment

Highest sustainable growth is desirable. When the economy fluctuates too much, the cycles tend to reinforce each other. When the economy contracts, consumers stop spending, thereby causing businesses to restrain their spending, thereby causing the economy to contract even more.

The output of any economy depends on technology, capital, and people. However, these factors of production have to be optimized to lead to the greatest potential output. When the economy reaches its maximum potential output, then unemployment will generally be at its lowest rate, and the benefit of the economy to society will be maximized.

Stable Financial Markets and Institutions

Financial stability is also important because financial intermediation is what brings borrowers and lenders together, or investors and businesses. If financial institutions are not stable, then neither people nor businesses will rely on them, and without them, economic growth and efficiency will decline dramatically.

Exchange Rate Stability
Exchange rate stability facilitates international trade, but is not a main objective of most central banks of developed countries, since domestic goals usually have greater priority. Exchange rates are more important to emerging markets that depend on favorable exchange rates for their export businesses. For instance, the Central Bank of China actively buys United States Treasuries to keep its currency, the yuan, pegged at steep discount to the United States dollar.

Central bank design

In the 20th century and before, money was often based on the gold standard, because in order for money to work as money, people had to have confidence in it, that it could not be manipulated by the will of politicians or banks. By using gold or some other precious metal that was scarce and had to be mined as money, or by allowing money to be exchanged for gold, prevented politicians and banks from creating money at will, which would reduce its value and cause rampant inflation.

The temptation to create money is very great. In the 17th, 18th, and 19th centuries, United States banks issued their own notes which, supposedly, could be exchanged for specie, which were gold or silver coins. However, many banks printed many more notes than what they had specie for, creating the booms and busts of that period. Hence, being able to exchange the money for specie was not a reliable method for controlling the supply of money because there was no way to know if the total value of the issued bank notes was equal to the total amount of specie held by the issuer.

However, controlling the supply of money is a very useful means of controlling the economy. When managed correctly, the supply of money can be controlled to allow the economy to operate at maximum efficiency. Hence, no country relies on the gold standard anymore and, increasingly, money is becoming electronic. Electronic money is very easy to create, at virtually zero cost. Although it has many benefits, the only way that electronic money, or any money not based on any scarce resource, can work is if the economy has tight control over the supply of money according to specific objectives, which generally gives priority to low and stable inflation.

In order for a central bank to achieve these objectives, to operate successfully, and to achieve the optimization of the economy, it must have certain characteristics:

- it must be independent of political pressure and have the sole authority to effect monetary policy;
- decisions should be made by committee;
- the central bank should be accountable to the public and should communicate its policy actions, so that everyone understands what is going to happen and can see that the central bank is doing what it should;
- both goals and their rationale should be clearly explained.
Independent and the Sole Authority for Monetary Policy

The central bank needs to be independent so that it can respond to the economy, which is the only way to optimize it. Allowing politicians to meddle invites disaster, since politicians are highly motivated to change monetary policy for short-term gains, even when the long-term effects could be disastrous. With politicians running the economy, booms and busts are inevitable.

For central banks to achieve independence, they must satisfy several conditions:

- The central banks must be able to control their own budgets, otherwise politicians could starve the central bank of funding, thus controlling the bank's decisions;
- Likewise, the members of the monetary policy committee should not be removable except for cause; otherwise members of the committee can be pressured to vote a certain way.
- The bank's policies must be irreversible — no one outside the central bank should be permitted to change them, for this would undermine the very purpose of the central bank. Hence, only the central bank should be permitted to make monetary policy.

Decision-Making By The Monetary Policy Committee

Although the central bank should have sole authority for monetary policy, no individual should. Hence, monetary policy is usually decided by a monetary policy committee (MPC). MPC members generally have long terms and cannot be removed from their position except for cause. Members of the committee are usually drawn from different banks and from different geographic areas so that they can provide information about their area of the economy and to provide a diversity of opinion. Generally, committee members have expertise in economics, banking, and monetary policy.

Decision-making by committee is effective for monetary policy, because it takes time to assess the response of the economy and for the economy to respond to any change in policy. Hence, there is no need for quick decisions, and, indeed, hasty decisions can lead to disaster. The knowledge, experience, and opinions of a group of people reduce the risk that central bank policy will be subjected to an individual's ideology. Examples:

Public Policy Objectives

The central bank's policy objectives should be clear and communicated to the public, so that people trust their financial markets and institutions in that the supply of money is not going to be manipulated ad hoc, that inflation will be low and stable.

Low inflation is the most important objective because it allows people and businesses to plan long-term. Furthermore, interest rates depend on low inflation, because interest rates are commensurate with future expectations of future inflation — the higher the expected inflation, the higher the interest rate demanded.
by lenders to compensate them for the reduced value of money in the future. Higher interest rates have the same effect as reducing the supply of money — discouraging spending and investments, and reducing employment and economic output.

Another benefit of public policy objectives is that everyone knows what the central bank is going to do. Therefore, no one gains an advantage by knowing a secret policy, since such knowledge would give an investor or business person an unfair advantage over others.

**Accountability and Transparency**

Another aspect of the central bank's effectiveness is accountability and transparency. Because the voting members of the central bank are not elected officials, there must be some way to know that the central bank's policies are in the best interest of the economy, that their policies are effective, and that the central bank is actually following those policies.

Explicit goals are often defined when the central banks are created or when major laws are passed that affect their operation. Explicit goals promote accountability, in that they provide a means of measuring how effective the central bank is in carrying out its policies. Disclosure requirements create transparency, which forces the central banks to reveal how they function and to explain the rationale for their policies.

Central banks of different countries achieve accountability and transparency by different methods, more or less successfully. Virtually every central bank announces its policy actions quickly, but the details of the statements vary and the willingness to answer questions also varies. Hence, the Federal Reserve is very concise in its information and does not answer any questions. While the president and vice president of the European Central Bank hold a press conference and answer questions.

Accountability and transparency are also required for the central bank to maintain its independence, since the laws can be changed. It is the confidence of the people in the central bank that it is doing its job that helps to prevent politicians from changing the law to suit their own purposes and the people maintain their confidence when they are kept informed by the central bank.

**3. European Monetary System**

The European Economic Community (EEC) Treaty, signed in Rome in 1957, brings together France, Germany, Italy and the Benelux (Belgium, Holland and Luxemburg) countries in a community whose aim is to achieve integration via trade with a view to economic expansion. After the Treaty of Maastricht in 1992, the EEC became the European Union. This reflected the determination of the Member States to expand the Community’s powers to non-economic domains. Its objective was the creation of a general common market, by removing the obstacle to free circulation of goods and services, capital and people among them.
In 1970 the Werner Plan mentioned for the very first time about the creation of monetary union in Europe, after 1980, through the assurance of currencies convertibility, reduction of exchange rate fluctuations towards fixed parities and liberalization of capital flows.

In 1971, the EEC countries agreed to maintain stable exchange rates by preventing exchange fluctuations of more than 2.25%. This arrangement was called “European snake in the tunnel” because the community currencies floated as a group against the dollar, which extended the exchange rate fluctuation margins of the main European currencies to 2.25 % around a central rate.

Furthermore, exchange rates between the currencies of the Member States had to be fixed before a common market could be created. It allowed central banks to buy and sell European currencies provided that the exchange rate fluctuation margin of 2.25% is maintained. While the EEC accession procedure was under way, the pound sterling, the Irish punt and the Danish crown joined the snake on 1 May 1972. But these three currencies, like the dollar, came under speculative attacks and were forced to leave the exchange-rate mechanism a few weeks later.

By 1978 only German mark, Belgian franc, Dutch guilder, Danish krone were left in the European snake. A new effort to achieve monetary cooperation was launched in 1979 when EC established European Monetary System and created the European Currency Unit (ECU). The characteristics of EMS were:

- Prevention of movements above 2.25 % around parity in bilateral exchange rates with other member countries (Exchange Rate Mechanism I).
- Allocation of ECUs by the European Monetary Cooperation Fund to members’ central banks in exchange for gold and dollar deposits. ECU was an artificial currency used in all settlements of intrasystem balance of payments. ECU was replaced by euro (at 1:1) on January 1, 1999.
- Provision of credit facilities for compensatory financing.

In 1987 the EC made a dramatic effort to relaunch the drive toward economic union, and adopted the Single European Act (SEA). By SEA the EC had to establish a single market by 1992.

In June 1988 the European Council confirmed the objective of the progressive realization of Economic and Monetary Union (EMU). It mandated a committee chaired by Jacques Delors to study and propose concrete stages leading to this union. The resulting Delors Report proposed that economic and monetary union should be achieved in three discrete but evolutionary steps:

*Stage One of EMU*
On the basis of the Delors Report, the European Council decided in June 1989 that the first stage of the realization of economic and monetary union should begin on 1 July 1990. On this date, in principle, all restrictions on the movement of capital between Member States were abolished. The Committee of Governors of the central banks of the Member States of the EEC, created in 1964, was given additional responsibilities: holding consultations on, and promoting the coordination of the monetary policies of the Member States, with the aim of achieving price stability.

**Stage Two of EMU, establishment of the EMI and the ECB**

The establishment of the European Monetary Institute (EMI) on 1 January 1994 marked the start of the second stage of EMU and with this the Committee of Governors ceased to exist. The EMI’s transitory existence also mirrored the state of monetary integration within the Community. The EMI had no responsibility for the conduct of monetary policy in the EU – this remained the prerogative of the national authorities – nor had it any competence for carrying out foreign exchange intervention.

The two main tasks of the EMI:

1. to strengthen central bank cooperation and monetary policy co-ordination

2. to make the preparations required for the establishment of the European System of Central Banks (ESCB), for the conduct of the single monetary policy and for the creation of a single currency in the third stage.

To this end, the EMI provided a forum for consultation and for an exchange of views and information on policy issues and it specified the regulatory, organizational and logistical framework necessary for the ESCB to perform its tasks in Stage Three.

In December 1995 the European Council agreed to the name of “Euro”. The EMI was given the task of carrying out preparatory work on the future monetary and exchange rate relationships between the euro area and other EU countries – the new exchange rate mechanism (ERM II) adopted in June 1997. In order to complement and to specify the Treaty provisions on EMU, the European Council adopted the Stability and Growth Pact in June 1997, which aimed to ensure budgetary discipline of EMU. In 1998 the Council of the EU decided that 11 Member States had fulfilled the conditions necessary for the participation in the third stage of EMU and the adoption of the Euro on 1 January 1999: Belgium, Germany, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal and Finland.

**Stage Three of EMU, irrevocable fixing of exchange rates**

On 1 January 1999 the third and final stage of EMU began with:
1. the introduction of Euro as credit money for three years and coins and notes to begin circulating in January 2002

2. the irrevocable fixing of the exchange rates of the currencies of the 11 Member States initially participating in Monetary Union

3. the conduct of a single monetary policy under the responsibility of the ECB.

The number of participating Member States increased to 12 on 1 January 2001, when Greece entered the third stage of EMU as it fulfilled convergence criteria.

Slovenia became the 13th member of the euro area on 1 January 2007.

In 2008 other two countries adopted Euro: Cyprus and Malta.

On the day each country joined the euro area, its central bank automatically became part of the Eurosystem.

**Convergence criteria for the adoption of the euro:**

The Maastricht Treaty specified that for adopting the euro a EU member state would have to meet just criteria for nominal convergence. The Maastricht Treaty does not make reference to the real convergence criteria to ensure a high degree of similarity among the economic structures of the EU member states, given the fact that before the early 90s the EU comprised only countries with relative similar economic systems. Real convergence became an important issue only when the accession of the Central and Eastern European countries was considered. Real convergence is as important as nominal convergence, as, according to the Optimal Currency Area Theory, the states in a group cannot mutually gain from a common currency unless their economic structures are similar and when there is no risk of asymmetric shocks to affect only some of these countries. The final objective is not just the adoption of the common European currency but also the generation of profits. The convergence criteria are meant to ensure that economic development within EMU is balanced and does not give rise to any tensions between the Member States.

**Nominal convergence criteria**

1. Inflation rate criterion: the inflation rate should be no more than 1.5% higher than the average inflation rate of the three best-performing EU members in terms of price stability;
2. Long-term interest rate criterion: long term interest rate measured by Consumer Price Index should not exceed more than 2% the average rate of the three best-performing EU countries in terms of price stability;
3. Budgetary deficit criterion: budgetary deficit should not exceed 3% of GDP;
4. Government debt criterion: government debt should not exceed 60% of GDP;
5. Exchange rate criterion: exchange rate should remain within the normal fluctuation margins (+/-15%) of the Exchange Rate Mechanism II (ERM II) without severe tensions for at least two years.

**Real convergence criteria**

1. Degree of economic openness is expressed by the proportion of a country’s exports and imports in the GDP.

2. Proportion of bilateral trade with the EU member states in the whole volume of international trade.

3. Economic structure is expressed in the contribution of the principal sectors (agriculture, industry and services to the creation of GDP).

4. Level of GDP/inhabitant is the most synthetic criterion of real convergence and can be evaluated either at the nominal value or through the parity of the purchasing power.

European integration requires the simultaneous achievement of both nominal convergence (the attainment of the Maastricht criteria) and real convergence (improvement of living standards, sustainable economic growth, decrease in the discrepancy among EU countries).

After the new EU candidate states become EU members, they will participate in ERM II, and then, after they fulfill the nominal convergence criteria, they will adopt the euro.

**4. Central bank transactions. Monetary policy tools**

Transactions by the central bank can have a significant effect on the economy. These transactions always change the central bank's balance sheet and will often change the supply of money. The economy can be expanded or contracted by monetary policy, changing either the money supply or the interest rate. The term **monetary policy** refers to the actions undertaken by a central bank to influence the availability and cost of money and credit as a means of helping to promote national economic goals.

There are 3 fundamental types of transactions that change the supply of money:

1. **open-market operations**, where the central bank buys or sells securities, usually government bonds;

2. **foreign exchange interventions**, where a central bank exchanges domestic currency for foreign currency; and

3. **discount loans** to commercial banks.
European central bank monetary policy

The prime objective of the European Central Bank (ECB) is to maintain price stability over a medium-term, which the ECB's Governing Council defined as "a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2%." The European Central Bank's monetary policy objectives have been set by the Treaty on the Functioning of the European Union, Article 127 (1).

The Governing Council of the European Central Bank conducts monetary policy to achieve price stability by setting 3 key interest rates:

- The interest rate on the main refinancing operations (MRO), which provide the bulk of liquidity to the banking system.
- The rate on the Deposit Facility, which banks may use to make overnight deposits with the Eurosystem.
- The rate on the Marginal Lending Facility, which offers overnight credit to banks from the Eurosystem.

Monetary Policy Objectives

The ECB has adopted several principles by which monetary policy is guided:

- operational efficiency, which is the capacity of a operational framework to enable monetary policy decisions to effect changes as precisely and as quickly as possible to short-term money market rates;
- equal treatment of financial institutions, regardless of their size or location within the euro area;
- decentralized implementation whereby the ECB coordinates the operations and the national central banks actually carry out the policy.

Monetary Policy Transmission Mechanism

The monetary policy transmission mechanism is the link that connects monetary policy to changes in the economy. The desired characteristics of monetary policy transmission mechanism include:

- simplicity and transparency, so that the monetary policy objectives can be easily understood and carried out;
- continuity, implementing only small changes at a time and observing the reactions;
- safety, to minimize risk to the financial institutions; and
- cost minimization to both the central banks and their counterparties.
Operating instruments are the actual policy tools that the central bank has direct control over. For instance, every bank controls its balance sheet, which can be used to expand or contract the monetary base or to control interest rates in the interbank lending market for reserves.

Historically, central bankers have used intermediate targets, such as the monetary aggregates, to achieve policy objectives. However, sometimes the link between the operating instruments and the intermediate targets or the intermediate targets and the final objectives is tenuous, with the results sometimes being unpredictable. Therefore, the ECB now focuses on the final objective, which is price stability.

The monetary policy transmission mechanism includes the steps that translate a change in monetary policy into a change in the economy, and includes the following:

- changing the refinancing rate to directly affect money market interest rates;
- setting expectations of future interest rates and inflation, which directly affects medium and long-term interest rates;
- changing saving and investment decisions of both households and firms, with higher rates increasing savings and investments while decreasing borrowing for consumption. Higher interest rates also increase the risk that borrowers will not be able to pay back their loans, thereby causing lenders to decrease the amount of available credit.
- Interest rates can also affect asset prices, since many assets are bought with borrowed money. Real estate is a prime example of an asset whose value varies with interest rates.
- Interest rates also affect aggregate demand and supply, which can have an effect on wages and prices in general.
- Low interest rates generally increase borrowing because of the increase in asset prices that are used as collateral, instilling greater confidence in the borrowers and the lenders, and because lenders are willing to take more risks to earn a higher yield. The result of keeping interest rates low for too long is what partly caused the 2008 credit crisis.

Monetary Policy Operations

The ECB rarely buys securities outright. Reserves are provided to the European banking system primarily through what are called refinancing operations, which are weekly auctions of 2-week repurchase agreements in which the ECB, through the national central banks, provides reserves to banks in exchange for securities and then reverses the transactions 2 weeks later.

The ECB’s Governing Council, which sets monetary policy for the ECB, establishes a main minimum interest rate in the refinancing options, called the minimum bid rate, which is equivalent to the target federal funds rate. Unlike in the United States, where monetary policy is conducted by the Federal
Reserve Bank of New York, refinancing operations take place at the National Central Banks (NCBs). Any European financial institution that is subject to the ECB's reserve requirements may participate in the ECB's weekly auctions in contrast to the 20 primary security dealers that trade with the Fed in open market operations. The collateral that is required for refinancing operations differs in different countries, and can include government issued bonds, privately issued bonds, and bank loans. The types of collateral accepted were extended during the 2008 credit crisis to provide greater liquidity to the banking system. There are also long-term refinancing operations with 3-month terms; and infrequent, smaller, shorter duration operations when reserve levels have to be fine-tuned.

**Deposit Facility And Marginal Lending Facility**

The ECB achieves its objective of price stability by restricting the interest rates in the interbank lending market to a narrow channel. To provide a corridor, or channel, for the **overnight cash rate**, which is the interbank lending market rate, the ECB provides 2 facilities to put a floor and a ceiling on the overnight cash rate.

The ECB provides the **Deposit Facility** where banks can place excess reserves and earn an interest rate that is usually 100 basis points, or 1%, below the main refinancing rate. This establishes the floor on the interest rate, since no bank will lend money out at less than what it can earn at the Deposit Facility.

Similar to the Federal Reserve's discount window, the **Marginal Lending Facility** makes overnight loans to banks who apply for it with an interest rate set by the Governing Council that is currently 100 basis points above the main refinancing rate. Banks will most often seek loans in the interbank lending market to supplement their reserves, where the interest rate is usually lower than the marginal lending facility rate and no collateral is needed. However, if a bank cannot borrow more cheaply in the marketplace, then it will borrow from the Marginal Lending Facility.

The Governing Council determines the interest rate spread between the main refinancing rate and both the marginal lending rate and the deposit facility rate. A corridor for interest rates in the interbank lending market is, thus, formed by the floor provided by the Deposit Facility and the ceiling established by the Marginal Lending Facility. This channel system helps to constrain the interest rate to within 1% of the main refinancing rate, thus establishing a corridor in which the interbank lending rate variation is limited to 2% between the lowest and highest rate.

The ECB also establishes **minimum reserve requirements** based on a bank's liabilities, which currently is 2% for checking accounts and other short-term deposits and debt securities with terms not greater than 2 years. Deposit levels are averaged over the previous month and are applied to the following month. The ECB pays interest on required reserves based on the interest rate from the weekly refinancing auctions,
averaged over a month. The reserves are held at the National Central Bank of the country in which the financial institution is located.

5. Credit and Lending Activity

Credit is the provision of resources by one party to another party where that second party does not reimburse the first party immediately, thereby generating a debt, and instead arranges either to repay or return those resources (or material(s) of equal value) at a later date. In credit relations the payment is replaced by a promise of future payment, so the creditor (lender) must have confidence in the debtor (borrower).

Credit is a combination of three factors: promise of payment, trust in debtor and time factor.

The role of credit

The role of credit consists in its contribution to the achievement of some economic objectives and effects:

1. Being a means of redistribution of available resources among sectors, the credit determines the equalization of return ratio.

2. Credit contributes to capital concentration, given the fact that credits can be used for investments projects.

3. Credit contributes to capital centralization, since the access to credits is more facile for large firms in comparison with smaller ones.

4. Credit contributes to the improvement of living standards, given the fact that population can use the credit for the satisfaction of its own necessities of living.

5. Credit helps the improvement of public facilities if government uses the amounts borrowed to finance investments in the domains of public concern.

Growth of the economy, inflation, and the tax deductibility of some interest payments all appear to have fueled the rapid growth in the credit usages by businesses, households and governments.

Credit instruments

Credit instrument is an agreement (whether in writing or not) acknowledging there is an obligation to pay a sum or sums of money on demand, or at any future time. Credit instrument describe any item agreed upon that can be used as currency. There are a variety of credit instruments:

I. Depending on their content:

a). Credit instruments that confer to possessor (owner) the right to receive an amount of money: cheque, bill of exchange, promissory note, bond, Treasury bill, certificate of deposit, commercial paper
b). Credit instruments that confer to possessor (owner) the right on merchandise deposited in special places or being in the course of transportation: warehouse receipt and bill of lading.

c). Credit instruments which have the value of money: banknotes and fiat money.

d). Credit instruments that confer to possessor (owner) complex patrimonial and non-patrimonial rights: shares.

II. Depending on the modality of circulation:

a). Nominal credit instruments – in their text the possessor’s name is specified; these instruments circulate through cession of claim (transfer of a personal claim from a cedent to a cessionary).

b). Credit instruments at order – are transmitted through endorsement (to write payee’s signature on the back of a credit instruments as evidence of the legal transfer of its ownership, especially in return for the cash or credit indicated on its face).

c). Bearer credit instrument – bearer of the document has title to property and the instrument is payable on demand to the holder; they circulate by delivering from one person to another.

III. Depending on the cause of obligation:

a). Causal credit instruments – in their text the cause of obligation is clearly mentioned.

b). Abstract credit instruments – do not contain the cause of obligation, but the absence of the cause is irrelevant for the existence of obligation.

Bill of exchange and promissory note

The bill of exchange is the document through which a person, the drawer or the issuer, gives an order to another person, the drawee, to pay at maturity, an amount of money to a third person, the payee, or upon his order.

The bill of exchange shall include the following legal provisions:

- the term of “bill of exchange” inserted in the text of the instrument

- unconditional order to pay a determined sum of money (“pay in the exchange of this bill of exchange to…”)

- drawee’s name

- maturity – the date when the bill of exchange should be paid
The promissory note is the document through which the issuer undertakes to pay to the payee, or upon his order, an amount of money, at maturity, in a certain place. Consequently, the promissory note intervenes between two and not three persons, as is the case of the bill of exchange. It does not contain the payment order addressed to another person, but only the acknowledgment of issuer’s own payment obligation.

The promissory note shall include the following legal provisions:

- the term of “promissory note” inserted in the text of the instrument

- unconditional promise to pay a determined sum of money (“I will pay in the exchange of this promissory note to…”)  

- maturity – the date of payment

- place of payment – the place and the bank where payment is to be made

- date and place of issuing – the day, month and year and the locality where the bill of exchange was issued.

- payee’s name – the name of the person to whom or to whose order payment is to be made

- issuer’s signature

Non-banking operations on bill of exchange

1. Issuing – is realized at the face (issuing) value, composed by the value of credit plus the interest.

2. Endorsement:

It has the effect of transferring all the rights represented by the instrument to another individual. The ordinary manner in which an individual endorses a credit instrument is by placing his or her signature on the back of it, but it is valid even if the signature is placed somewhere else, such as on a separate paper, known as an allonge, which provides a space for a signature.

For example, if the instrument says, “Pay to the order of Jane Smith”, then it is an order instrument and Jane Smith must endorse it and then deliver it to the payer or drawee.
The person who transfers the instrument is called *endorser* and the person to whom ownership is transferred is called *endorsee*.

It is essential that according to exchange law all endorsers (persons who make endorsements) are responsible for the payment of the instrument.

It means that if a drawee hasn’t paid the sum of money promised this sum could be demanded from endorsers if the phrase “without recourse” is not included in the endorsement. An issuer or any endorser can prohibit further endorsement by writing on a promissory note “not to order”, “without right of endorsement”, or an equivalent reservation.

3. Payment guarantee (aval):

It is a special guarantee for payment of a bill – so called “aval”. The giver of an aval, the guarantor (in Romanian “avalist”), is usually a person not obliged yet. This guarantee may be given by a person who has signed the bill as well. The giver of an aval is bound in the same manner as the person for whom he has become a guarantor. The person for whom the guarantee is given is named the debtor under aval (in Romanian “avalizat”).

The name of the debtor under aval must be clearly specified, but if it is not then it is considered to be given for the drawer.

4. Acceptance:

It appears only in the case of bill of exchange. In the case of promissory note the issuer promised and accepted the payment in the moment when he/she issued the instruments. The drawee is not obliged to accept the payment, but if he/she does, he/she becomes the principal/direct obligor.

5. Maturity:

It is the date when the instruments should be paid. It has to be clearly specified on the instruments. Instrument may be payable: at sight (at demand), at a fixed period after sight, at a fixed period after the date of drawing, and on a fixed day.

6. Payment:

The bill of exchange is a circulating security which may be transferred many times until its maturity. The debtor may usually only guess who will present him the bill at the time of its maturity. The right to payment is exercised by the possessor by presenting the bill for payment to the direct debtor.
The debtor is entitled to make the payment dependent on handing over the bill of exchange. The debtor may demand that the bill should be handed over to him by the possessor with a receipt for payment.

7. **Recourse:**

All drawers, acceptors, endorsers or avalists of a bill of exchange are jointly liable to the holder. The holder has the right to proceed against all these persons individually or against some of them or collectively without being required to observe the order in which they have become bound.

If the drawee accepted the payment but he/she does not pay, the possessor can follow directly the drawee or his/her avalists because he/she assumed obligation of payment.

Recourse refers only to indirect debtors and only if the acceptance and payment were both refused by the direct debtor.

The recourse requires the procedure of “protest for non-acceptance” or “protest for non-payment” to be made in order for the possessor to preserve his/her right for recourse.

The possessor may, within the recourse, demand from any liable debtor: the bill sum of money (with possible interest), interest since the day of maturity, expenses (especially the expenses on protest and notification).

**Banking operations on bill of exchange**

1. **Discounting** – represents the payment of the bill of exchange before maturity by a bank in exchange of a discount interest.

   a) Discounting with recourse:

   Discounting of a bill of exchange can only occur once the bill has a specific maturity date in the future and the buyer/drawee has accepted it.

   Discounting differs from negotiation in that the bank will calculate the net present value of the face value of the bill utilizing a cost of funds interest rate and a margin.

   The net amount so calculated is then advanced to the seller.

   Upon receipt of the proceeds from the buyer/drawee at maturity, the bank will clear its bills discounted account.

   This finance is provided with recourse to the seller by the bank.

   b) Discounting without recourse:
It is similar to discounting with recourse, except that the financing bank will waive its rights of recourse to the seller.

This can occur when the bill is guaranteed by another bank, or where the buyer/drawee has a very strong credit standing or rating.

2. **Rediscounting:**

Is operation of selling of the bill of exchange or promissory note which have already been discounted (i.e. sold for less than face value) by the commercial banks to central banks.

Central bank will calculate the net present value of the face value of the bill utilizing a cost of funds interest rate and a margin.

The rate of interest charged by the central bank for rediscounting credit instruments offered by the commercial banks is called rediscount rate and it represents an important monetary policy tool.

Banks may rediscount these instruments to assist the movement of a market that has a high demand for loans. When there is low liquidity in the market, banks can generate cash by rediscounting short-term securities.

A central bank’s discount facility is often called a discount window. The term comes from the days when a clerk would go to a window at the central bank to rediscount a company’s securities.

**Cheque**

It is a document through which the drawer gives an unconditional order to a bank, the drawee, where the drawer has available funds to pay another person, the payee, upon presenting the writ.

A check is an example of a bill of exchange, where the individual or business writing the check is the drawer, the bank is the drawee, and the person or business to whom the check is made out is the payee. It is a bill of exchange drawn on a banker and is payable on demand.

**Other credit instruments**

1. **Banknote** – is a negotiable instrument, a promissory note made by a bank payable to the bearer on demand.

2. **Certificate of deposit (CD):**

It is a time deposit, a financial product commonly offered to consumers by banks. CDs are similar to savings accounts in that they are insured and thus virtually risk-free.
They are different from saving accounts in that the CD has a specific, fixed term (often three months, six months, or one to five years), and, usually, a fixed interest rate. It is intended that the CD be held until maturity, at which time the money may be withdrawn together with the accrued interest.

3. **Commercial paper:**

It represents short-term, unsecured promissory note issued by well-known companies that are financially strong and carry high credit ratings.

The funds raised from a paper issue normally are used for current transactions rather than for capital transactions.

CD and commercial papers are considered to be money market instruments.

4. **Credit cards** – are issued by banks, allowing the clients to use them to make purchases on credit and pay the amount borrowed back later.

5. **Treasury bill (T-bill):**

It is a short-term debt obligation backed by the government with a maturity of less than one year. T-bills are issued through a competitive bidding process at a discount from par/face value.

6. **Bonds:**

They are debt securities by which the authorized issuer owes the holders a debt and is obliged to repay the principal and interest (the coupon) at a later date, termed maturity.

A bond is simply a loan in the form of a security: the **issuer** is equivalent to the **borrower**, the **bond holder** to the **lender**, and the **coupon** to the **interest**.

Bonds enable the issuer to finance long-term investments with external funds.

7. **Stock** – typically takes the form of shares of ownership in a corporation, representing both property title and credit instrument.

Bonds and stocks are both securities; the differences between them are:

Stock-holders are the owners of the company (i.e. they have an equity stake), whereas bond-holders are lenders to the issuing company. Bonds usually have a defined term/maturity, after which the bond is redeemed, whereas stocks may be outstanding indefinitely.

8. **Bill of lading:**
It is a document issued by a carrier (e.g. a ship’s master or by a company’s shipping department), acknowledging that specified goods have been received on board as cargo for conveyance to a named place for delivery to the consignee who is usually identified.

It is also a document of transfer, being freely transferable but not a negotiable instrument in the legal sense. It may be endorsed affecting ownership of the goods actually being carried. Order bill of lading (also known as a negotiable bill of lading) – it can be endorsed.

Bearer bill of lading – states that delivery shall be made to whosoever holds the bill. It can be negotiated by physical delivery.

9. Warehouse receipt:

It is an instrument issued by a warehouse keeper that shows proof of ownership of an asset, often a commodity left at a warehouse for commercial storage purposes. The instrument indicates the quantity and quality of the produce, nature of packing, and details of the warehouse.

It is a document of title or ownership of goods.

It can be a negotiable or non-negotiable instrument.

A negotiable warehouse receipt can be transferred by endorsement.

It can be used as pledge in order to obtain a credit from a bank, guaranteed with the deposited merchandise.

Lending activity

Principles of lending activity

The main activity of banks is to grant credits to costumers. The major risk which can occur in lending activity of a bank is credit risk.

Credit risk represents the risk of loss due to a debtor’s non-payment of a loan or other line of credit (either the principal or interest or both). To reduce credit risk banks apply some general lending principles, which concern the reimbursement of credit granted to costumers.

These principles refer to:

1. Solicitant of credit

Banks are interested to find out as much information as possible regarding the solicitant of credit (physical or legal person), the potential future client:
Character of the solicitant: is evaluated by the bank taking into account his/her personality features (honesty, moral integrity, reputation, prudence, etc.).

Domain of activity: banks are interested if the domain is growing or not, if the competition in the respective domain is high or small, if the company has a seasonal activity, or if the company depends on a single purveyor or a single beneficiary, etc.).

Financial situation: is determined by the bank taking in consideration some essential aspects: financial indicators (liquidity, solvency, profitability, evolution of the turnover), credit experience like bill-paying history, the number and types of accounts held by the customer, whether the customer pays the bills by the date they’re due, outstanding debt, and the age of your accounts.

Quality of management: banks are interested in the managers’ experience in business, in general, and in the respective domain in particular, if the management is realized by a single or by many persons, if managers can evaluate the real capacity of the company, etc.

Future: banks are interested if the business will be profitable in future in order to generate sufficient profit to cover the credit.

2. Documentation of credit

The documentation of credit must contain the following information:

- Legal competence of the solicitant: in the case of a company, a bank is interested if this is legally established and if it develops a legal activity and if the person who applies for the credit is authorized by the company’s leadership to do this; in the case of a physical person, a bank verifies if she/he has the legal age in order to be allowed to apply for the credit.

- Destination of the credit: should be clearly specified and in accordance with the current activity of the company; knowing the purpose of the credit, a bank can evaluate the risks and, thus, assess the results of the business.

- Duration of credit: depends on the destination of credit and the customer’s cash-flow.

- Credit reimbursement graph: the reimbursement of the credit can be realized in increasing, decreasing and equal installments.

- Value of credit: It must to be realistically established depending on the credit destination. Banks require that customers should determine the amount of credit they need on the basis of economic calculation.
To be sure that the amount credit required is correct, banks ask that the customer should present a forecast of the company’s cash-flow which will indicate the current liquidities, the future incomes and the future expenses.

In order to reduce the credit risk and stimulate the prudence of the clients, banks require that the beneficiaries of the credits should participate with their own capital in financing the project for which the credit is required.

3. Reimbursement of credit

The realistic duration of the reimbursement of the credit is indicated by the forecast of the cash-flow. It is preferable that the reimbursement be realized in smaller installments during a longer period, so that the client will be able to pay them without problems from the income generated by the business, rather than in larger installments within a shorter period of time.

The duration of the reimbursement is tied to the duration of functioning (length life) of the object of the credit. For example, if the credit is used for the acquisition of equipment whose duration of functioning (length life) is 7 years, then the duration of the reimbursement could not exceed 7 years.

It is also necessary that the type of the financing (on the short term or on the medium or long term) should correspond to the destination of the credit (credits granted on short term aim to satisfy current production needs of the company and credits on medium or long term aim the acquisition of the assets with a longer period of functioning or realization of the productive investments).

4. Cost of credit

Cost of the credit is represented by the interest and the commissions. The interest and the commissions must be set in such a manner that they ensure the profitability of each credit and of the entire portfolio of credits as well.

The interest and the commissions applied by the bank must be competitive in comparison with those practiced by the other banks; otherwise, the costumers will apply for credits to other banks.

The interest charged for the credit includes the following elements: the interest paid for the deposits, the bank’s running expenses, the risk premium, and the profit of the bank. The commissions are charged by the bank in order to cover some additional expenditures of lending activity. The main commissions used by the banks are the following: commission for the credit analysis, commission for opening the accounts (in the case of credits granted in accounts), commission for granting the credit, commission for withdrawal the cash (in the case of credits granted in cash), commission for the administration of credit, commission for reimbursement in advance.
5. The collateral (the guarantee)

Banks have to base the decision of granting the credit before taking into account the collateral brought by the clients on the basis of their capacity to reimburse the credit from their own financial sources.

The collateral does not represent the main source of credit reimbursement; banks will resort to the execution of guarantee only in those situations where the customer cannot return the borrowed funds.

It is preferable that the bank should not be forced to execute the guarantee because there exits the risk that the market value of the guarantee will depreciate under the initially evaluated level and the bank will incur substantial losses.

This is the reason why banks must first analyze the customer’s capacity of returning the borrowed funds and, second, realistically evaluate the value of each guarantee offered by the customer and the easiness of the execution of the guarantee.

Credit collaterals

In lending agreements, collateral, also called security, is a borrower’s asset that is forfeited to the lender if the borrower is insolvent, that is, unable to pay back the principal and interest on the loan. The assets are pledged by a borrower to secure a loan, and subject to seizure in the event of default.

When insolvent, the borrower is said to default on the loan, in which case the lender becomes the owner of the collateral.

The legal right of a bank to sell the collateral of those who fail to meet the obligations of their loan contract is called a lien.

Liens can be structured in many different ways. In some cases, the creditor will have legal claim against an asset, but not actually hold it in possession. In other cases, the creditor will actually hold on to the asset until the debt is paid off.

There are two main types of collateral:

A. Real collateral: mortgage, pledge, cash collateral, etc.

B. Personal collateral: guaranty, insurance policy, bank letter guarantee.

A1. Mortgage

A mortgage is the pledging of a property to a lender as a security for a loan. While a mortgage in itself is not a debt, it is evidence of a debt. It is a transfer of an interest in land, from the owner to the lender, on the
condition that this interest will be returned to the owner of the real estate when the terms of the loan have been satisfied or performed.

The mortgage is a security for the loan that the lender makes to the borrower. The main function of the mortgage is to provide security to the lender. Should the buyer fail to pay the debt, the ownership of the real estate is transferred to the bank in the process known as foreclosure.

Lender usually wants security for the loan that will provide a claim upon that security and will take precedence over other creditors.

The parties involved in a mortgage are:

a. Mortgagor is the legal term for the borrower, who owes the obligation secured by the mortgage.

b. Mortgagee is the legal term for the lender.

The lender registers the mortgage against the title to the property.

The same real estate asset can serve as collateral for more loans. If the bank is the first in whose favour the mortgage is offered, it has the first rank mortgage, which gives it preference over further creditors. The next creditor will have second rank mortgage. The degree of priority of the mortgage is set on the basis of the date of its registration in the Real Estate Registry.

The borrower gives the lender the mortgage as security for the loan, receives the funds, makes the required payments and maintains possession of the property.

The borrower has the right to have the mortgage discharged from the title once the debt is paid. The mortgage shall secure the entire claim, interest and other auxiliary claims and enforced collection costs. The debtor must meet the conditions of the underlying loan or other obligation and the conditions of the mortgage. If the debtor fails to repay the loan according to the conditions set forth by the lender, then the lender reserves the right to foreclose on the property.

Foreclosure is the legal process in which a bank or other secured creditor sells the real property after the owner has failed to comply with an agreement between the lender and borrower called a “mortgage“.

Foreclosure allows the lender to declare that the entire debt is due and must be paid immediately. The lender seizes the property, sells it and keeps the proceeds to pay off the remaining debt and any legal costs.

The most common processes are court proceedings (judicial foreclosure) or grants of power to the lender to sell the property (power of sale foreclosure).
If immovable property is under joint ownership, the entire immovable property can be mortgaged only with the consent of all joint owners.

If the immovable property is improved during the effectiveness of the mortgage, the mortgage shall also relate to the improvements (extensivity of a mortgage).

A mortgage agreement may be secured by a future property, but the mortgage can be registered in the real estate registry only when the property comes into existence.

A.2. Pledge

Pledge is a security of movable property or movables – any property that can be moved from one location to another, which generally include items such as inventory, furniture, jewelry, art, writings, or goods.

In some cases, there can be formal title documents that show the ownership and transfer rights of that property. Any tangible or intangible asset or a body of assets may be pledged, except for inalienable assets or assets on which execution may not be levied. Any property right or money claim, including the pledger’s right of claim to the pledgee, may be pledged.

There are many type of pledge:

a. Pledge on credit instruments: promissory note and bill of exchange.

b. Pledge on claims

c. Pledge on securities

d. Pledge on movable assets (inventory, equipment, installations etc.)

The pledger is a natural person or legal entity that has right of ownership to the pledged asset. Both the obligor of a secured obligation and a third party may be a pledger.

Assets in common ownership may only be pledged by consent of all co-owners.

Pledgee is an entity for the benefit of which a pledge is established. Pledge is established with regard to a movable or real asset or a body of movable or real assets. Pledge of real assets is called mortgage.

Movable assets are encumbered with pledge with or without their disposition. Pledge of a movable asset with its disposition is called pawn.

The right of pledge also extends to the accessories of the pledged asset, provided the agreement does not say otherwise. The publicity of the pledge is realized through its registered in the “Moveble Assets Registry”.
A.3 Cash collateral

The borrower guarantees the loan with a deposit held with a different bank.

B.1 Guaranty

A surety is a person who agrees to be responsible for the debt or obligation of another.

Additionally, the situation in which a surety is most typically required is when the ability of the primary obligor or principal to perform its obligations under a contract is in question, or when there is some public or private interest which requires protection from the consequences of the principal’s default or delinquency.

If the surety is required to pay or perform due to the principal’s failure to do so, the law will usually give the surety a right of subrogation, allowing the surety to “step into the shoes of” the principal and use his contractual rights to recover the cost of making payment or performing on the principal’s behalf, even in the absence of an express agreement to that effect between the surety and the principal.

The act of becoming a surety is also called a guaranty.

Traditionally a guaranty was distinguished from a surety in that the surety’s liability was joint and primary with the principal, whereas the guaranty’s liability was ancillary and derivative, but many jurisdictions have abolished this distinction.

B.2 Insurance policy

An insurance company guarantees the reimbursement of credit and the payment of the interest.

B.3 Bank letter guarantee

The bank guarantees that it would pay its client debt in the case in which the client would be unable to pay; the bank will reimburse the credit received by its client if he/she won’t be able to pay his/her debt.
1. Financial Intermediation

Financial intermediaries are firms that pool the savings or investments of many people and lend or invest the money to other companies or people to earn a return. Financial intermediaries include banks, investment companies, insurance companies, and pension funds. Banks lend the money of depositors to businesses and others, and pay depositors interest or provide them with valuable services, such as checking and electronic funds transfers. Investment companies allow small retail investors to pool their money together to reduce the diversifiable risks of investments and to profit from the expertise of professional money managers. Insurance companies pool the premiums of the insured to pay for the losses of a few of the insured, thereby preventing a financial catastrophe for the sufferers. Pension funds pool the contributions of workers to invest for greater returns, so that a pension income can be provided to the workers after they retire.

The assets and liabilities of financial intermediaries are primarily financial instruments. Loans, stocks, bonds, and other investments are their assets while the deposits and payment obligations, such as the insurance company's obligation to pay for a loss or the pension funds obligation to pay retirees an income, are their liabilities.

Financial intermediaries make a profit from the difference from what they earn on their assets and what they pay in liabilities. So why don't people loan their money directly and earn all of the interest instead of getting only a portion? Or why doesn't a business simply sell stock or bonds directly to the public to save on the investment banking fee or on interest rates that would probably be less than what a bank would charge?

One reason is because financial intermediaries provide valuable services that cannot be obtained by direct lending or investing. Banks, for instance, offer depositors safety for their funds. They have vaults for the safekeeping of cash and other valuables and deposits are insured by the government. Banks also provide payment services that reduce the hassle of paying bills and also provide a record of those payments. Insurance companies provide financial protection in case of a loss, even if that loss is much greater than the premiums paid by the insured.

Another major reason for using financial intermediaries is because they reduce the risk of information asymmetry, where the receiver of the funds knows more about their financial condition and their intentions than do the giver of those funds. Financial intermediaries have expertise in assessing the risk of the applicant for funds that reduces adverse selection and moral hazard. They have easy access to various databases that provide information on both individuals and businesses, and they have expertise in doing their own research and monitoring.
Internal Financing, Indirect Finance, And Direct Finance

Sources of funding for businesses can be categorized as either internal or external financing. External finance can be further categorized as either indirect or direct financing. Direct finance is the financing obtained by selling stocks and bonds directly to the public in the financial markets. Direct finance provides the lowest cost of funds from external sources, but it requires a company that is well established with an appreciable income and substantial assets; otherwise, investors would be reluctant to lend or invest in the company due to the lack of information and assets.

Indirect finance is the financing obtained from financial intermediaries. Financial intermediaries can lend or invest money in smaller businesses because they can do a better job of investigating the company, assessing its risks, and securing assets for collateral against loans. Indirect financing costs more than direct financing, but financial intermediaries can invest or lend money to businesses that would otherwise not be able to get external financing.

However, most businesses, especially many small businesses, cannot obtain any form of external financing. They have to rely entirely on internal financing, which is the money obtained either from the business owners or from the income earned by the business.

According to some recent statistics, more than 80% of all financing in most countries is internal. This is because most businesses don’t have substantial net worth or assets, and so it is difficult to offset the risk that information asymmetry presents, even for financial intermediaries.

2. Types of Depository Institutions

Depository institutions, which are usually just called banks, are categorized as such because their primary source of funding is the deposits of savers. Their savings accounts are insured by the Federal Deposit Insurance Corporation (FDIC) up to certain limits. Banks are further subcategorized depending on the markets they serve, their primary sources of funding, type of ownership, how they are regulated, and the geographic extent of their market.

These categories of banks arose because they were established to serve different markets at different times. What state and federal regulations governed a particular bank also depended on its type, and whether it had a state or federal charter. States, especially, restricted the banks’ ability to compete and to expand geographically. However, modern technology and deregulation are blurring these traditional distinctions, with categories overlapping even more than in the past.

Savings Institutions
Savings institutions, sometimes called thrift institutions, are banks that serve a local community. They take the deposits of local residents and lend the money back in the form of consumer loans, mortgages, and small business loans. Savings institutions include savings and loan institutions, savings banks, and credit unions. Most savings institutions are regulated by the Office of Thrift Supervision (OTS).

Prior to 1980, savings institutions were mostly limited to the residential mortgage market, but the Depository Institutions Deregulation and Monetary Control Act of 1980 deregulated banking by removing interest rate ceilings and allowing savings institutions to offer more services, including commercial and consumer lending. The Act also eliminated dollar limits on mortgages, allowed second mortgages, and eliminated the territorial restrictions on mortgage lending and permitted savings institutions to offer interest-paying Negotiable Order of Withdrawal (NOW) accounts—basically, checking accounts paying interest.

Savings and Loan Associations (SLAs, S&Ls) first appeared in the 1800s so that factory workers could save money to buy a home. They were loosely regulated until the Great Depression, when Congress passed several major laws to shore up the banking industry and to restore the public's trust in them. Before 1980, SLAs were restricted to mortgages and savings and time deposits, but the Monetary Control Act extended their permitted activities to commercial loans, non-mortgage consumer lending, and trust services.

Many S&Ls have been owned by depositors, which was their main source of funding—thus they were called Mutual Savings and Loans Associations or just Mutual Associations. Mutual S&Ls, like credit unions, used their earnings to lower future loan rates, raise deposit rates, or to reinvest while corporate S&Ls either reinvested profits or returned profits to their owners by paying dividends. Nowadays, most S&Ls are corporations, giving them access to additional capital funding to compete more successfully and to facilitate mergers and acquisitions.

Savings banks (aka mutual savings banks, MSBs) began as mutual companies first chartered in 16 states, with most in New York and New Jersey, that were owned by the depositors and were restricted to mortgages. They were governed by a local board of trustees. When interest rates were limited by law, mutual savings banks distributed their earnings back to the depositors.

Credit unions are nonprofit depository institutions that are financial cooperatives owned by people belonging to a particular group, such as the employees of a particular company, a union, or a religious group, or who live in a specific area such as a county, and they are governed by a board of volunteers. Because they are nonprofits and owned by their customers, they charge lower loan rates and pay higher interest rates on savings, and they offer a wide variety of financial services for their owners. All credit
unions with federal charters and most with state charters are regulated and insured by the National Credit Union Administration. Deposit insurance is provided by the National Credit Union Share Insurance Fund.

Commercial Banks

The primary business of commercial banks is to serve businesses, although with banking deregulation they have entered into the consumer business as well. Commercial banks provide the widest variety of banking services. In addition to savings accounts, checking services, consumer loans, commercial and industrial (C&I) loans, and credit cards, commercial banks may also offer trust services, trade financing, investment banking and management for corporations, governments and their agencies, and treasury services.

Commercial banks are the largest banks, both in assets and in geographic extent. Community banks, however, are smaller commercial banks with assets of less than $1 billion that generally serve their immediate community of consumers and small businesses. Community banks are also the most numerous by a large margin.

Some commercial banks, often called regional and super-regional banks, cover a much wider geographic area and usually have assets in the hundreds of billions of dollars. They have many branches that extend into several states and many ATM machines at convenient locations throughout their area. Global banks also offer international services, such as letters of credit, and currency exchange. These larger banks use short-term borrowing in the money markets to supplement their deposits and often require loans from the smaller community banks. These correspondent banks have accounts at the larger banks, which facilitates the frequent transfers of funds with the big banks. Some banks—money center banks—borrow for their funding instead of relying on deposits. However, the recent credit crisis has forced money center banks to become depository institutions because they could not sell their commercial paper or bonds in financial markets that have been greatly diminished by investors' fear of defaults.

Bank and Financial Holding Companies

Many of the largest banks are actually bank holding companies, which is a company that controls 2 or more banks. A holding company is a company whose only purpose is to own a controlling interest in other companies. A bank holding company can more easily expand its market through acquisitions than a bank can. Another benefit enjoyed by bank holding companies is the removal of the geographic restriction imposed by most state laws on banks that required all branches of a bank to be within a certain
The advantages of bank holding companies are evidenced by the fact that, in 2000, 76% of banks were owned by bank holding companies.

The **Financial Services Modernization Act of 1999** deregulated the financial industry even more by creating the legal entity known as the financial holding company that can control banks, securities firms, and insurance companies. Previous to this Act, banks were restricted to banking by the **Glass-Steagall Act of 1933**. The primary purpose of restricting banks to banking is to limit their risk because the federal government insures their customers' deposits and because solvent banks are essential to any modern economy as best evidenced by the 2007-2009 credit crises. Consequently, for a bank holding company to qualify as a *financial holding company*, its subsidiaries must be well managed and well capitalized. The bank holding company must register with the Federal Reserve, declaring and certifying that it is qualified as a financial holding company under the Act.

The largest financial holding company is J.P. Morgan Chase & Co., with assets totaling $2.1 trillion in 2009. According to the Federal Reserve, at the end of 2007, the top 10 banks held 53% of all assets held by banks, while the top 100 banks held 80%.

The deregulation of financial institutions caused many to take outsized risks in the hope of earning huge profits. Many took these risks because they considered themselves *too big to fail* and because they could pass their credit default risks to investors of their securitized loans. Of course, it was deregulation that allowed these companies to become so large, so the government could not allow them to fail since it could cause many other financial institutions to fail through a domino effect caused by *credit default swaps*. Consequently, many governments were forced to pump trillions of dollars into their banks and their economy to prevent a death spiral of deflation caused by limited credit. There will probably be more restrictions on banks in the future to limit their risk both to themselves and to the economy. One thing that seems certain is that the different regulatory agencies will be consolidated to prevent banks from shopping around for the most lenient regulator.

### 3. Nondepository Institutions

The economy works best when there is money and credit available to finance business or consumer purchases or investments. When money is limited, such as during the 2007 – 2009 credit crisis, businesses can't finance their operations nor invest in new projects, so unemployment rises, which causes people to curtail their spending which further contracts business. Tax receipts fall, so governments cut back on their spending, adding to the recession.
Most of the money and credit readily available to the economy comes from financial intermediaries. **Depository institutions**—banks that accept deposits—contribute to the economy by lending much of the money saved by depositors. However, deposits do not provide all of an economy's funding, since only the wealthy save a significant amount of money and most of it is not in low-interest paying deposits which are taxable as ordinary income. The wealthy put most of their money into assets such as stocks, real estate, and municipal bonds, which not only offer greater returns, but the returns are often taxed less than ordinary income. People who are not wealthy do not save very much, at least in the United States, because they need the money for everyday wants and needs. Although wealthy individuals have a lot more money than lower-income individuals, there are many more people in the lower-income classes; hence, the aggregate of the money held by the lower-income classes is greater than the aggregate held by the wealthy.

This greater aggregate wealth of the lower-income people is made available to the economy through **financial nondepository institutions**, which are financial intermediaries that do not accept deposits but do pool the payments of many people in the form of premiums or contributions and either invest it or provide credit to others. Hence, nondepository institutions form an important part of the economy. These institutions receive the public's money because they offer other services than just the payment of interest. They can spread the financial risk of individuals over a large group, or provide investment services for greater returns or for a future income.

Nondepository institutions include insurance companies, pension funds, securities firms, government-sponsored enterprises, and finance companies. There are also smaller nondepository institutions, such as pawnshops and venture capital firms, but they constitute a much smaller portion of sources of funds for the economy.

**Insurance Companies**

Insurance companies protect their customers from the financial distress that can be caused by unforeseen events, such as accidents or premature death. They pool the small premiums of the insured to pay the larger claims to those who have losses. The premium payments are regular while the losses are irregular, both in timing and amount. An insurance company can profit because it can accurately estimate the payment of claims over a large group by using statistics and it can invest its surplus for greater returns, which helps to lower premiums to be competitive.

Like banks, insurance companies are confronted with the informational asymmetry problems of adverse selection and moral hazard. An insurance company solves the problem of adverse selection by screening applicants—**verifying information** in the application, checking the **applicant's history**, and by
applying **restrictive covenants** in the insurance contract, such as not covering a pre-existing condition. Adverse selection is also reduced by **grouping**—placing the insurance applicant into specific classes where there is a difference in claims history for the group, and then charging the appropriate premium. The solution to moral hazard differs, depending on the type of insurance offered. There are 2 major types of insurance: property and casualty insurance and life insurance. How the premiums are invested depends on what type of insurance the company offers, which determines the amount of liquidity it needs.

**Pension Funds**

**Pension funds** receive contributions from individuals and/or employers during their employment to provide a retirement income for the individuals. Most pension funds are provided by employers for employees. The employer may also pay part or all of the contribution, but an employee must work a minimum number of years to be **vested**—qualified to receive the benefits of the pension. Self-employed people can also set up a pension fund for themselves through **individual retirement accounts (IRAs)** or other types of programs sanctioned by the federal government.

While an individual has many options to save for retirement, the main benefit of government-sanctioned pension plans is tax savings. Pension plans allow either contributions or withdrawals that are tax-free. For instance, for regular IRAs, contributions are tax-free, but withdrawals are taxed, while for Roth IRAs, contributions are taxed, but withdrawals are tax-free.

As a consequence of the regular contributions and the tax savings, pension funds have enormous amounts of money to invest. And because their payments are predictable, pension funds invest in long-term bonds and stocks, with more emphasis on stocks for greater profits.

**Securities Firms**

**Securities firms** are companies that provide institutional support for the buying and selling of securities. Investment companies, brokerages, and investment banks are the major types of securities firms. **Investment companies** pool the investments of many people into a single portfolio that is managed by professional managers. Investment companies, such as mutual funds, provide expertise and economies of scale that small individual investors would not be able to afford otherwise. **Brokerages** provide an institutional framework that allows retail investors to invest in stocks, bonds, options, futures, and other financial instruments directly. Brokers provide trading software that allows traders to select their trades, and settlement and clearing services to effect the transactions. **Investment banks** help businesses and other organizations to sell their own stocks and bonds to the investing public.
Investment banks offer advice to the issuer, register the securities with the Securities and Exchange Commission, and sell the securities to their customers.

**Federal Government-Sponsored Enterprises (GSEs)**

There are a number of government agencies or private corporations chartered by the federal government that also act as financial intermediaries. These agencies were created ad hoc by Congress to provide credit to specific constituencies that Congress has argued were not being addressed adequately by the free market. The largest of these include the Government National Mortgage Corporation (Ginnie Mae), the Federal National Mortgage Association (Fannie Mae), the Federal Home Loan Mortgage Corporation (Freddie Mac), the Student Loan Marketing Association (Sallie Mae), and the Farm Credit System. These agencies are all involved in providing credit to buy homes or farms, except for Sallie Mae, which provides student loans.

Most of these agencies buy loans from private lenders, then they securitize the loans into asset-backed securities and sell them to the public. These *agency securities* are exempt from state and local taxes, and they were considered very safe, at least before 2008, since most investors believed that they had the implicit backing of the federal government, which has been demonstrated in September, 2008, when the federal government placed Fannie Mae and Freddie Mac under conservatorship, ousting its executives and turning over their loan portfolios to the Federal Housing Finance Agency.

**Finance Companies**

*Finance companies* provide loans to people or businesses using the issuance of short-term securities, especially commercial paper, as a source of funds. *Consumer finance companies* provide consumer loans and sometimes mortgages. They also provide the instant credit offered by so many retail stores, where the customer receives the item but doesn't have to pay for a stipulated amount of time.

*Business finance companies* provide loans to businesses but are especially prominent in the equipment leasing business, where the finance company will buy equipment that a particular business wants, and lease it to the business. This saves the business the upfront purchase cost, and allows it to treat the equipment as a current deduction for taxes rather than as a capital expense that has to be depreciated over a number of years.

Business finance companies also provide businesses with short-term liquidity by financing inventory until it is sold and with accounts receivable loans, which are short-term loans backed by accounts receivable.
Sales finance companies finance specific types of major purchases or finance the purchases of a specific retailer. For instance, most of the financing provided by automobile dealers is provided by these companies, so that the potential buyer can buy right away.

4. Depository Institutions (Banks)

Depository institutions (aka banks), which includes commercial banks, savings and loans, and credit unions, receive money from depositors to lend out to borrowers. Nondepository institutions, such as finance companies, rely on other sources of funding, such as the commercial paper market. Because depository institutions receive funds from the public for safekeeping and are major sources of credit and the main providers of a payment system, these institutions are more heavily regulated than nondepository institutions.

Depository institutions provide 4 important services to the economy:

1. they provide safekeeping services and liquidity;
2. they provide a payment system consisting of checks and electronic funds transfers;
3. they pool the money of many savers and lend it out to people and businesses; and
4. they invest in securities.

The 1st 3 services are so important in any economy that when banks fail, the economy suffers. The credit crisis of 2008 and 2009 underscored the primary importance of banks and why governments all over the world propped up their banks with trillions of dollars.

Bank Balance Sheet: Assets, Liabilities, and Bank Capital

A balance sheet (statement of condition, statement of financial position) is a financial report that shows the value of a company's assets, liabilities, and owner's equity at a specific period of time, usually at the end of an accounting period, such as a quarter or a year. An asset is anything that can be sold for value. A liability is an obligation that must eventually be paid, and, hence, it is a claim on assets. The owner's equity in a bank is often referred to as bank capital, which is what is left when all assets have been sold and all liabilities have been paid. The relationship of the assets, liabilities, and owner's equity of a bank is shown by the following equation:

Bank Assets = Bank Liabilities + Bank Capital

A bank uses liabilities to buy assets, which earns its income. By using liabilities, such as deposits or borrowings to finance assets such as loans to individuals or businesses, or to buy interest earning securities, the owners of the bank can leverage their bank capital to earn much more than would otherwise be possible using only the bank's capital.

Assets: Uses Of Funds
Assets earn revenue for the bank and include cash, securities, loans, and property and equipment that allow it to operate.

**Cash**

One of the major services of a bank is to supply cash on demand, whether it is a depositor withdrawing money or writing a check, or a bank customer drawing on a credit line. A bank also needs funds to pay bills, but while bills are predictable in both amount and timing, cash withdrawals by customers are not.

Hence, a bank must maintain a certain level of cash compared to its liabilities to maintain solvency. A bank must hold some cash as **reserves**, which is the amount of money held in a bank's account at the Federal Reserve (Fed). The Federal Reserve determines the **legal reserves**, which is the minimum amount of cash that banks must hold in their accounts to ensure the safety of banks and also allows the Fed to effect monetary policy by adjusting the reserve level. Often, banks will keep **excess reserves** for greater safety.

To do business at its branches and automated teller machines (ATMs), a bank also needs **vault cash**, which includes not only cash in its vaults, but also cash elsewhere on a bank’s premises, such as in teller drawers, and the cash in its ATM machines.

Some banks, usually smaller banks, also have accounts at larger banks, called **correspondent banks** which are usually larger banks that often borrow from the smaller banks or perform services for them. This relationship makes lending expeditious because many of these smaller banks are rural and have excess reserves whereas the larger banks in the cities usually have a deficiency of reserves.

Another source of cash is **cash in the process of collection**. When a banks receives a check, it must present the check to the bank on which it is drawn for payment, and, previously, this has taken several days. Nowadays, checks are being processed electronically and many transfers of funds are being conducted electronically instead of using checks. So this category of cash is diminishing significantly, and will probably disappear when all financial transactions finally become electronic.

**Securities**

The primary securities that banks own are United States Treasuries and municipal bonds. These bonds can be sold quickly in the secondary market when a bank needs more cash, so they are often referred to as **secondary reserves**.

The recent credit crisis has also underscored the fact that banks held many asset-backed securities as well. United States banks are not permitted to own stocks, because of the risk, but, ironically, they can hold much riskier securities called derivatives.

**Loans**
Loans are the major asset for most banks. They earn more interest than banks have to pay on deposits, and, thus, are a major source of revenue for a bank. Often banks will sell the loans, such as mortgages, credit card and auto loan receivables, to be securitized into asset-backed securities which can be sold to investors. This allows banks to make more loans while also earning origination fees and/or servicing fees on the securitized loans.

Loans include the following major types:

- business loans, usually called commercial and industrial (C&I) loans
- real estate loans
  - residential mortgages
  - home equity loans
  - commercial mortgages
- consumer loans
  - credit cards
  - auto loans
- interbank loans

**Liabilities: Sources of Funds**

Liabilities are either the deposits of customers or money that banks borrow from other sources to use to fund assets that earn revenue. Deposits are like debt in that it is money that the banks owe to the customer but they differ from debt in that the addition or withdrawal of money is at the discretion of the depositor rather than dictated by contract.

**Checkable Deposits**

**Checkable deposits** are deposits where depositors can withdraw the money at will. These include all checking accounts. Some checkable deposits, such as NOW, super-NOW, and money market accounts pay interest, but most checking accounts pay very little or no interest. Instead, depositors use checking accounts for payment services, which, nowadays, also include electronic banking services.

Before the 1980s, checkable deposits were a major source of cheap funds for banks, because they paid little or no interest on the money. But as it became easier to transfer money between accounts, people started putting their money into higher yielding accounts and investments, transferring the money when they needed it.

**Nontransaction Deposits**

**Nontransaction deposits** include **savings accounts** and **time deposits**, which are basically certificates of deposits (CDs). Savings accounts are not used as a payment system, which is why they are categorized as
nontransaction deposits and is also the reason why they pay more interest. Savings deposits of yore were mostly **passbook savings accounts**, where all transactions were recorded in a passbook. Nowadays, technology and regulations have allowed **statement savings** where transactions are recorded electronically and may be viewed by the depositor on the bank’s website or a monthly statement is mailed to the depositor; and **money market accounts**, which have limited check writing privileges and earn more interest than either checking or savings accounts.

A **Certificate of Deposit (CD)** is a time deposit where the depositor agrees to keep the money in the account until the CD expires. The bank compensates the depositor with a higher interest rate. Although the depositor can withdraw money before the CD expires, banks charge a hefty fee for this. There are 2 types of certificates of deposit (CDs): retail and large. A retail CD is for less than $100,000 and is generally sold to individuals. It cannot be resold easily. Large CDs are for $100,000 or more and are highly negotiable so they can be easily resold in the money markets. Large negotiable CDs are a major source of funding for banks.

Nontransaction deposits in depository institutions are now insured to $250,000 by the Federal Deposit Insurance Corporation (FDIC).

**Borrowings**

Banks also borrow money, usually from other banks in what is called the **federal funds market**, so-called because funds kept in their reserve accounts at the Federal Reserve are called federal funds. Banks with excess reserves, which are usually smaller banks located in smaller communities, lend to the larger banks in metropolitan areas, which are usually deficient in reserves.

The interbank loans in the federal funds market are unsecured, so banks only lend to other banks that they trust. Part of the reason for the 2007 - 2009 Credit Crisis is that banks didn't know which other banks were holding risky mortgage-backed securities that were beginning to default in large numbers, so they stopped lending to each other, forcing banks to restrict their lending to the public, which caused the supply of money to decline and the economy to contract.

Banks also borrow from nondepository institutions, such as insurance companies and pension funds, but most of these loans are collateralized in the form of a **repurchase agreement** (aka **repo**), where the bank gives the lender securities, usually Treasuries, as collateral for a short-term loan. Most repos are overnight loans that are paid back with interest the very next day.

As a last resort banks can also borrow from the Federal Reserve (Fed), though they rarely do this since it indicates that they are under financial stress and unable to get funding elsewhere. However, during the credit freeze in 2008 and 2009, many banks borrowed from the Fed because they could not get funding elsewhere.
**Bank Capital**

Banks can also get more funds either from the bank's owners or, if it is a corporation, by issuing more stock. For instance, 19 of the largest banks that received federal bailout money during the credit crisis raised $43 billion of new capital in 2009 by issuing stock because their reserves were deemed inadequate in response to stress testing by the United States Treasury.

**New Accounting Rules for Valuing Assets**

Bank capital, which is equal to the value of total assets minus total liabilities, is the bank's **net worth**. However, recent accounting changes have made it more difficult to determine a bank's true net worth.

Banks were having a tough time in early 2009. The credit crisis has caused many defaults on mortgages, credit cards, and auto loans, forcing them to increase their loan loss reserves and to devalue many of the asset-backed securities that they held based on these loans. Consequently, banks were suffering major losses. A major contributor to these losses was because the asset-backed securities that were still held by the banks had to be valued by mark-to-market rules, and since no one was buying these toxic securities, their mark-to-market value was very low.

To restore confidence in the banking system, the government allowed some changes to the accounting rules that artificially increased the revenues of the banks. The Financial Accounting Standards Board (FASB) allowed banks to value their assets according to **fair value**, as determined by the banks. However, many critics assert that there will be more defaults on the underlying loans of these securities, and, thus, will have to be accounted for in the future.

Banks also didn't have to **write down** assets that they intended to keep to maturity. Here, again, critics argued that there will probably be many more defaults on the underlying loans, especially since the unemployment rate is still rising, so they will be forced to write them down in the future.

Additionally, banks could record income on their books if the value of the debt falls in the market. The reason for this allowance is because they could buy back their own debt in the market, thus reducing their debt for a fraction of its face value. However, critics have pointed out that if a bank doesn't have the money to buy back its debt, it could still record the reduced value as revenue even though the bank would have to pay the principal back by the debt's maturity.

Citigroup is a good example of how much the new accounting rules can change the income reported by a bank. According to this Bloomberg article, the $1.6 billion **profit** reported by Citigroup under the new accounting rules for its 1st quarter in 2009 would be reduced to a $2.5 billion **loss** under the old accounting rules.
5. Bank Risks

A bank has many risks that must be managed carefully, especially since a bank uses a large amount of leverage. Without effective management of its risks, it could very easily become insolvent. If a bank is perceived to be in a financially weak position, depositors will withdraw their funds, other banks won’t lend to it nor will the bank be able to sell debt securities in the financial markets, which will exacerbate the bank's financial condition even more. The fear of bank failure was one of the major causes of the 2007 – 2009 credit crisis and of other financial panics in the past.

Although banks share many of the same risks as other businesses, the major risks that especially affect banks are liquidity risk, interest rate risks, credit default risks, and trading risks.

Liquidity Risk

Liquidity is the ability to pay, whether it is to pay a bill, to give a depositor their money, or to lend money as part of a credit line. A basic expectation of any bank is to provide funds on demand, such as when a depositor withdraws money from a savings account, or a business presents a check for payment, or borrowers may want to draw on their credit lines. Another need for liquidity is simply to pay bills as they come due.

The main problem in liquidity management for a bank is that, while bills are mostly predictable, both in timing and amount, customer demands for funds are highly unpredictable, especially demand deposits (checking accounts).

Another major liquidity risk is off-balance sheet risks, such as loan commitments, letters of credit, and derivatives. A loan commitment is a line of credit that a bank provides on demand. Letters of credit include commercial letters of credit, where the bank guarantees that an importer will pay the exporter for imports and a standby letter of credit which guarantees that an issuer of commercial paper or bonds will pay back the principal.

Derivatives are a significant off-balance sheet risk, as evidenced by the collapse of American International Group (AIG) in 2008. Banks participate in 2 major types of derivatives: interest rate swaps and credit default swaps. Interest rate swaps are agreements where one party exchanges fixed interest rate payments for floating rates. Credit default swaps (CDSs) are agreements where one party guarantees the principal payment of a bond to the bondholder.

Liquidity management is achieved by asset and liability management. Asset management requires keeping cash and keeping liquid assets that can be sold quickly at little cost. Liability management is borrowing.

Asset Management
The primary key to using asset management to provide liquidity is to keep both cash and liquid assets. **Liquid assets** can be sold quickly for what they are worth minus a transaction cost or bid/ask spread. Hence, liquid assets can be converted into a means of payment for little cost.

The primary liquidity solution for banks is to have reserves, which are also required by law. **Reserves** are the amount of money held either as vault cash or as cash held in the bank's account at the Federal Reserve, often referred to as **federal funds**. It can also include cash that a bank has in an account at a correspondent bank. In the United States, the Federal Reserve determines the amount of **required reserves** (aka legal reserves, primary reserves), which is expressed as a **required reserve ratio**, which is the amount of reserves as a percentage of the bank's demand deposits. A bank may even keep **excess reserves** in its Federal Reserve account for greater liquidity, especially since the Federal Reserve has started paying interest on these accounts since October, 2008.

Although reserves provide liquidity, they earn little or no money. Vault cash pays no interest at all and Federal Reserve accounts have paid 1% or less. By buying liquid assets, a bank can earn money while maintaining liquidity. The most liquid—and safest—asset is United States Treasuries, of which banks are major buyers.

Banks can also sell loans, especially those that are regularly **securitized**, such as mortgages, credit card and auto loan receivables.

A bank can also increase liquidity by not renewing loans. Many loans are short-term loans that are constantly renewed, such as when a bank buys commercial paper from a business. By not renewing the loan, the bank receives the principal. However, most banks do not want to use this method because most short-term borrowers are business customers, and not renewing a loan could alienate the customer, prompting them to take their business elsewhere.

**Liability Management**

A bank can increase liquidity by borrowing, either by taking out a loan or by issuing securities. Banks predominantly borrow from each other in an interbank market known as the **federal funds market** where banks with excess reserves loan to banks with insufficient reserves. Banks can also borrow directly from the Federal Reserve, but they only do so as a last resort.

Banks are big users of a debt instrument known as a **repurchase agreement** (aka repo), which is a short-term collateralized loan where the borrower exchanges collateral for the loan with the intent of reversing the transaction at a specified time, along with the payment of interest. Most repos are overnight loans, and the most common collateral is Treasury bills. Repos are usually made with institutional investors, such as investment and pension funds, who often have cash to invest.
The major security that banks sell is the large certificate of deposit (CD), which is highly negotiable, and can be easily sold in the money markets. A large CD is a time deposit of $100,000 or more. (Banks also sell small CDs to retail customers, but these can't be sold in the financial markets.) Other major securities sold by banks include commercial paper and bonds.

**Credit Risks**

Credit default risk occurs when a borrower cannot repay the loan. Eventually, usually after a period of 90 days of nonpayment, the loan is written off. Banks are required by law to maintain an account for loan loss reserves to cover these losses.

Banks reduce credit risk by screening loan applicants, requiring collateral for a loan, credit risk analysis, and by diversification.

Banks can substantially reduce their credit risk by lending to their customers, since they have much more information on them than on others, which helps to reduce adverse selection. Checking and savings accounts can reveal how well the customer handles money, their minimum income and monthly expenses, and the amount of their reserves to hold them over financially stressful times. Banks will also verify incomes and employment history, and get credit reports and credit scores from credit reporting agencies.

Collateral for a loan greatly reduces credit risk not only because the borrower has greater motivation to repay the loan, but also because the collateral can be sold to repay the debt in case of default.

When banks make loans to others who are not customers, then the bank has to rely more on credit risk analysis to determine the credit risk of the loan applicant. Credit risk analysis is the determination of how much risk a potential borrower poses and what interest rate should be charged. The potential risk of a borrower is quantified into a credit rating that depends on information about the borrower and well as statistical models of the business or individual applicant. There are credit rating agencies for businesses, such as Moody's or Standard Poor for larger entities and Dun & Bradstreet for smaller businesses and Experian, TransUnion, and Equifax for individuals. Most of these credit reporting agencies assign a number or other code that signifies the potential risk of the borrower. A bank will also look at other information, such as the borrower's income and history.

A bank can also reduce credit risk by diversifying—making loans to businesses in different industries or to borrowers in different locations.

**Interest Rate Risk**

A bank's main source of profit is converting the liabilities of deposits and borrowings into assets of loans and securities. It profits by paying a lower interest on its liabilities than it earns on its assets—the difference in these rates is the net interest margin.
However, the terms of its liabilities are usually shorter than the terms of its assets. In other words, the interest rate paid on deposits and short-term borrowings are sensitive to short-term rates, while the interest rate earned on long-term liabilities is fixed. This creates **interest rate risk**, which, in the case of banks, is the risk that interest rates will rise, causing the bank to pay more for its liabilities, and, thus, reducing its profits.

For instance, if a bank has a loan for $100 for which it receives $7 annually in interest, and a deposit of $100 for which it pays $3 per year in interest, that is a net interest margin of $4. But if current market interest rates for deposits rises to 4%, then the bank will have to start paying $4 for the $100 deposit while still receiving 7% on the long-term loan, decreasing its profit in this scenario by $1.

All short-term and floating-rate assets and liabilities are **interest-rate sensitive**—the interest received on assets and paid on liabilities changes with market rates. Long-term and fixed-rate assets and liabilities are not interest-rate sensitive. Interest-rate sensitive assets include savings deposits and interest-paying checking accounts. Long-term CDs are not interest-rate sensitive.

So for a bank to determine its overall risk to changing interest rates, it must determine how its income will change when interest rates change. Gap analysis and duration analysis are 2 common tools for measuring the interest rate risk of bank portfolios. Since interest rates affect the prices of bank assets and liabilities in the same way that they affect bonds, bankers also use a tool commonly used in bond portfolio analysis—**duration analysis**.

**Duration** measures the change in the price of a bond when the interest rate changes by 1%. A bank calculates its **duration gap** by subtracting the weighted average duration of its assets minus the weighted average duration of its liabilities.

**Reducing Interest Rate Risk**

Banks could reduce interest rate risk by matching the terms of its interest rate sensitive assets to its liabilities, but this would reduce profits. It could also make long-term loans based on a floating rate, but many borrowers demand a fixed rate to lower their own risks. In addition, floating-rate loans increase credit risk when rates rise because the borrowers have to pay more each month on their loans, and, thus, may not be able to afford it. This is best exemplified by the many homeowners who defaulted because of rising interest rates on their adjustable rate mortgages (ARMs) during the 2007 – 2009 credit crisis.

Increasingly, banks are using interest rate swaps to reduce their credit risk, where banks pay the fixed interest rate they receive on their assets to a counterparty in exchange for a floating rate payment.

**Trading Risk**
Generally, greater profits can be made by taking greater risks. A bank's leverage ratio is limited by law, but it can try to earn greater profits by trading securities. Although United States banks cannot, by law, own stocks, they can buy debt securities and derivatives. For this, banks hire traders for a separate department that specializes in trading securities.

The risk of trades is measured by standard statistical tools for measuring investment risk: standard deviations and value at risk (VaR). However, many banks use more sophisticated financial models to gauge risk and to increase their profits, but the 2007 – 2009 credit crisis showed that many of these models were faulty.

Also, rogue traders can cause stupendous losses for banks, even causing their bankruptcy. Consider Barings Bank that started in 1762, and was considered to be the most stable and safest bank for centuries. In 1995, Nick Leeson lost more than 860 million pounds trading Japanese equities in Singapore. Barings was unable to provide the cash to cover the losses, so it collapsed.

The 2007 - 2009 credit crisis has also shown the tremendous risks presented by derivatives, which are securities whose value depends on an underlying asset or index. The most common derivatives bought and sold by banks are mortgage-backed securities (MBS), interest-rate swaps, and credit default swaps (aka credit derivatives).

**Foreign Exchange Risk**

International banks trade large amounts of currencies, which introduces foreign exchange risk, when the value of a currency falls with respect to another. A bank may hold assets denominated in a foreign currency while holding liabilities in their own currency. If the exchange rate of the foreign currency falls, then both the interest payments and the principal repayment will be worth less than when the loan was given, which reduces a bank's profits.

Banks can hedge this risk with forward contracts, futures, or currency derivatives which will guarantee an exchange rate at some future date or provide a payment to compensate for losses arising from an adverse move in currency exchange rates. A bank, with a foreign branch or subsidiary in the country, can also take deposits in the foreign currency, which will match their assets with their liabilities.

**Sovereign Risk**

Many foreign loans are paid in U.S. dollars and repaid with dollars. Some of these foreign loans are to countries with unstable governments. If political problems arise in the country that threatens investments, investors will pull their money out to prevent losses arising from sovereign risk. In this scenario, the native currency declines rapidly compared to other currencies, and governments will often impose capital controls to prevent more capital from leaving the country. It also make foreign currency held in the country more valuable; hence, foreign borrowers are often prohibited from using foreign currency, such
as U.S. dollars, in repaying loans in an attempt to conserve the more valuable currency when the native currency is declining in value.

**Operational Risk**

**Operational risk** arises from faulty business practices or when buildings, equipment, and other property required to run the business are damaged or destroyed. For instance, banks in the vicinity of the World Trade Center suffered considerable losses as a result of the terrorist attacks on September, 11, 2001, which knocked out power and communications in the surrounding area. Barings Bank collapsed because its audit controls did not detect the calamitous losses suffered by its rogue trader, Nick Leeson, early enough to prevent its collapse.

Many types of operational risk, such as the destruction of property, are covered by insurance. However, good management is required to prevent losses due to faulty business practices, since such losses are not insurable.
Chapter 1 INTRODUCTION TO GOVERNMENT FINANCE

Public finance is a field of economics concerned with paying for collective or governmental activities, and with the administration and design of those activities. The field is often divided into questions of what the government or collective organizations should do or are doing, and questions of how to pay for those activities. The broader term (public economics) and the narrower term (government finance) are also often used.

The proper role of government provides a starting point for the analysis of public finance. Private markets, if certain conditions are met, will allocate goods and services among individuals efficiently (in the sense that no waste occurs and that individual tastes are matching with the economy's productive abilities).

If private markets were able to provide efficient outcomes and if the distribution of income was socially acceptable, then there would be little or no scope for government. In many cases, however, conditions for private market efficiency are violated.

For example, if many people can enjoy the same good at the same time (non-rival, non-excludable consumption), then private markets may supply too little of that good. National defense is one example of non-rival consumption, or of a public good.

The public sector is the part of economic and administrative life that deals with the delivery of goods and services by and for the government, whether

- national,
- regional or
- local/municipal.

Examples of public sector activity range from delivering

- social security,
- administering urban planning and
- organizing national defenses.

Government activity requires the reallocation of resources from the private to government use. To accomplish this, individuals must be induced to provide some parts of their resources to state disposal.
But this method of finance can affect a number of important economic and political variables like:

1. The political equilibrium: the equilibrium quantity and mix of government-provided goods and services depend on the distribution of tax shares per unit of those goods and services, because citizens’ tax shares influence their voting choices.

2. The overall market equilibrium, and the efficiency with which resources are employed in private uses: the particular method of finance used can distort the prices of goods and services, this means reducing markets competition and the efficiency.

3. The distribution of income: alternative financing schemes affect the distribution of income by reducing the income that persons can spent for the private G&S.

Musgrave proposes that the main economic functions of government could be divided among three branches, the Allocation, the Distribution, and the Stabilization Branches of government. The job of the Allocation Branch is to “secure adjustments in the allocation of resources”. The job of the Distribution Branch is to “secure adjustments in the distribution of income and wealth”, and the job of the Stabilization Branch is to secure “economic stabilization”.

Musgrave suggests that we think of each branch as run by a “manager” who is instructed to “plan his job on the assumption that the other two branches will perform their functions properly.” Thus the Allocation Branch proceeds on the “assumption of full employment of resources and that the proper distribution of income has been secured.” The distribution branch assumes that “a full-employment income is available for distribution and that the satisfaction of public wants is taken care of.”

**Taxation-the major financing source of public expenditures**

Taxation is the most important source of revenues for the modern governments, almost of the 90% or more of their income. The remainder of government revenue comes from borrowing and from charging fees for services.

Definition: Tax is a compulsory charge or payment levied by the government on an individual or corporation.

Definition: Tax is a compulsory payment associated with certain incomes, properties and activities.

Therefore an element of compulsion is involved in taxation.

The revenues collected through taxation are used to:

- purchase the inputs necessary to produce government supplied G&S

- to redistribute purchasing power among citizens

Taxation reallocates resources from private to government use in two distinct steps:
-the ability of individuals to command resources is reduced because taxation reduces income from the spending on market G&S

-the revenues collected by the government than are used to bid for resources necessary to provide income support payments to recipients of government transfers such as Social Security Pensions.

Theory about taxation

Classical taxation theory

☐ For a long time, the classical taxation theory was of most important.

☐ As a result, taxation was only granted the fiscal role of providing state revenues.

☐ A. Smith is considered to be the father of the scientific taxation theory. In his monograph “An Inquiry into the Nature and Causes of the Wealth of Nations” A. Smith gave a definition of the taxation system, indicating the main conditions for its formation and putting forward four main taxation principles: equity, determination, convenience and thrift of taxation administration.

☐ Smith’s work was developed later on by D. Ricardo, J. Mills, and W. Petty. All the theoretical deliberation and scientific debates of those years were focused on one singular aspect: that the execution of the taxation’s function—the provision of state revenues—is achieved on basis of the principles of equity and justice. Naturally, this theoretical approach to the nature and role of taxation changed in the course of many decades and centuries, when economic relations became more complex and the need for the intensification of the state’s regulatory role became more stringent.

☐ As a result, new taxation theories emerged; among them there were two directions of economic thought, which had the most significant influence on the taxation policy of the countries with a developed market economy: the Keynesian and the neo-classical ones.

Keynesian taxation theory

☐ The initiator of the Keynesian taxation theory was John Keynes, who exposed its main principles in his book “The General Theory of Employment, Interest and Money,” in which he advocated state interventions in the processes of market economy regulation. According to Keynes, fast economic development must be based on a market expansion and an associated increase in consumption.

☐ As a result, state intervention is achieved at the level of effective demand. One of the main assumptions in Keynes’s theory is that economic growth is related to monetary savings only in conditions of full-employment. In the contrary case, large amounts of savings hinder economic
development as they represent a passive form of income and are not invested in production; as a result, the author suggested that surplus savings must be subtracted with the help of taxation.

- This is why the state must intervene with the purpose of subtracting income savings with the help of taxation in order to finance investments and cover state expenditures. Keynes argued that high-level progressive taxation is necessary and that low tax rates lead to reduced state revenues and as a result contribute to economic instability. That is, according to Keynes, taxes must play the most important role in the system of state regulation. High taxes stimulate economic activity; influence the stability of the economy and in the context of the economic system act as “integrated flexibility mechanisms.”

**Neo-classical theory**

- The *neo-classical theory* developed by J. Mutt, A. Laffère, and others is based on the assumption that the state is obligated to remove obstacles to free market competition because the market can and must regulate itself without external intervention; in addition, it can achieve economic equilibrium.

- Hence, this theory differs from the Keynesian one and assigns a rather passive role to state regulation of economic processes. According to this theory, taxation policy should be developed under the same assumptions: taxes must be as small as possible and corporations should be granted significant tax exemptions.

- Otherwise, a high tax burden would hinder economic activity and restraint the investment policies of corporations, which would lead to a downfall in the production funds renewal and in an economic recession. A restricted taxation policy would allow the market to provide independently for fast development and would lead to a significant expansion of the taxation basis.

- Arthur Laffer contributed considerably to the neoclassical taxation theory. He established a quantitative relationship between progressive taxation and budget revenues, and developed the so-called “Laffer curve.” According to Laffer, an increase in the tax burden leads to an increase in state revenues only up to a level, where they start to decrease. The higher the tax rate, the higher the motivation for tax evasion. When the tax rate reaches a certain limit, entrepreneurship incentives are suppressed, the motivations for production expansion are reduced, taxable income decreases, and as a result, a part of the taxpayers will transfer from the legal to the shadow sector of the economy. Laffer considered that 30% of income is the maximum taxation rate that can be deducted for state budget purposes.

**Neo-Keynesian theory**
Taxation problems also constitute an important element of the *neo-Keynesian theory*. I. Fisher and N. Caldor considered necessary the division of taxation objects in accordance with consumption, by taxing the final cost of the consumed product and by taxing savings only as a % of the deposit.

This led to the idea of a consumption tax, which is simultaneously a method for promoting savings and a tool for fighting inflation. The money assigned earlier for the purchase of consumer goods could now be used either for investments or for savings, which are transformed in capital investments with the help of the same budget policy—“the subtraction of the surplus savings.” Long-term savings in themselves serve as a factor for future economic growth.

Caldor considered that the consumption tax introduced through progressive rates with the use of exemptions and tax allowances for separate types of goods (for example, for objects of everyday use), is more just for people with low incomes than a fixed sales tax. In addition, in comparison to the income tax, the consumption tax does not cover savings that are necessary for future investments, thus stimulating their growth.

**Chapter 2 Taxation Elements**

1. The Subject and Object of Taxation
2. Taxation Allowances
3. Tax Rates and Other Tax Elements

**1. The Subject and Object of Taxation**

The *taxation subject* is the individual or company, fulfilling taxation obligations in accordance to the ownership of the taxation object. Every citizen of a state is a taxation subject. If the state has the right to deduct a part of the income, this relates to the obligation of each citizen to offer a part of his/her wealth to the state. In this context, one should not forget about the distinction between the taxpayer and the tax carrier. The former is the entity that initially pays the tax; the latter is the entity carrying the tax as a result of economic processes and transfers. This takes place primarily at the deduction of secondary taxes. For example, taxation subjects are responsible for paying the VAT, yet the real carriers of the tax are the consumers.

The *taxation object* is the object or phenomenon, which, according to the law, is being taxed. Taxation objects can be classified in the following way: income (income tax), wealth (real estate, land), wealth transfers (inheritance and gift tax), consumption (excises and VAT), or the import and export of goods (customs duties). Income taxation is divided into the taxation of earned and unearned income. Earned income tax relates to salaries, fees of people engaged in freelance occupations, the income of
individual juridical persons. Taxation of unearned but legal income refers to dividends, interest revenue, capital expansion, land and real estate rents. The taxation object materializes as a result of legal events (actions, events, conditions), which affect the obligation of the subject to pay the tax: the sale of goods, works and services; the transit of goods though a customs territory, ownership of wealth, the receipt of inheritance rights, the receipt of revenue in one or another form.

2. Tax Allowances

A tax allowance is a full or partial reduction of the taxation burden in correspondence with the legislation in force. In the international practice, the system of allowances and reliefs has been formed a long time ago. Individual income is taxed only after it reaches a certain level (which is the non-taxable income). Additional sums for the maintenance of each dependant, expenditures for the support of infants and elderly, for medical services that cost over a certain amount, for charitable donations and for education expenses are subtracted from the taxed income.

It is possible to develop a certain systematization of tax allowances. These can be classified into permanent and temporary allowances. **Temporary** allowances are granted to adolescents, refugees, foreigners, and people without a permanent residence in the given state but who are there only temporarily. **Permanent** tax allowances are granted to people, who are fulfilling other obligations or who have earned special merits with the state.

**Tax allowances** provide for the financial-economic stimulation of the economic activity of the taxpayer through the reduction of the taxation burden obligations. Tax allowances form an important element of the taxation policy and entail social and economic goals. For example, in the sphere of international economic relations, tax allowances are widely used as an incentive for exporters and foreign investors. Tax allowances are usually implemented through the taxation obligation of the payer, but sometimes this is done through the extension of the payment deadline, which is also a reduction in the taxation obligation. Tax allowances include the following types:

1) The untaxed minimum
2) Exempting from taxation certain elements of the object
3) Exempting from the payment of taxes certain natural persons or categories of payers
4) The reduction of the tax rate
5) Full tax relief, and others.

The tax amount can be reduced either partially or entirely, for a limited or unlimited period of time. The exemption from tax for a certain period of time is called a tax break. The process of appropriation removes certain objects from being covered by taxation. Appropriation can be relevant permanently or
temporarily, for all taxpayers and for certain categories. Tax discounts are aimed at the reduction of the taxation basis. Depending on the influence on the results of taxation, discounts can be divided into limited discounts (the size of the discount is limited directly or indirectly) and unlimited discounts (the taxation basis can be reduced up to the full amount of the payer’s expenditure).

**Tax credits** are allowances aimed at the reduction of the tax amount and of the taxed sum. The tax credit takes the form of accounting for previously paid taxes and is used in order to avoid double taxation (a credit for foreign tax). **Tax amnesty** is the return of the paid tax sum, a part of it, or the exemption of the taxpayer from financial sanctions for a certain period of time.

Preferences are a special (preferential) type of allowance offered by one state to another on basis of reciprocity or unilaterally without impact on a third party. Most often this happens in the form of discounts or relief from customs duties. Preferential regimes are established by developed countries towards developing countries in the framework of the Global System of Preferences.

### 3. Tax Rates and Other Elements of Taxation

The tax rate is the size of the tax set per unity levied. There are fixed and percentage rates. Percentage rates are classified can be proportional, progressive or regressive. It is important to emphasize the notion of base (main) rate, i.e. the rate that does not take into account the specific characteristics of the subject or the type of activity levied (ex. VAT 24%). There is also the reduced rate, which takes account of the specific traits of the payer and applies a reduced taxation burden, and the increased rate, which again takes into consideration the specific activity type that leads to income creation and applies an increased rate. Tax rates can also be classified as follows:

* Value added rates—expressed in percentages (income tax)

* Specific rates—expressed in a monetary form in conformity with the physical features of the objects levied (ex. the land tax).

In terms of content, there are marginal, factual and economic rates. A marginal rate is indicated directly in the taxation legislation (ex. income tax for a company of 28%). The factual rate is defined as the relation between the paid tax amount and the total amount of income received. The comparison of economic rates most adequately represents the consequences of taxation.

**The taxation basis** is the part of the taxation object expressed in levied units, to which a tax rate is applied in correspondence with the law. For example, when income is taxed, not all of it will serve as the taxation basis, but only a part of it—the taxable income. In a number of cases the taxation basis is factually a part of the object levied, to which the tax rate is applied. But this is relevant only in the cases
where the taxation object is directly conducive to and allows for a calculation measure. Thus, the taxable profit can be expressed directly in monetary units. In contrast, the majority of the taxation objects cannot be expressed directly in taxation units. In order to measure the object, it is necessary to first select some physical feature, i.e. to determine the measuring unit of taxation. For example, the taxation object for car owners is the car itself. Different countries have various parameters of levying: in France it is the power of the engine, in Holland—the weight of the car, in Germany—the volume of the operating cylinders of the engine. In these cases, the taxation basis cannot be determined as the part of the taxation object.

Tax payment deadlines are dates indicated in the law, when payments have to be made to the state or local budgets, as well as to extra-budgetary funds. Missing the deadline automatically leads to penalties, irrespective of the identity of the taxpayer who missed the deadline.

The source of tax payment is a resource used for paying the tax. The source is different from the object and does not always correspond to the latter. Irrespective of the taxation object, the source of the tax payment can only be the net income (profit) or the capital of the taxpayer. Thus, the object of the land tax is land ownership and the taxed item is the specific piece of land.

Chapter 3 Tax Rate Establishment and Tax Collection

1. Tax Rate Establishment and Tax Collection Procedures
2. Tax Collection Methods. Tax Debt Payment Methods

1. Tax Rate Establishment and Tax Collection Procedures

When introducing one or another type of tax, it is necessary to identify the taxpayer of the given tax and the source to be levied. Then, the exact taxation object is determined (income, wealth, sale of merchandise etc., it should be remembered that one object cannot be taxed through multiple taxes or charges, except when indicated in the law) together with the calculation method of the tax. The tax rate depends on the sum that needs to be collected and the number payers. Next, the tax collection method is established.

The taxation basis and the method of its determination, as well as the tax rates and payment deadlines are determined for each tax or charge in the law on the given tax or charge.

Tax payment is the obligation of each taxpayer. The financial relations between the state and the taxpayer are reflected in the tax obligation. The tax obligation is the condition that obligates the taxpayer to pay the given tax or charge and grants the taxation authorities the right to demand the fulfillment of this obligation by the taxpayer.
**The fulfillment of the tax obligation** is achieved through paying the established tax or charge amount within the stipulated deadline. The fulfillment of the tax obligation is mandatory and is executed irrespective of other obligations that the taxpayer may be subject to. This obligation covers the entire wealth of the taxpayer. Full or partial tax evasion constitutes sufficient grounds for applying a punishment to the taxpayer, which usually takes the form of a fine.

The payment is executed in cash or through a bank account in the national currency. Surplus payments or subtractions can be directed for upcoming taxes payable. It is acceptable to exchange tax and state obligations between the state and a certain taxpayer. If the payment deadline is missed, a penalty is applied. The methods of payment are cash, bank transfers, or duty stamps.

If the taxpayer does not comply with the request of the taxation authority to pay the tax or charge amount, the taxation authority has the right to block the operations of the indebted person by freezing the bank accounts or by arresting the person’s property, and to unconditionally subtract the tax amount from the bank account funds or from the sale of the arrested property.

**2. Tax Collection Methods**

There are three tax collection methods: cadastral, at the source (before the receipt of the income) and through self-assessment (at the declaration of the income).

**The cadastre** method implies the use of the cadastre. The cadastre is a register of all the typical objects (land, real estate) classified according to physical features and where the average profitability of the object is determined. Physical features include: for the land tax—the size of the land area, the distance from transportation ways and markets; for the house tax—the number of windows, pipes, doors, the type of the building; for industry tax—the number of employees and machines. The average profitability of the object, which is based on physical features, may differ significantly from actual profitability; this constitutes the main disadvantage of this method. This method is used for land tax.

Taxation **at the source** is calculated and deducted at the accounting unit of the company, which pays the income of the taxation subject. In this way is deducted the tax from wages and salaries. The tax is subtracted by an intermediary—the collector (tax agent) before the receipt of the tax by the subject, which excludes the possibility of tax evasion. Collection at the source is done for taxing income of employed personnel and for other relatively fixed incomes. The same method is used in other countries for the income of joint ventures. Tax collection at the source implies collection before the receipt of the income by its owner.
Tax collection upon self-assessment represents the deduction of a part of the income after its receipt and implies that the taxpayer submits to the taxation authorities a self-assessment, i.e. an official statement about the income received. Taxation authorities, taking into consideration the size of the taxation object and the taxation rates, verify the accuracy of tax calculations. This method is usually applied for the taxation of non-fixed revenues and for the cases when the taxpayer has multiple income sources. Self-assessment collection is convenient for the taxpayers because it creates conditions for tax evasion due to the weakness of the taxation apparatus and due to commercial confidentiality.

This method entails a number of variations: 1) in advance payments during the taxation period, when the state receives an approximate amount estimated on the basis of the income earned during the previous period or on basis of the tax paid; 2) payment by the taxpayer at the due date on basis of self-assessment at the time or after the presentation of the income self-assessment: the tax payer independently subtracts the tax amount and transfers it to the state; 3) additional payments determined by the tax authority required after the examination or verification of the submitted self-assessment.

Chapter 4 Types of Taxes

1. Principles of Tax Classification
2. Characteristics of Direct Taxes
3. Characteristics of Indirect Taxes

1. Principles of Tax Classification

The existing taxation system includes various types of taxes, which defer from one another in form and content. In practice, tax classification is done according to various criteria:

II. In accordance with the collection method:
1. Direct taxes which are determined directly for the income or wealth (income tax, land, individual tax, real estate tax, and others)
2. Indirect taxes which are applied to goods and services in the form of an addition to the price or tariff (VAT, excises and the customs duty).

III. In accordance with the taxation object
1. Income tax (profit tax, income tax for natural persons)
2. Taxes on wealth (individual tax, real estate tax, inheritance and gift tax)
3. Consumption tax (VAT, excises, customs duties)
IV. In accordance with the objectives set:

1. Fiscal, aimed at the formation of the state budget
2. Limiting (excises and customs duties)

V. In accordance with the taxation subject—individual and corporate taxes

VI. In accordance with the entity, which deducts the tax and disposes of it:

1. State taxes, determined by state legislation, transferred into the state budget and applied in the same way for the entire territory: income tax, VAT, excises, customs duties, individual tax and charges for the Road Fund.
2. Local taxes collected by the local authorities of the corresponding territory and transferred to the local budget: real estate tax, land tax, natural resources charges and local charges.

VII. In accordance to the purpose of utilization:

1. General taxes are amalgamated and transferred to a single state account; they are directed for general state programmes. General taxes encompass the majority of the taxes in any taxation system.
2. Special (purpose) taxes have a strictly defined purpose and are aimed for a certain type of expenditures (land tax, road tax, natural resources charges). As a rule, special extra-budgetary funds are created for the special purpose taxes and a special article for this type of tax is introduced in the budget law itself.

2. Direct Tax Characteristics

Chronologically, the mechanisms for direct taxation appeared earlier than those for indirect taxation. The criterion for dividing taxes into direct and indirect ones is the possibility to transfer them to the consumer. This criterion is based on the assumption that the final payer of the direct tax is the owner of the taxed property or the earner of the taxed income, while the final payer of the indirect tax is the consumer of the good, to the price of which the tax is added. Direct taxes constitute the basis of the taxation system. Historically, having appeared later than the direct taxes, indirect taxation mechanisms are transformed into a more palpable channel for the provision of state budget revenues, i.e. for covering the expenses of the state.

Direct taxes are divided into real and individual ones. Real taxes are applied to the sale, purchase or ownership of wealth, and their deduction does not depend on the individual financial capacity of the taxpayer (land tax, wealth tax, real estate tax). In contrast, individual taxes take into consideration the financial status of the taxpayer and his/her capacity to pay (profit tax, individual income tax, the tax for returns on capital).

There are two methods for distinguishing direct and indirect taxes:
1. In correspondence with the payment indices: direct taxes are paid and carried by the same entity, while indirect taxes are carried by one person and paid by another one.

2. On economic basis: direct taxes are subtracted from the production of valuables, i.e. from income or wealth, while indirect taxes are applied to the consumption of valuables.

Direct taxes are the most progressive form of taxation because their deduction takes into consideration the income and family situation of the taxpayer. When paying direct taxes, the payer can determine the exact tax amount, the tax rate, as well as the strictly applied deadlines. Yet, for indirect taxation, the buyers of various goods usually do not know exactly when and how much they are paying to the state through indirect taxes.

Direct taxes are divided into real and individual ones. Real taxes comprise the land, housing, and industrial tax. Real taxes were widely used in the period when land was the main form of wealth. This is when the land tax was introduced in Europe. Various methods were used for the calculation of this tax, including the number of ploughs, the area of the processed lands, and others. These criteria did not allow, however, an accurate determination of the purchase price of land.

With time, buildings became an important taxation base; this is why the house tax was introduced. The size of this tax was determined on the basis of the following criteria: number and purpose of rooms, number of doors, and windows. However, these criteria could not insure the fairness of taxation; this is why the level of income and the family situation started to be taken into consideration.

In the second half of the 19th century, a transition to individual taxes started to happen. Individual taxes are income or wealth taxes collected at the source or on basis of a self-assessment. For the collection of individual taxes, objects are considered individually for each payer. This involves taking into consideration the size of the income, family situation and other factors. Direct taxes include the income tax, land tax, real estate tax, road charges and the state tax.

3. Indirect Taxes Characteristics

The formation of the budget revenues entails the collection not only of direct, but also of indirect taxes. In developed countries the relative weight of indirect taxes is usually lower than that of direct ones, while in developing countries—the opposite occurs. Indirect taxes are applied to goods and services and take the form of an addition to its price or tariff. The payers of indirect taxes are the buyers or the consumers. All the citizens, independently of their income pay indirect taxes because they consume goods and services necessary for survival and which are chargeable to indirect taxation.

Indirect taxes are the simplest to collect and are also difficult to evade by the taxpayer. These taxes are also attractive to the government for the reason that their receipt does not depend directly on the
financial-economic activity of the taxation subject, and the fiscal effect is achieved even in conditions of production downfalls and unprofitable periods of enterprises.

At the same time, the state has to apply direct taxes as well such that taxation covers as many activities of the taxpayer as possible: processes that create the material and technical basis for economic activities, the wealth of enterprises, the workforce, the resources used in production, and the income. This creates a rather stable inflow of tax payments and also increases the causality between the amount of taxes paid and the effectiveness of the taxpayer.

Indirect taxes are divided into excises, state fiscal monopoly, and customs duties. Excises can be either individual or universal. A good example of a universal excise is the VAT, which is used in the world taxation system since the end of the 60-ies. Individual excises are applied to certain types and groups of goods. Customs duties are applied in most countries only to imported goods. Usually, exporting goods is not taxed through a customs duty.

Fiscal monopoly taxes are applied for the state production of goods (ex. salt, matches, spirit).

Customs duties are classified into export, import and transit duties. In most countries import taxes constitute the largest part of customs duties.

The advantages of indirect taxes include the following:

1) They increase the state revenue as a result of an increase in the population number or in its wealth. This is most advantageous for the countries that face economic progress.

2) By influencing the consumption rate through increasing the price of one product or another, the state limits the consumption of products that are dangerous for health.

3) Taxes are received as a payment for the good, as they are added to the price.

4) For the consumer, indirect taxes are convenient for the following reasons:
   • Insignificance of the amounts paid
   • Time convenience
   • The lack of a constraining factor
   • The lack of time requirements for making the payment
   • Does not require the accumulation of a certain sum.

The evolution of indirect taxes, according to many experts, is a general tendency covering essential as well as luxury goods, or instead of taxing a large number of items it concentrated on a selected few.
Chapter 5 Taxation Principles

1. Ethical basis of taxation

Taxes are justified because they **fund** activities that are necessary and beneficial to **society**. Additionally, **progressive taxation** can be used to reduce **economic inequality** in a society.

The payment of taxation is justified as part of the general obligations of citizens to obey the law and support established institutions.

- **Social democrats** generally favor **higher levels of taxation** to fund public provision of a wide range of services such as universal **health care** and education, as well as the provision of a range of **welfare benefits**.
- Many **libertarians** recommend a **minimal level of taxation** in order to maximize the protection of **liberty**.
- Compulsory taxation of individuals, such as **income tax**, is often justified on grounds including territorial **sovereignty**, and the **social contract**.
- **Social contract** describes a broad class of theories that try to explain the ways in which people form **states** and/or maintain **social order**.
- The notion of the social contract implies that the **people give up some rights to a government or other authority in order to receive or maintain social order through the rule of law**. It can also be thought of as an agreement by the governed on a set of rules by which they are governed.
- Social contract theory formed a central pillar in the historically important notion that **legitimate state authority** must be derived from the **consent of the governed**.
- The starting point for most of these theories is a **heuristic examination of the human condition** absent from any structured social order, usually termed the **“state of nature”**. In this condition, an individual’s actions are bound only by his or her personal power, constrained by **conscience**.
- From this common starting point, the various proponents of social contract theory attempt to explain, in different ways, **why it is in an individual’s rational self-interest to voluntarily give up the freedom one has in the state of nature in order to obtain the benefits of political order**.
• **Thomas Hobbes** (1651), **John Locke** (1689) and **Jean-Jacques Rousseau** (1762) are the most famous philosophers of contractarianism, which formed the theoretical groundwork of **democracy** and **republicanism**.

• **Defenders of business taxation** argue that it is an efficient method of taxing income that ultimately flows to individuals, or that separate taxation of **business** is justified on the grounds that commercial activity necessarily involves use of publicly established and maintained economic infrastructure, and that businesses are in effect charged for this use.

• **Georgist** economists argue that all of the economic rent collected from natural resources (land, mineral extraction, fishing quotas, etc.) is unearned income, and belong to the community rather than any individual. They advocate a high tax (the "Single Tax") on land and other natural resources to return this unearned income to the state, but no other taxes.

• **Georgism**, named after **Henry George** (1839-1897), is a **philosophy** and **economic ideology** that holds that everyone owns what they create, but that everything found in nature, most importantly **land**, belongs equally to all of humanity

**Opponents of taxation**

• Because payment of tax is compulsory and enforced by the legal system, some political philosophies view **taxation as theft**, or tyranny, accusing the government of levying taxes via **force** and **coercive** means.

• The view that democracy legitimizes taxation is rejected by those who argue that all forms of government, including laws chosen by democratic means, are fundamentally oppressive. According to **Ludwig von Mises**, "society as a whole" should not make such decisions, due to **methodological individualism**.

• Libertarian opponents of taxation claim that governmental protection, such as police and defense forces might be replaced by **market** alternatives such as **private defense agencies**, **arbitration agencies** or **voluntary contributions**.

• **Walter E. Williams**, professor of economics at George Mason University, stated "Government income redistribution programs produce the same result as theft. In fact, that's what a thief does; he redistributes income. The difference between government and thievery is mostly a matter of legality."

• Taxation has also been opposed by **communists** and **socialists**.

• **Karl Marx** assumed that taxation would be unnecessary after the advent of communism and looked forward to the "withering away of the state".
• In socialist economies such as that of China, taxation played a minor role, since most government income was derived from the ownership of enterprises, and it was argued by some that taxation was not necessary.

• While the morality of taxation is sometimes questioned, most arguments about taxation revolve around the degree and method of taxation and associated government spending, not taxation itself.

• In economics, the excess burden of taxation, also known as the distortionary cost or deadweight loss of taxation, is the economic loss that society suffers as the result of a tax, over and above the revenue it collects.

• It is assumed that distortions occur because people or firms change their behaviour in order to reduce the amount of tax they must pay.

• Excess burdens were first discussed by Adam Smith.

2. Adam Smith’s Canons of Taxation

The Adam Smith's four maxims of taxation (put forward over two hundred years ago) may be considered as a starting point for modern principles of taxation which will form the basis of a tax system which is simple, just and lasting.

These principles are founded on a philosophy which does not accept the theory of the "social contract" as the basis for society. Under that theory, every citizen is deemed to have contracted with the state to become a member of society and assume the benefits and burdens of such membership. Under that theory, the taxpayer is already deemed to have agreed to pay the taxes levied on him; and there are consequently no natural limits on the power of the state to tax him.

Adam Smith is generally considered (certainly in the English speaking world) to be the father of modern political economy. In "The Wealth of Nations" (1776) he set forth four maxims, or canons, of taxation, saying that "the evident justice and utility of (these) maxims have recommended them more or less to the attention of all nations.

The maxims were as follows:

I. The subjects of every state ought to contribute towards the support of the government, as nearly as possible, in proportion to their respective abilities; that is, in proportion to the revenue which they respectively enjoy under the protection of the state.

II. The tax which each individual is bound to pay ought to be certain, and not arbitrary. The time of payment, the manner of payment, the quantity to be paid, ought all to be clear and plain to the contributor, and to every other person.
III. Every tax ought to be levied at the time, or in the manner, in which it is most likely to be convenient for the contributor to pay it.

IV. Every tax ought to be contrived as both to take out and to keep out of the pockets of the people as little as possible over and above what it brings into the public treasury of the state.

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<th>Canons</th>
<th>Explanations</th>
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<tr>
<td>I. The subjects of every state ought to contribute towards the support of the government, as nearly as possible, in proportion to their respective abilities; that is, in proportion to the revenue which they respectively enjoy under the protection of the state.</td>
<td>Maxim I, it is the most controversial. It appears to be justifying the &quot;ability to pay&quot; principle; but whoever heard of taxing people according to inability to pay? In fact the ability to pay principle gets us no further forward. Does it, for example, require a proportional income tax or a progressive income tax?</td>
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<td>II. The tax which each individual is bound to pay ought to be certain, and not arbitrary. The time of payment, the manner of payment, the quantity to be paid, ought all to be clear and plain to the contributor, and to every other person.</td>
<td>Maxim II makes it clear that the requirement of certainty means certain to the man in the street -- to all of us, not just to the &quot;tax profession&quot;. If any society is to cohere, its members must know and be capable of understanding their basic rights under the society's constitution. Likewise, a society's tax system must be known and understood by all its adult members; otherwise, they cannot play their part to the full, and we are all the worse for it.</td>
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<td>III. Every tax ought to be levied at the time, or in the manner, in which it is most likely to be convenient for the contributor to pay it.</td>
<td>Maxim III is self-explanatory, but universally ignored. It is somehow presumed that inconvenience in payment is legitimised by the fact that the government is democratically accountable - as if this gives the government carte blanche to do what it likes.</td>
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<td>IV. Every tax ought to be contrived as both to take out and to keep out of the pockets of the people as little as possible over and above what it brings into the public treasury of the state.</td>
<td>Maxim IV provides grounds alone for condemning our tax systems on the grounds of efficiency. Not only does the government have to employ armies of inspectors and assessors, investigators, prosecutors and other officials (including judges), the poor taxpayer is forced</td>
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by economic circumstances --to stay competitive he must take full advantage of the tax system -- to engage teams of tax managers, advisors, accountants and lawyers at his own expense. The costs of all these people mean that there is a large difference between the revenue to the government (net of administration expenses) and the total outlay by the taxpayer.

3. Modern taxation principles

These four maxims have been summarized in four words:

- Equity,
- Certainty,
- Convenience and
- Efficiency.

If we measure our existing tax systems against these four maxims and according to these criteria, we can see just how far they fall short of the ideal.

- Most believe that a tax system should follow two main principles: fairness and efficiency, derived from the ADAM SMITH'S FOUR MAXIMS.
- Economists consider two principles of fairness to determine whether the burden of a tax is distributed fairly: the ability-to-pay principle and the benefits principle.
- In addition to being fair, a good tax system should be efficient, wasting as little money and resources as possible. Three measures of efficiency are administration costs, compliance costs, and excess burden.

A. Fairness: 1. the ability-to-pay principle

2. the benefits principle

B. Efficiency: 1. administration costs

2. compliance costs

3. excess burden

A. Fairness
Which is fairest—a **proportional, progressive, or regressive** system? There is no scientific way to resolve this question.

The answer depends on ethical and philosophical judgments, such as whether a society has the right to take income from one group of people and give it to another.

A progressive, proportional, or even slightly regressive system all can achieve vertical equity’s requirement that a richer person should pay more in taxes than a poorer person. Most industrialized nations have progressive income tax systems, which impose a heavier tax burden as one’s income increases. In the United States, the individual income tax system divides taxable income into different *tax brackets*—ranges of income with different tax rates.

Some economists consider sales taxes regressive because individuals with higher incomes spend a smaller proportion of their incomes on sales taxes than those with lower incomes. A poor person and a rich person who spend the same amount on groceries each year will pay the same amount in sales taxes, even though the rich person earns more money. However, rich people consume more than poor people, and studies of people’s spending patterns reveal that, over the course of a lifetime, the rich person will pay roughly the same proportion of his or her income in sales taxes as the poor person.

1. **Ability-to-Pay Principle**
   - The *ability-to-pay principle* holds that people’s taxes should be based upon their ability to pay, usually as measured by income or wealth. One implication of this principle is *horizontal equity*, which states that people in equal positions should pay the same amount of tax.
   - If two people both have incomes of $50,000, then horizontal equity requires that they pay the same amount of tax. Suppose, however, that two individuals both have incomes of $50,000, but one has a lot of medical bills and the other is healthy. Are they in equal positions? If not, then perhaps the tax burden of the person with medical bills should be reduced. But by how much? And how does a person document to tax authorities that he or she is truly paying medical costs, and not just pretending in order to lower the tax bill? This example illustrates a fundamental dilemma in tax design: Fairness is often the enemy of simplicity.
   - A second requirement of the ability-to-pay principle is *vertical equity*, the idea that a tax system should distribute the burden fairly across people with different abilities to pay. This idea implies that a person with higher income should pay more in taxes than one with less income. But how much more? Should families with different incomes be taxed at the same rate or at different rates?
   - Taxes may be proportional, progressive, or regressive. A **proportional tax** takes the same percentage of income from all people. A **progressive tax** takes a higher percentage of income as income rises—rich people not only pay a larger amount of money than poor people, but a larger fraction of their
incomes. A *regressive tax* takes a smaller percentage of income as income rises—poor people pay a larger fraction of their incomes in taxes than rich people.

2. Benefits Principle

- The *benefits principle* of taxation states that only the beneficiaries of a particular government program should have to pay for it. The benefits principle regards public services as similar to private goods and regards taxes as the price people must pay for these services. The practical application of the benefits principle is extremely limited, because most government services are consumed by the community as a whole. For example, one cannot estimate the benefit received by a particular individual for general public services such as national defense and local police protection.

- One can make a case that, for some taxes, there is a relationship between taxes paid and benefits received. Gasoline taxes, for example, are used to finance highway construction. But even here, the link between taxes and benefits is weak. Some drivers have more fuel-efficient cars than others. They may use the roads as much as other drivers, but buy less gasoline and thus pay less tax. Merchants who operate stores along the sides of highways benefit from the presence of the roads, but the benefit has nothing to do with the merchants’ gasoline consumption. Despite its intuitive appeal, the benefits principle is not important in practice, and it plays little role in the design of tax systems.

B. Efficiency

1. Administration Costs

Running a tax collection authority costs money. The government must hire tax collectors to gather revenue, data entry clerks to process tax returns, auditors to inspect questionable returns, lawyers to handle disputes, and accountants to track the flow of money. No tax system is perfectly efficient, but government should strive to minimize the costs of administration.

2. Compliance Costs

Complying with the system—paying taxes—costs taxpayers money above and beyond the actual tax bill. These costs include the money that people spend on accountants, tax lawyers, and tax preparers, as well as the value of taxpayers’ time spent filling out tax returns and keeping records.

3. Excess Burden

A third measure of a tax system’s efficiency takes into account the fact that when the government levies a tax on a good, it distorts consumer behavior—people buy less of the taxed good and more of other goods. Instead of choosing what goods to buy solely on the basis of their intrinsic merits, consumers are influenced
by taxes. This tax-induced change in behavior is called an *excess burden*. The larger the excess burden of a tax, the worse it is for efficiency.

Taxes on labor can also lead to excess burdens. When the government taxes people’s labor (through an income tax), people may decide to change the number of hours that they work. The tax distorts their choice between working and leisure. Not every tax generates an excess burden. Consider a lump-sum tax—a fixed amount of money that all taxpayers must pay regardless of their circumstances. If the government levies a tax of $1,000 on each citizen, regardless of what he or she buys or earns, the only way to avoid paying the tax is to leave the country or die. Citizens cannot avoid the tax by changing their behavior. Because it does not distort behavior, a lump-sum tax has no excess burden—it is perfectly efficient. However, most people would perceive such a tax as extremely unfair because it disregards individual circumstances such as a person’s ability to pay. Thus, the principles of fairness and efficiency conflict: fairness comes at the cost of efficiency. Each society must find the best tradeoff between fairness and efficiency, given the ethical beliefs of its citizens.

**4. Principles of taxation in Romanian Fiscal Code**

The taxes and fees governed by the Romanian Fiscal Code are based on the following principles:

a) **neutrality** of the fiscal measures as regards the various categories of investors and capital, forms of ownership, by ensuring equal conditions for investors and for Romanian and foreign capital;

b) **certitude** of taxation, by developing clear legal norms, that do not lead to arbitrary interpretations, while the deadlines, manner and amounts payable are clear for each payer, respectively such payers may follow and understand their fiscal burden and may determine the impact of their financial management decisions on their fiscal burden;

c) **fiscal equity** at the level of physical persons, by different taxation of incomes based on the size of the incomes;

d) **efficiency of taxation** by providing long-term stability of the provisions of the fiscal code, so that such provisions do not to lead to unfavorable retroactive effects for physical and legal persons, in comparison with the taxation in force on the date when they adopt major investment decisions.
Chapter 1. Risk

To understand what insurance is and how it works, we must first understand the concept of risk.

1.1. The Nature of Risk

Definition of Risk. Risk is the chance or uncertainty of loss. Risk is not the loss itself, but the uncertainty that a loss might occur.

Table no.1 Certainty vs. Uncertainty

<table>
<thead>
<tr>
<th>Level of Uncertainty</th>
<th>Characteristics</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>None (certainty)</td>
<td>Outcomes can be predicted with precision</td>
<td>Physical law, natural sciences</td>
</tr>
<tr>
<td>Level 1 (objective uncertainty)</td>
<td>Outcomes are identified and probabilities are known (calculated)</td>
<td>Games of chance: cards, dice, mortality in large groups of individuals</td>
</tr>
<tr>
<td>Level 2 (subjective uncertainty)</td>
<td>Outcomes are identified, probabilities are unknown (but can be estimated)</td>
<td>Investments, insurable risks</td>
</tr>
<tr>
<td>Level 3</td>
<td>Outcomes are not fully identified and probabilities are unknown</td>
<td>Space exploration, genetic research</td>
</tr>
</tbody>
</table>

1.2. Pure vs. Speculative Risks

Speculative risks represent a category of risks that, when undertaken, result in an uncertain degree of gain or loss. All speculative risks are made as conscious choices and are not just a result of uncontrollable circumstances. Speculative risk is the opposite of pure risk.

The risk management solution that involves insurance is concerned almost exclusively with situations in which no gain is possible – termed pure risks. Pure risks are a category of risks in which loss is the only possible outcome; there is no beneficial result. Pure risk is related to events that are beyond the risk-taker's control and, therefore, a person cannot consciously take on pure risk. For example, the possibility that a person's house will be destroyed due to a natural disaster is pure risk. In this example, it is unlikely that there would be any potential benefit to this risk. There are products that can be purchased to mitigate pure
risk. For example, home insurance can be used to protect homeowners from the risk that their homes will be destroyed.

For pure risk to exist, it must be possible for loss to occur. Much of the job of a risk manager involves estimating future losses and the variability of those future outcomes.

1.3. Attitude towards Risk

- Risk adverse
  - The premium is larger than the average loss
- Risk neutral
  - The premium is equal to the average loss
- Risk seeker
  - The person accepts risk at less than the average loss

1.4. The Law of Large Numbers

The law of large numbers holds that as a sample of observations is increased in size, the relative variation about the mean declines. This enables insurance companies to pool together many unpredictable individual loss exposures and make them collectively predictable.

Basically, the law of large numbers is a statistical axiom which states that the larger the number of exposure units independently exposed to loss, the greater the probability that actual loss experience will equal expected loss experience. In some instances, insurers can virtually eliminate their risk of loss by securing a large enough number of units in an insured group.

1.5. Methods for managing risks of losses

1) Avoid the risk
2) Risk reduction: burglar alarms, seat belts
3) Risk retention: self-insurance, high deductibles
4) Risk transfer: insurance

Chapter 2. Insurance

Insurance is a form of risk management primarily used to hedge against the risk of a contingent, uncertain loss. Insurance is defined as the equitable transfer of the risk of a loss, from one entity to another, in exchange for payment. Furthermore, the purpose of insurance is to transfer the risk (not to avoid or to eliminate it). When the risk is transferred to an insurance company, the risk is shared by a large number of insured people whose collective premiums form a pool of money from which individual losses are paid.
An insurer is a company selling the insurance; the insured, or policyholder, is the person or entity buying the insurance policy. The amount to be charged for a certain amount of insurance coverage is called the **premium**.

### 2.1. Definition of insurance.

It represents a contract for transferring risk from a person, business or organization to an insurer who agrees, in exchange of a premium, to pay for losses through an accumulation of premiums.

The transaction involves the insured assuming a guaranteed and known relatively small loss in the form of payment to the insurer in exchange for the insurer's promise to compensate (**indemnify**) the insured in the case of a financial (personal) loss. The insured receives a **contract**, called the **insurance policy**, which details the conditions and circumstances under which the insured will be financially compensated.

### 2.2. Principles.

Insurance involves pooling funds from many insured entities (known as exposures) to pay for the losses that some may incur. The insured entities are therefore protected from risk for a fee, with the fee being dependent upon the frequency and severity of the event occurring. In order to be insurable, the risk insured against must meet certain characteristics in order to be an **insurable risk**. Insurance is a commercial enterprise and a major part of the financial services industry, but individual entities can also **self-insure** through saving money for possible future losses.

**Insurability.** Risk which can be **insured** by private companies typically share seven common characteristics:

1. **Large number of similar exposure units:** Since insurance operates through pooling resources, the majority of insurance policies are provided for individual members of large classes, allowing insurers to benefit from the **law of large numbers** in which predicted losses are similar to the actual losses. Exceptions include **Lloyd's of London**, which is famous for insuring the life or health of actors, sports figures and other famous individuals. However, all exposures will have particular differences, which may lead to different premium rates.

2. **Definite loss:** The loss takes place at a known time, in a known place, and from a known cause. The classic example is death of an insured person on a life insurance policy. **Fire**, **automobile accidents**, and worker injuries may all easily meet this criterion. Other types of losses may only be definite in theory. **Occupational disease**, for instance, may involve prolonged exposure to injurious conditions where no specific time, place or cause is identifiable. Ideally, the time, place and cause of a loss should be clear enough that a reasonable person, with sufficient information, could objectively verify all three elements.

3. **Accidental loss:** The event that constitutes the trigger of a claim should be fortuitous, or at least outside the control of the beneficiary of the insurance. The loss should be pure, in the sense that it results from an event
for which there is only the opportunity for cost. Events that contain speculative elements, such as ordinary business risks or even purchasing a lottery ticket, are generally not considered insurable.

4. Large loss: The size of the loss must be meaningful from the perspective of the insured. Insurance premiums need to cover both the expected cost of losses, plus the cost of issuing and administering the policy, adjusting losses, and supplying the capital needed to reasonably assure that the insurer will be able to pay claims. For small losses these latter costs may be several times the size of the expected cost of losses. There is hardly any point in paying such costs unless the protection offered has real value to a buyer.

5. Affordable premium: If the likelihood of an insured event is so high, or the cost of the event so large, that the resulting premium is large relative to the amount of protection offered, it is not likely that the insurance will be purchased, even if on offer. Further, as the accounting profession formally recognizes in financial accounting standards, the premium cannot be so large that there is not a reasonable chance of a significant loss to the insurer. If there is no such chance of loss, the transaction may have the form of insurance, but not the substance.

6. Calculable loss: There are two elements that must be at least estimable, if not formally calculable: the probability of loss, and the attendant cost. Probability of loss is generally an empirical exercise, while cost has more to do with the ability of a reasonable person in possession of a copy of the insurance policy and a proof of loss associated with a claim presented under that policy to make a reasonably definite and objective evaluation of the amount of the loss recoverable as a result of the claim.

7. Limited risk of catastrophically large losses: Insurable losses are ideally independent and non-catastrophic, meaning that the losses do not happen all at once and individual losses are not severe enough to bankrupt the insurer; insurers may prefer to limit their exposure to a loss from a single event to some small portion of their capital base. Capital constrains insurers’ ability to sell earthquake insurance as well as wind insurance in hurricane zones. In the US, flood risk is insured by the federal government. In commercial fire insurance it is possible to find single properties whose total exposed value is well in excess of any individual insurer's capital constraint. Such properties are generally shared among several insurers, or are insured by a single insurer who syndicates the risk into the reinsurance market.

**Indemnification.** To “indemnify” means to make whole again, or to be reinstated to the position that one was in, to the extent possible, prior to the happening of a specified event or peril.

An entity seeking to transfer risk (an individual, corporation, or association of any type, etc.) becomes the 'insured' party once risk is assumed by an 'insurer', the insuring party, by means of a contract, called an insurance policy. Generally, an insurance contract includes, at a minimum, the following elements: identification of participating parties (the insurer, the insured, the beneficiaries), the premium, the period of
coverage, the particular loss event covered, the amount of coverage (i.e., the amount to be paid to the insured or beneficiary in the event of a loss), and exclusions (events not covered). An insured is thus said to be "indemnified" against the loss covered in the policy.

When insured parties experience a loss for a specified peril, the coverage entitles the policyholder to make a claim against the insurer for the covered amount of loss as specified by the policy. The fee paid by the insured to the insurer for assuming the risk is called the premium. Insurance premiums from many insureds are used to fund accounts reserved for later payment of claims — in theory for a relatively few claimants — and for overhead costs. So long as an insurer maintains adequate funds set aside for anticipated losses (called reserves), the remaining margin is an insurer's profit.

2.3. Effects

Insurance can have various effects on society through the way that it changes who bears the cost of losses and damage. On one hand it can increase fraud, on the other it can help societies and individuals prepare for catastrophes and mitigate the effects of catastrophes on both households and societies.

Insurance can influence the probability of losses through moral hazard, insurance fraud, and preventative steps by the insurance company. Insurance scholars have typically used morale hazard to refer to the increased loss due to unintentional carelessness and moral hazard to refer to increased risk due to intentional carelessness or indifference. Insurers attempt to address carelessness through inspections, policy provisions requiring certain types of maintenance, and possible discounts for loss mitigation efforts. While in theory insurers could encourage investment in loss reduction, some commentators have argued that in practice insurers had historically not aggressively pursued loss control measures - particularly to prevent disaster losses such as hurricanes - because of concerns over rate reductions and legal battles. However, since about 1996 insurers began to take a more active role in loss mitigation, such as through building codes.

2.4. Insurers’ Business Model

Underwriting and investing

The business model is to collect more in premium and investment income than is paid out in losses, and to also offer a competitive price which consumers will accept. Profit can be reduced to a simple equation: Profit = earned premium + investment income - incurred loss - underwriting expenses.

Insurers make money in two ways:

1. Through underwriting, the process by which insurers select the risks to insure and decide how much in premiums to charge for accepting those risks;
2. By investing the premiums they collect from insured parties.

The most complicated aspect of the insurance business is the actuarial science of ratemaking (price-setting) of policies, which uses statistics and probability to approximate the rate of future claims based on a given risk. After producing rates, the insurer will use discretion to reject or accept risks through the underwriting process.

Underwriting is the process of classifying potential insured into appropriate risk classifications in order to charge the correct rate. Note that not all applications for insurance are acceptable and fair discrimination is necessary to reduce adverse selection.

Underwriters use the following three financial ratios to help them accomplish their task:

- Loss ratio = incurred losses/ earned premiums; high loss ratios may indicate that an insurance company may need better risk management policies to guard against future possible insurance payouts.
- Expense ratio = underwriting expenses/ written premiums
- Combined ratio = loss ratio + expense ratio; the combined ratio measures claim losses and operating expenses against earned premiums; a ratio below 100% represents a measure of profitability and the underwriting efficiency of an insurance firm; ratios above 100% denote a failure to earn sufficient premiums to cover expected claims.

Claims

Claims and loss handling is the materialized utility of insurance; it is the actual "product" paid for. Claims may be filed by insureds directly with the insurer or through brokers or agents. The insurer may require that the claim be filed on its own proprietary forms, or may accept claims on a standard industry form.

Insurance company claims departments employ a large number of claims adjusters supported by a staff of records management and data entry clerks. Incoming claims are classified based on severity and are assigned to adjusters whose settlement authority varies with their knowledge and experience. The adjuster undertakes an investigation of each claim, usually in close cooperation with the insured, determines if coverage is available under the terms of the insurance contract, and if so, the reasonable monetary value of the claim, and authorizes payment.

In managing the claims handling function, insurers seek to balance the elements of customer satisfaction, administrative handling expenses, and claims overpayment leakages. As part of this balancing act, fraudulent insurance practices are a major business risk that must be managed and overcome. Disputes
between insurers and insureds over the validity of claims or claims handling practices occasionally escalate into litigation.

**Marketing**

Insurers will often use insurance agents to initially market or underwrite their customers. An agent legally represents the insurance company. A broker represents a customer. Insurance broker finds sources for contracts of insurance on behalf of their customers.

Agents can be captive, meaning they write only for one company, or independent, meaning that they can issue policies from several companies. The existence and success of companies using insurance agents is likely due to improved and personalized service.

Traditionally, the distribution systems used to market insurance are classified as follows:

**Exclusive agency system** = a distribution system through which agents represent only one company or a group of companies under similar management.

**Direct writer system** = a system for selling insurance wherein the insurer sells directly to the insured via its employees.

**Independent agency system** = is a system for the distribution of insurance through independent contractors which represent different companies.

**Chapter 3. Technical Elements of Insurance**

1. **The insurance subjects**
   - The insurer: The juridical person that administrates the insurance fund and takes the obligation to pay to the insured either the indemnity or the sum insured.
   - The insured: Any physical or juridical person that contracts the insurance and has the right to collect the indemnity or the sum insured.
   - The contracting of the insurance
     
     e.g. The accident insurances subscribed by the tourism agencies for their clients.
   - The beneficiary is mentioned in the contract by nominalization; the beneficiary is the person entitled to collect the sum insured or the indemnity.

   *Obs.* May be a third part person, unknown at the moment of subscribing a liability insurance.

2. **The insurance objects** may be
   - The insured property
   - The insured person
   - The insured liability
3. The **insured risk** is the chance of loss. Only pure risks are insurable risks.

4. The **insurable interest** represents a chance of financial loss or a personal or financial interest in the insured property or individual.

5. The **sum insured** \((Sa)\) represents the upper limit of the insurer’s engagement towards the insured, if the insured risk (peril) occurs. It’s settled by the insurance contract.
   - Property insurance – the sum insured is established in accordance with the value of the insured property.

   *Obs.* The indemnity cannot exceed the loss suffered by the insured, it cannot exceed the real value of the property when the event occurred and it cannot exceed the sum insured.

   *Obs.* The sum insured is established by the insured for voluntary insurances or by law for compulsory insurances.
   - Life and health insurance – the sum insured is established by the insured because the life and health of humans cannot be estimated in money.
   - Liability insurance – the limitation of the insurer responsibility usually operates here, limitation by event (after each event the insurer’s guarantee is reconstituted) or by insurance year.

6. The **insurance premium** represents the payment a policyholder agrees to make for an insurance policy. The premium has two parts:
   - net (pure, risk) premium – the part of the premium which is sufficient to pay for losses and loss adjustment expenses;
   - the loading – the part of an insurance rate designed to cover expenses, profit and a margin for contingencies (reserve fund).

   \( \text{Gross premium}(Pb) = \text{net premium}(Pn) + \text{the loading}(L) \)

   The net premium and the loading constitute the gross premium (Pb) or the commercial premium. So, the gross premium is obtained by adding to the net premium the loading of net premium with the following destinations:
   - \( L: l(1) \) -> for constituting the reserve fund 0.25
     - \( l(2) \) -> for financing preventive actions 0
     - \( l(3) \) -> for covering the insurers expenses; chosen between 0.10- 0.25
     - \( l(4) \) -> technical profit of the insurer; chosen between 0- 0.15

   The insurance premium measured in monetary units is a function of two factors: the ratio and the sum insured.

   \( \text{Premium}(Pa) = \text{the ratio} \ (Ct)* \text{sum insured} \ (Sa) \)

   *The ratio* is the charge for a monetary unit of insurance used as a basis for the calculation of premium. \( Ct = \) Gross premium for every x monetary unit insured
In order to stimulate the concern of the insureds for the insured property, the *Bonus-Malus* system has been introduced in the international practice. The **Bonus clause** stipulates that the insured that are not generating indemnity payments benefit from premium reductions in the next year. The **Malus clause** stipulates that the insureds that are generating repeated indemnity payments are subject to premium raise.

7. The damage, the average, the loss (Pg)

- The damage represents the loss, in monetary expression, of an insured good as a result of the occurrence of the covered risk (peril).
- The average represents any loss, expense or prejudice to a transport facility or a commodity during transportation.

A. Transport insurance: *the particular (simple) average* refers to the damage suffered only by the transport facility or by the transported commodities in the period between their departure from the deposit until their arrival at destination.

B. Marine insurance: *the general (gross) average* is a specific type of average, brought about the men, consisting of a loss that was caused intentionally to the ship or to the transported commodities in order to save both the ship and the freight.

*Eg.* In order to save the ship a part of the freight is jetted into the sea, so the participants at the expedition will share the loss of the sacrificed goods.

8. The indemnity (Dp). **Covering systems in property insurance.**

In order to determine the indemnity, the following two situations and variants have to be considered:

**Situation 1 Total loss**  \( \text{Pg}=\text{Vr} \) (the property is entirely destroyed)

**Situation 2 Partial loss**  \( \text{Pg}<\text{Vr} \)

a. \( \text{Sa} \geq \text{Vr} \) (overinsurance)

b. \( \text{Sa} < \text{Vr} \) (underinsurance)

**Situation 1 Total loss**  \( \text{Pg}=\text{Vr} \)

a. \( \text{Sa} \geq \text{Vr} \) (overinsurance)

then \( \text{Dp} = \text{Pg} \)

b. \( \text{Sa} < \text{Vr} \) (underinsurance)

then \( \text{Dp} = \text{Sa} \)

**Situation 2 Partial loss**  \( \text{Pg}<\text{Vr} \)

If the insured property wasn’t entirely destroyed, the indemnity is settled as a function of the covering system:
1. **Proportional covering system**

a. If the insurance was settled for a sum insured greater or equal than the real value of the good, then the indemnity equals the damage.

   \[ Sa \geq Vr \text{ then } Dp = Pg \]

b. In the case of under insurance the indemnity represents only a part of the damage, corresponding to the degree of covering by insurance.

   \[ Sa < Vr \text{ then } Dp = Pg \times \frac{Sa}{Vr} \]

2. **First risk covering system** – the system guarantees a complete indemnification for the partial damages up to maximum the sum insured.

   \[ Dp = Pg \leq Sa \]

3. **The limited covering system** (with franchise) - The franchise is the part of the damage that stays in the charge of the insured; it is the portion of any claim that is not covered by the insurance provider.

   The franchise may be settled as a fixed sum, as a percentage from the damage or from the sum insured or in a mixed system (a percentage but minimum a fixed sum; \( Ff=\text{MAX}\{\%Pg; F\} \)).

   The franchise may be

   a. **Deductible** – its value is subtracted from any damage

      \[ Sa \geq Vr \text{ then } Dp = Pg - F \]

      \[ Sa < Vr \text{ then } Dp = Pg - F \leq Sa \]

   b. **Non-deductible** – it acts only for smaller damages, greater damages being totally indemnified

      \[ Sa \geq Vr \text{ then} \]

      1. \( Pg < F \Rightarrow Dp = 0 \)

      2. \( Pg \geq F \Rightarrow Dp = Pg \)

      \[ Sa < Vr \text{ then} \]

      1. \( Pg < F \Rightarrow Dp = 0 \)

      2. \( Pg \geq F \Rightarrow Dp = Pg \leq Sa \)

   The arguments and motivations that support the introducing of the limited covering system are the following:

   - The need to release the insurer from small damages – the deductible assumes that small damages are not indemnified, so the insurer concentrates over the important damages;
   - The declining in insurance cost – the number of small damages not paid represent an economy for the insurer, so he has the possibility to set smaller premiums for these insurances or to offer premium reductions;
The preventive function of the system – the insured will be more careful than in the case of complete insurance, knowing that in case of damage he has to pay a part of it.

9. **The period of insurance** represents the period of time at which the rights and obligations of the parts refer to and it’s stipulated in the contract. Furthermore, for property and liability insurances the contracts are concluded for a period of insurance of maximum one year while for life insurances the period can be of 5, 10, 12, 20, 30 years or undetermined (lifelong insurances).

**Practical examples for computing the indemnity according to the covering systems:**

*Problem 1.* Regarding a property insurance contract we have the following information.

\[ V_r = 7500 \text{ mu} \]
\[ S_a = 5000 \text{ mu} \]
\[ P_g = 6050 \text{ mu} \]
\[ F = 5\% \text{ of } P_g \]

Determine the indemnity of the insured

- **a)** in the proportional covering system
- **b)** in the first risk covering system
- **c)** in the limited covering system with deductible franchise

- **Pg < Vr** underinsurance

**Problem 2.** Knowing

\[ V_r = 7500 \text{ mu} \]
\[ S_a = 5000 \text{ mu} \]
\[ P_g = 3750 \text{ mu} \]
\[ F = 250 \text{ mu} \]

Determine the indemnity in the

- **a)** proportional covering system
- **b)** first risk covering system
- **c)** limited covering system with non deductible franchise

**Problem 3.** Knowing

\[ V_r = 7500 \text{ mu} \]
\[ S_a = 5000 \text{ mu} \]
\[ P_g = 3750 \text{ mu} \]
\[ F = 250 \text{ mu} \]

Determine the indemnity in the

- **a)** proportional covering system
- **b)** first risk covering system
- **c)** limited covering system with non deductible franchise
Problem 3. Knowing
\[ \text{Vr} = 1500 \, \text{mu}, \]
\[ \text{Sa} = 2000 \, \text{mu}, \]
\[ \text{Pg} = 780 \, \text{mu}, \]
\[ F = 10\% \, \text{Pg}, \text{but minimum 50} \, \text{mu}, \text{determine the indemnity} \]
a) in the proportional covering system
b) in the first risk covering system
c) in the limited covering system with deductible franchise (\(F_f = \text{MAX} \{10\% \, \text{Pg}, 50\}\))
\(\text{Pg} < \text{Vr}\)
\(\text{Sa} > \text{Vr}\) overinsurance
a) \(D_p = \text{Pg} \Rightarrow D_p = 780 \, \text{mu}\)
b) \(D_p = \text{Pg} \leq \text{Sa} \Rightarrow D_p = 780 \, \text{mu}\)
c) \(F_f = 78\)
\[D_p = \text{Pg} - F_f \Rightarrow D_p = 780 - 78 = 702 \Rightarrow D_p = 702\]

Problem 4. Knowing
\[ \text{Vr} = 3000 \, \text{mu}, \]
\[ \text{Sa} = 2200 \, \text{mu}, \]
\[ \text{Pg} = 2850 \, \text{mu}, \]
\[ F = 5\% \, \text{Sa}, \text{but min 100} \, \text{mu}, \text{determine the indemnity} \]
a) in the proportional covering system
b) first risk covering system
c) limited covering system with deductible franchise (\(F_f = \text{MAX} 10\% \, \text{Pg}, 100\))
\(\text{Pg} < \text{Vr}\)
\(\text{Sa} < \text{Vr}\) underinsurance
a) \(D_p = \text{Pg} \times \text{Sa} / \text{Vr} \Rightarrow D_p = 2850 \times 2200 / 3000 = 2090 \, \text{mu}\)
b) \(D_p = \text{Pg} \leq \text{Sa} \Rightarrow D_p = 2200 \, \text{mu}\)
c) \(F_f = 110 \Rightarrow D_p = \text{Pg} - F_f \leq \text{Sa} \Rightarrow D_p = 2850 - 110 = 2740 \leq \text{Sa} \Rightarrow D_p = 2200 \, \text{mu}\)

Chapter 4. The Insurance Contract
An contract represents a legal agreement between two or more competent parties that promises a certain performance in exchange for a certain consideration.

1. Requirements of a contract
   • Competent parties – A contract is not valid unless it is made between competent parties under the law.
Examples of incompetent parties- a minor, a person who is insane or under the influence of drugs or alcohol.

- **Legal purpose** – a contract that is against public policy or in violation of the law, is not enforceable.

  *Eg* A contract of insurance to cover losses caused by the insured’s own arson would be illegal and **contrary to public policy**.

- **Offer and acceptance** (agreement) – a contract must involve at least two parties: one who makes the offer and one who accepts it. An offer is a promise that requires an act or another promise in exchange; acceptance occurs when the other party agrees to the offer.

- **Consideration** is the price each party demands for agreeing to carry out his or her part of the contract. The consideration given by the insured is the premium payment; the consideration given by the insurer is the promise to pay for losses suffered by the insured.

### 2. **Characteristics of insurance contracts**

- **Principle of Indemnity** - the insurer agrees to pay no more and no less than the actual loss suffered by the insured. The principle of indemnity is related to the requirement of insurable interest and the exclusion of speculative risks, so an insured can be indemnified to the extent of his/her insurable interest. The principle of indemnity is supported by *the right of subrogation*: it gives the insurer whatever claim against third parties the insured may have as a result of the loss for which the insurer paid.

- **Personal** – an insurance contract insures the person who owns the property (not the property).

- **Aleatory** – under an aleatory contract one party’s performance depends on an uncertain event, so the exchange of value might appear to be unequal.

- **Adhesion** – for contracts of adhesion, one party has greater power over the other party in drafting the contract. For insurance contracts the insurer has greater power over drafting the contract (prepares the provisions of the contract) while the insured simply adheres to the policy terms. Ambiguity occurs when the insurer doesn’t make the terms and agreements of the policy perfectly clear, and the courts usually resolve any ambiguity in policy wording in favor of the insured.

- **Unilateral** – only the insurance company is legally bounded to perform its part of the agreement. The insureds are not legally obligated to pay premiums. If insureds stop paying premiums, the insurance company can cancel coverage, but can’t take the policyholder to court for breaking the contract.

- **Contract of Utmost Good Faith** – the insurance company relies on the truthfulness and integrity of the applicant when issuing a policy. The insured relies on the company’s promise and capability to provide coverage and pay claims.

- **Conditional** – an insurance policy includes a number of conditions that both the insured and the insurer must comply with. The insurer can refuse to perform if the insured does not satisfy certain conditions contained in the contract.
3. **Parts of an insurance contract**

3.1. **Declarations** are statements that identify the covered person or organization and give information about the loss exposure and the amount of coverage provided; they can include the period of coverage and the limitations of liability (maximum amount payable).

3.2. **Insuring agreement** (clauses) – are a general statement of the promises the insurer makes to the insured, stating the losses for which the insured will be indemnified; it describes the type of property covered and the perils against which it is insured.

a. **Variation in insurance clauses** (either simple, such as in life insurance, or package policies -> several insurance clauses, one for each major type of coverage)

b. **Named- perils policy** covers losses caused by the listed perils vs. **Open- perils policy** covers losses caused by all perils except those excluded – very few policies are “all risk” in the sense of covering every conceivable peril.

c. **Exposures to loss** are defined in the insuring agreement as basis of valuation (actual cash value; replacement cost) and types of losses covered.

3.3. **Conditions** – state the ground rules for the policy, describing the responsibilities and the obligations of the insured and insurer

a. **Notice and proof of loss** – the insurer has to be notified when the event, accident or loss occurs. If notice is not made within a reasonable time after the loss, the insurer is relieved of all liability under contract.

b. **Suspension of coverage** - the insurer is released from liability for some risk situations he wants to avoid.

c. **Cooperation of the insured** - the insured must fulfill certain conditions before the insurer will pay for losses. The purpose of cooperation clause is to force the insured to perform the way they would if they did not have insurance.

d. **Protection of property after loss** – the insured is required to protect the property after a loss in order to reduce the loss as much as possible.

3.4. **Exclusions and exceptions**

The main reasons for this part are to avoid financial catastrophe for the insurer, to exclude intentional losses, to avoid duplication of coverage and to reduce adverse selection.

A policy may exclude specific locations, perils, property or losses.

3.5. **Endorsements** are used with property or casualty policies while **riders** are used for life/health policies.

A rider or endorsement makes a change in the contract to which it is attached. It may increase or decrease the coverage, change the premium, correct a statement, or make any number of other changes.
1. Common Stocks, Preferred Stocks—Basic Concepts

Stocks, which represent ownership in a corporation are, and have been, one of the best investments one can make. The potential for profit is much greater than with guaranteed investments or interest-paying investments. The main benefits of corporations over sole proprietorships and partnerships are that:

- its owners—stockholders—are liable only for the amount invested;
- the corporation can raise large amounts of money through the sale of stocks and bonds;
- complete control is vested in a board of directors, which the stockholders choose through voting.

The main disadvantage is that a corporation is carefully regulated by law, and must publish and distribute numerous reports to stockholders and various government agencies.

Legal Rights Of Common Stockholders

Common stockholders have the following legal rights:

- The right to receive stock certificates as evidence of ownership.
- The right to vote at stockholders’ meetings.
- The right to receive any declared dividends, and to sell the stock.
- The right to information and to receive financial reports about the company.
- Sometimes they may have the right to buy newly issued shares of stock by the company before the shares are sold to the public, so that current owners can maintain their proportionate interest in the company, if they so choose. Whether they have this privilege is determined by law or by the company's charter.

Par Value, Stated Value, Legal Capital

Par value is the value assigned to a share of stock when it is authorized, and is much less than its expected market value. Sometimes a stock will not have a par value, but will have a stated value in the corporation's financial records. Par and stated values set the minimum requirement for legal capital, which is the number of shares of outstanding stock multiplied by the par or stated value of each share. A corporation cannot pay dividends or buy back its stock, if doing so reduces the amount of legal capital below the minimum required by state law. Par value is more relevant, however, for preferred stock, because they pay a fixed dividend that is a set percentage of the par value.

Residual Claim

If a company liquidates, common stockholders have a claim to the residue—what is left after all creditors and all preferred stockholders have been paid. In most cases of liquidation, the common shareholder gets nothing.

Rights and Warrants
Rights and warrants are much like options. They give the owner the right, but not the obligation to buy new shares of stock at a specified price, and they expire at a specified date. Unlike options, the company issues rights and warrants to raise more money for the company.

**Rights (Synonyms: Pre-Emptive Rights, Subscription Rights, Oversubscription Privilege)**

If a corporation wants to raise more money, it will frequently do so by issuing more shares from the authorized, but unissued shares. However, as discussed above, existing shareholders may have the right to maintain their proportionate ownership of the company, so the company provides existing stockholders with **subscription rights** (aka **rights certificates**), giving stockholders the right, but not the obligation, to buy the new shares at a specified price—the **subscription price**—which is usually lower than the market price. A benefit for the company of selling to existing shareholders is that marketing costs will be less than selling to the general public. The **rights offering** is generally handled by investment bankers in a standby commitment, where the investment bank agrees to buy any shares not subscribed to by the holders of rights.

**Warrants**

A warrant is a security that gives its owner the right, but not the obligation, to purchase a stipulated number of shares at a stipulated price anytime before the warrant expires. When the warrant is first issued, the stipulated price is always above the current market price, usually well above, because warrants have a much longer lifetime than rights.

Warrants are frequently sold attached to bonds, to lower the interest that the corporation has to pay, since the bondholder has the additional option of exercising the warrant for profit if the company does well. They may be attached to preferred stock as well. Sometimes the warrant is detachable—that is sold separately from the stock or bond—after a certain time; otherwise the warrant is nondetachable.

**Stock Splits**

When a stock appreciates considerably, the corporation will sometimes declare a stock split, which will lower the market price of the stock, and therefore, hopefully entice more investors to buy the stock. The split ratio is usually 2:1, that is, 2 shares of stock now replace every share of stock, but the ratio can be 3:1, 4:1, 5:3 or anything else. If an investor had 100 shares of stock selling at $80 per share, he will have 200 shares selling at $40 per share after a 2:1 split. All financial ratios with the share price as one of the terms and the par value of the stock will be adjusted accordingly. The number of outstanding stocks will also increase. Whether the stock split entices more people to buy it is questionable, and necessarily limited. If this were not true, a corporation could continually split its stock to increase its value, even without increasing profits.

**Reverse Stock Splits**

When a company has financial difficulties, sometimes its stock falls to a low value. Often, this is seen as a sign of risk and bad performance, so the company will do a reverse split, where 2 or more shares of
stock are exchanged for 1, thereby increasing the value of each share. The company itself is not worth more, but it may appear more valuable to inexperienced investors.

**Stock Dividend**

Large companies that are profitable, but have little potential for growth, will start paying dividends, usually quarterly. Usually the dividend is paid in cash, but sometimes, to conserve cash, a company will declare a stock dividend instead of a cash dividend. The stock dividend is stated as a percentage of stock owned. Thus, with a 10% dividend, each stockholder will get 1 more share of stock for every 10 that he owns. There is no change to the par value and the shareholders’ proportionate interest in the company is unchanged. Each share will be worth less, however.

**Types of Stocks**

Investors have different objectives, such as growth or income, and different investment horizons. Hence, they seek out stocks that have the qualities that they look for. To satisfy this need, stocks have been categorized according to their investment characteristics. The most common categories are listed below.

**Blue-chip stocks** are stocks of large, stable companies that have a long history of stable earnings and dividends, and are typified by the stocks composing the Dow Jones Industrial Average, including General Electric, IBM, Microsoft, and Pfizer. Because of their large size, there is virtually no potential for a high growth rate, so most of the return of these stocks is in the form of dividends. However, capital gains can be earned from these stocks if they are bought in a bear market, when stock prices are depressed overall.

**Income stocks** generate most of their returns in dividends, and the dividends—unlike the dividends of preferred stock or the interest payments of bonds—will, in many cases, grow continuously year after year as the companies' earnings grow. These companies have a high dividend payout ratio because there are few opportunities to invest the money in the business that would yield a higher return on stockholders' equity. Hence, many of these companies are already very large, and are also considered to be blue-chip companies, such as General Electric.

**Cyclical stocks** cycle with the economic cycles, going up strongly when the economy is growing and declining as the economy declines. Most of these companies supply capital equipment for businesses or big ticket items, such as cars and houses, for consumers. Some examples include Alcoa, Caterpillar, and Brunswick. The best time to buy these stocks is at the bottom of a business cycle, then sell when the cycle peaks.

**Defensive stocks** are issued by companies that are resistant to the economic cycles, and may even profit from them. When consumers and businesses cut back spending, a few other businesses profit, either because they offer a way to cut costs, or because they have the lowest prices. For instance, during the credit crisis of late 2008 and early 2009, people tried to save by doing more for themselves. For instance,
many people starting cutting hair for their families, or coloring their own hair to save the $200 that some beauty shops charge. This increased business for businesses that manufactured hair cutters and coloring kits. Auto repair shops tend to do better, because people cut back on the purchase of new cars, but cars nowadays are too complex for most people to fix on their own. And while most retailers were hurting significantly during the credit crisis, Wal-Mart was one of the few that actually thrived, since Wal-Mart is usually recognized as providing lower prices than other retailers.

**Growth stocks** are stocks of companies that reinvest most of their earnings into their businesses, because it can yield a higher return on stockholders’ equity, and ultimately, a higher return to stockholders, in the form of capital gains, than if the money were paid out as dividends. Typically, these companies have high P/E ratios because investors expect high growth rates for the near future. Note, however, that growth stocks are risky. If a growth-oriented company doesn’t grow as fast as anticipated, then its price will drop as investors lower its future prospects with the result that the P/E ratio declines. So even if earnings remain stable, the stock price will decline.

Another risk is bear markets—growth stocks will tend to decline much more than blue-chips or income stocks in a declining market, because investors become pessimistic, and will sell their stocks, especially those that pay no dividends. One of the main benefits of growth stocks is that capital gains, especially long-term gains where the stock is held for at least 1 year, are generally taxed at a lower rate than dividends, which are taxed as ordinary income.

**Tech stocks** are the stocks of technology companies, which make computer equipment, communication devices, and other technological devices. Most tech stocks are listed on NASDAQ. The stocks of most tech companies are either considered growth stock or speculative stock; some are considered blue-chip, such as Intel or Microsoft. However, there is considerable risk in tech companies because research and development efforts are hard to evaluate, and since technology is continually evolving, it can quickly change the fortunes of many companies, especially when old products are displaced by new products.

**Speculative stocks** are the stocks of companies that have little or no earnings, or widely varying earnings, but hold great potential for appreciation because they are tapping into a new market, are operating under new management, or are developing a potentially very lucrative product that could cause the stock price to zoom upward if the company is successful. Many Internet companies were considered speculative investments. During the stock market bubble of the latter half of the 1990’s, many of these stocks had ridiculous market capitalizations, and yet, many of them had virtually no earnings, and many, if not most, have since then, imploded. A few, such as Amazon, have grown to become major corporations. Many speculative stocks are traded frequently by investors—or some would say, gamblers—in the hope of making a profit by timing the market, since speculative stocks range wildly in price as their perceived prospects constantly change.
2. Overview of the types and features of fixed income securities

I. BONDS

Type of Issuer

One important characteristic of a bond is the nature of its issuer. Although foreign governments and firms raise capital in U.S. financial markets, the three largest issuers of debt are domestic corporations, municipal governments, and the federal government and its agencies. Each class of issuer, however, features additional and significant differences.

Domestic corporations, for example, include regulated utilities as well as unregulated manufacturers. Furthermore, each firm may sell different kinds of bonds: Some debt may be publicly placed, whereas other bonds may be sold directly to one or only a few buyers (referred to as a private placement); some debt is collateralized by specific assets of the company, whereas other debt may be unsecured. Municipal debt is also varied: “General obligation” bonds (GOs) are backed by the full faith, credit, and taxing power of the governmental unit issuing them; “revenue bonds,” on the other hand, have a safety, or creditworthiness, that depends on the vitality and success of the particular entity (such as toll roads, hospitals, or water systems) within the municipal government issuing the bond.

The U.S. Treasury has the most voracious appetite for debt, but the bond market often receives calls from its agencies. Federal government agencies include federally related institutions and government-sponsored enterprises (GSEs). It is important for the investor to realize that, by law or practice or both, these different borrowers have developed different ways of raising debt capital over the years. As a result, the distinctions among the various types of issuers correspond closely to differences among bonds in yield, denomination, safety of principal, maturity, tax status, and such important provisions as the call privilege, put features, and sinking fund. As we discuss the key features of fixed income securities, we will point out how the characteristics of the bonds vary with the obligor or issuing authority.

Maturity

A key feature of any bond is its term-to-maturity, the number of years during which the borrower has promised to meet the conditions of the debt (which are contained in the bond’s indenture). A bond’s term-to-maturity is the date on which the debt will cease and the borrower will redeem the issue by paying the face value, or principal. One indication of the importance of the maturity is that the code word or name for

\[ \text{term-to-maturity} \]

\[ \text{date on which the debt will cease} \]

\[ \text{the borrower will redeem the issue by paying the face value, or principal.} \]

\[ \text{One indication of the importance of the maturity is that the code word or name for} \]

\[ \text{Internet material (Frank Fabozzi, Michael Ferri, and Steven Mann):} \]

http://books.google.ro/books?id=HCMimoiNO2sC&printsec=frontcover&hl=ro&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false,
every bond contains its maturity (and coupon). Thus the title of the Anheuser Busch Company bond due, or maturing, in 2016 is given as “Anheuser Busch 85/8s of 2016.” In practice, the words maturity, term, and term-to-maturity are used interchangeably to refer to the number of years remaining in the life of a bond. Technically, however, maturity denotes the date the bond will be redeemed, and either term or term-to-maturity denotes the number of years until that date.

A bond’s maturity is crucial for several reasons. First, maturity indicates the expected life of the instrument, or the number of periods during which the holder of the bond can expect to receive the coupon interest and the number of years before the principal will be paid. Second, the yield on a bond depends substantially on its maturity. More specifically, at any given point in time, the yield offered on a long-term bond may be greater than, less than, or equal to the yield offered on a short-term bond. Third, the volatility of a bond’s price is closely associated with maturity: Changes in the market level of rates will wrest much larger changes in price from bonds of long maturity than from otherwise similar debt of shorter life.

When considering a bond’s maturity, the investor should be aware of any provisions that modify, or permit the issuer to modify, the maturity of a bond. Although corporate bonds (referred to as “corporates’’) are typically term bonds (issues that have a single maturity), they often contain arrangements by which the issuing firm either can or must retire the debt early, in full or in part. Some corporates, for example, give the issuer a call privilege, which permits the issuing firm to redeem the bond before the scheduled maturity under certain conditions (these conditions are discussed below). Municipal bonds may have the same provision. Although the U.S. government no longer issues bonds that have a call privilege, there are a few outstanding issues with this provision. Many industrials and some utilities have sinking-fund provisions, which mandate that the firm retire a substantial portion of the debt, according to a prearranged schedule, during its life and before the stated maturity. Municipal bonds may be serial bonds or, in essence, bundles of bonds with differing maturities. (Some corporates are of this type, too.) Usually, the maturity of a corporate bond is between 1 and 30 years. This is not to say that there are not outliers. In fact, financially sound firms have begun to issue longer-term debt in order to lock in long-term attractive financing. For example, in the late 1990s, there were approximately 90 corporate bonds issued with maturities of 100 years. Although classifying bonds as “short term,” “intermediate term,” and “long term” is not universally accepted, the following classification is typically used. Bonds with a maturity of 1 to 5 years are generally considered short term; bonds with a maturity between 5 and 12 years are viewed as intermediate term (and are often called notes). Long-term bonds are those with a maturity greater than 12 years.

**Coupon and Principal**

A bond’s coupon is the periodic interest payment made to owners during the life of the bond. The coupon is always cited, along with maturity, in any quotation of a bond’s price. Thus one might hear about the “IBM 6.5 due in 2028” or the “Campell Soup 8.875 due in 2021” in discussions of current bond trading. In these
examples, the coupon cited is in fact the *coupon rate*, that is, the rate of interest that, when multiplied by the *principal, par value, or face value* of the bond, provides the dollar value of the coupon payment. Typically, but not universally, for bonds issued in the United States, the coupon payment is made in semiannual installments. An important exception is mortgage-backed and asset-backed securities that usually deliver monthly cash flows. In contrast, for bonds issued in some European bond markets and all bonds issued in the *Eurobond market*, the coupon payment is made annually. Bonds may be *bearer bonds* or *registered bonds*. With bearer bonds, investors clip coupons and send them to the obligor for payment. In the case of registered issues, bond owners receive the payment automatically at the appropriate time. All new bond issues must be registered.

There are a few corporate bonds (mostly railroad issues), called *income bonds*, that contain a provision permitting the firm to omit or delay the payment of interest if the firm’s earnings are too low. They have been issued as part of bankruptcy reorganizations or to replace a preferred-stock offering of the issuer. A variant of this bond type, *deferrable bonds* (also called *trust preferred* and *debt/equity hybrids*), witnessed explosive growth in the 1990s. Deferrable bonds are deeply subordinated debt instruments that give the issuer the option to defer coupon payment up to five years in the event of financial distress.

*Zero-coupon bonds* have been issued by corporations and municipalities since the early 1980s. For example, Coca-Cola Enterprises has a zero-coupon bond outstanding due June 20, 2020 that was issued on May 9, 1995. Although the U.S. Treasury does not issue zero-coupon debt with a maturity greater than one year, such securities are created by government securities dealers. Merrill Lynch was the first to do this with its creation of Treasury Investment Growth Receipts (TIGRs) in August 1982. The most popular zero-coupon Treasury securities today are those created by government dealer firms under the Treasury’s Separate Trading of Registered Interest and Principal Securities (STRIPS) Program. The investor in a zero-coupon security typically receives interest by buying the security at a price below its principal, or maturity value, and holding it to the maturity date. However, some zeros are issued at par and accrue interest during the bond’s life, with the accrued interest and principal payable at maturity.

Governments and corporations also issue *inflation-indexed bonds* whose coupon payments are tied to an inflation index. These securities are designed to protect bondholders from the erosion of purchasing power of fixed nominal coupon payments due to inflation. For example, in January 1997, the U.S. Treasury auctioned a 10-year Treasury note whose semiannual coupon interest depends on the rate of inflation as measured by the Consumer Price Index for All Urban Consumers (i.e., CPI-U). The coupon payments are adjusted annually. These issues are referred to as “Treasury Inflation-Protection Securities” (TIPS). As of this writing, the Treasury issues TIPS with 5-year, 10-year, and 20-year maturities. Some corporations followed the Treasury and issued inflation-indexed bonds of their own.
There are securities that have a coupon rate that increases over time. These securities are called *step-up notes* because the coupon rate “steps up” over time. For example, a six-year step-up note might have a coupon rate that is 5% for the first two years, 5.8% for the next two years, and 6% for the last two years. Alternatively, there are securities that have a coupon rate that can decrease over time but never increase. For example, in June 1998, the Tennessee Valley Authority issued 30-year 6.75% putable automatic rate reset securities (PARRS), also known as *ratchet bonds*. Beginning five years after issuance and annually thereafter, the bond’s coupon rate is automatically reset to either the current 30-year constant maturity Treasury yield plus 94 basis points or to 6.75%, whichever is lower. The coupon rate may decline if Treasury yields decline, but it will never increase. This bond also contains a contingent put option such that if the coupon rate is lowered, the bond is putable at par. Ratchet bonds were designed as substitutes for callable bonds.

In contrast to a coupon rate that is fixed for the bond’s entire life, the term *floating-rate security* or *floater* encompasses several different types of securities with one common feature: The coupon rate will vary over the instrument’s life. The coupon rate is reset at designated dates based on the value of some reference rate adjusted for a spread. For example, consider a floating-rate note issued in September 2003 by Columbus Bank & Trust that matured on March 15, 2005. The floater delivers cash flows quarterly and has a coupon formula equal to the three month LIBOR plus 12 points.

Typically, floaters have coupon rates that reset more than once a year (e.g., semiannually, quarterly, or monthly). Conversely, the term *adjustable-rate* or *variable-rate security* refers to those issues whose coupon rates reset not more frequently than annually.

There are several features about floaters that deserve mention. First, a floater may have a restriction on the maximum (minimum) coupon rate that will be paid at any reset date called a *cap* (*floor*). Second, while the reference rate for most floaters is a benchmark interest rate or an interest rate index, a wide variety of reference rates appear in the coupon formulas. A floater’s coupon could be indexed to movements in foreign exchange rates, the price of a commodity (e.g., crude oil), movements in an equity index (e.g., the S&P 500), or movements in a bond index (e.g., the Merrill Lynch Corporate Bond Index). Third, while a floater’s coupon rate normally moves in the same direction as the reference rate moves, there are floaters whose coupon rate moves in the opposite direction from the reference rate. These securities are called *inverse floaters* or *reverse floaters*. As an example, consider an inverse floater issued by the Federal Home Loan Bank in April 1999. This issue matured in April 2002 and delivered quarterly coupon payments according to the following formula:

\[ 18\% - 2.5 \times \text{(three-month LIBOR)} \]

This inverse floater had a floor of 3% and a cap of 15.5%. Finally, *range notes* are floaters whose coupon rate is equal to the reference rate (adjusted for a spread) as long as the reference rate is within a certain
range on the reset date. If the reference rate is outside the range, the coupon rate is zero for that period. Consider a range note issued by Sallie Mae in August 1996 that matured in August 2003. This issue made coupon payments quarterly. The investor earned three-month LIBOR plus 155 basis points for every day during this quarter that the three-month LIBOR was between 3% and 9%. Interest accrued at 0% for each day that the three-month LIBOR was outside this range. As a result, this range note had a floor of 0%.

Structures in the high-yield (junk bond sector of the corporate bond market have introduced variations in the way coupon payments are made. For example, in a leveraged buyout or recapitalization financed with high-yield bonds, the heavy interest payment burden the corporation must bear places severe cash-flow constraints on the firm. To reduce this burden, firms involved in leveraged buyouts (LBOs) and recapitalizations have issued deferred-coupon structures that permit the issuer to defer making cash interest payments for a period of three to seven years. There are three types of deferred-coupon structures: (1) deferred interest bonds, (2) step-up bonds, and (3) payment-in-kind bonds.

Another high-yield bond structure allows the issuer to reset the coupon rate so that the bond will trade at a predetermined price. The coupon rate may reset annually or reset only once over the life of the bond. Generally, the coupon rate will be the average of rates suggested by two investment banking firms. The new rate will then reflect the level of interest rates at the reset date and the credit spread the market wants on the issue at the reset date. This structure is called an extendible reset bond. Notice the difference between this bond structure and the floating-rate issue described earlier. With a floating-rate issue, the coupon rate resets based on a fixed spread to some benchmark, where the spread is specified in the indenture and the amount of the spread reflects market conditions at the time the issue is first offered. In contrast, the coupon rate on an extendible reset bond is reset based on market conditions suggested by several investment banking firms at the time of the reset date. Moreover, the new coupon rate reflects the new level of interest rates and the new spread that investors seek.

One reason that debt financing is popular with corporations is that the interest payments are tax-deductible expenses. As a result, the true after-tax cost of debt to a profitable firm is usually much less than the stated coupon interest rate. The level of the coupon on any bond is typically close to the level of yields for issues of its class at the time the bond is first sold to the public. Some bonds are issued initially at a price substantially below par value (called original-issue discount bonds, or OIDs), and their coupon rate is deliberately set below the current market rate. However, firms usually try to set the coupon at a level that will make the market price close to par value. This goal can be accomplished by placing the coupon rate near the prevailing market rate.

To many investors, the coupon is simply the amount of interest they will receive each year. However, the coupon has another major impact on an investor’s experience with a bond. The coupon’s size influences the volatility of the bond’s price: The larger the coupon, the less the price will change in response to a change in
market interest rates. Thus the coupon and the maturity have opposite effects on the price volatility of a bond.

The principal, par value, or face value of a bond is the amount to be repaid to the investor either at maturity or at those times when the bond is called or retired according to a repayment schedule or sinking-fund provisions. But the principal plays another role, too: It is the basis on which the coupon or periodic interest rests. The coupon is the product of the principal and the coupon rate. For most corporate issues, the face value is $1,000; many government bonds have larger principals starting with $10,000; and most municipal bonds come in denominations of $5,000.

Participants in the bond market use several measures to describe the potential return from investing in a bond: current yield, yield-to-maturity, yield-to-call for a callable bond, and yield-to-put for a putable bond. A yield-to-worst is often quoted for bonds. This is the lowest yield of the following: yield-to-maturity, yields to all possible call dates, and yields to all put dates.

The prices of most bonds are quoted as percentages of par or face value. To convert the price quote into a dollar figure, one simply divides the price by 100 (converting it to decimal) and then multiplies by the par value.

**Call and Refunding Provisions**

If a bond’s indenture contains a call feature or call provision, the issuer retains the right to retire the debt, fully or partially, before the scheduled maturity date. The chief benefit of such a feature is that it permits the borrower, should market rates fall, to replace the bond issue with a lower-interest-cost issue. The call feature has added value for corporations and municipalities. It may in the future help them to escape the restrictions that frequently characterize their bonds (about the disposition of assets or collateral). The call feature provides an additional benefit to corporations, which might want to use unexpectedly high levels of cash to retire outstanding bonds or might wish to restructure their balance sheets.

The call provision is detrimental to investors, who run the risk of losing a high-coupon bond when rates begin to decline. When the borrower calls the issue, the investor must find other outlets, which presumably would have lower yields than the bond just withdrawn through the call privilege. Another problem for the investor is that the prospect of a call limits the appreciation in a bond’s price that could be expected when interest rates decline.

Because the call feature benefits the issuer and places the investor at a disadvantage, callable bonds carry higher yields than bonds that cannot be retired before maturity. This difference in yields is likely to grow when investors believe that market rates are about to fall and that the borrower may be tempted to replace a high-coupon debt with a new low-coupon bond. (Such a transaction is called refunding.) However, the higher yield alone is often not sufficient compensation to the investor for granting the call privilege to the
issuer. Thus the price at which the bond may be called, termed the \textit{call price}, is normally higher than the principal or face value of the issue. The difference between call price and principal is the \textit{call premium}, whose value may be as much as one year’s interest in the first few years of a bond’s life and may decline systematically thereafter.

An important limitation on the borrower’s right to call is the \textit{period of call protection}, or \textit{deferment period}, which is a specified number of years in the early life of the bond during which the issuer may not call the debt. Such protection is another concession to the investor, and it comes in two forms. Some bonds are \textit{noncallable} (often abbreviated NC) for any reason during the deferment period; other bonds are \textit{nonrefundable} (NF) for that time. The distinction lies in the fact that nonrefundable debt may be called if the funds used to retire the bond issue are obtained from internally generated funds, such as the cash flow from operations or the sale of property or equipment, or from nondebt funding such as the sale of common stock. Thus, although the terminology is unfortunately confusing, a nonrefundable issue may be refunded under the circumstances just described and, as a result, offers less call protection than a noncallable bond, which cannot be called for any reason except to satisfy sinking-fund requirements, explained later.

Beginning in early 1986, a number of corporations issued long-term debt with extended call protection, not refunding protection. A number are noncallable for the issue’s life, such as Dow Chemical Company’s 85/8s due in 2006. The issuer is expressly prohibited from redeeming the issue prior to maturity. These \textit{noncallable-for-life issues} are referred to as \textit{bullet bonds}. If a bond does not have any protection against an early call, then it is said to be \textit{currently callable}.

Since the mid-1990s, an increasing number of public debt issues include a so-called \textit{make-whole call provision}. Make-whole call provisions have appeared routinely in privately placed issues since the late 1980s. In contrast to the standard call feature that contains a call price fixed by a schedule, a make-whole call price varies inversely with the level of interest rates. A make-whole call price (i.e., redemption amount) is typically the sum of the present values of the remaining coupon payments and principal discounted at a yield on a Treasury security that matches the bond’s remaining maturity plus a spread. For example, on January 22, 1998, Aluminum Company of America (Alcoa) issued $300 million in bonds with a make-whole call provision that mature on January 15, 2028. These bonds are redeemable at any time in whole or in part at the issuer’s option. The redemption price is the greater of (1) 100\% of the principal amount plus accrued interest or (2) the make-whole redemption amount plus accrued interest. In this case, the make-whole redemption amount is equal to the sum of the present values of the remaining coupon and principal payments discounted at the Adjusted Treasury Rate plus 15 basis points. The Adjusted Treasury Rate is the bond-equivalent yield on a U.S. Treasury security having a maturity comparable to the remaining maturity of the bonds to be redeemed. Each holder of the bonds will be notified at least 30 days but not more than 60 days prior to the redemption date. This issue is callable at any time, as are most issues with make-whole call
provisions. Note that the make-whole call price increases as interest rates decrease, so if the issuer exercises the make-whole call provision when interest rates have decreased, the bondholder receives a higher call price. Make-whole call provisions thus provide investors with some protection against reinvestment rate risk.

A key question is, When will the firm find it profitable to refund an issue? It is important for investors to understand the process by which a firm decides whether to retire an old bond and issue a new one. A simple and brief example will illustrate that process and introduce the reader to the kinds of calculations a bondholder will make when trying to predict whether a bond will be refunded.

Suppose that a firm’s outstanding debt consists of $300 million par value of a bond with a coupon of 10%, a maturity of 15 years, and a lapsed deferment period. The firm can now issue a bond with a similar maturity for an interest rate of 7.8%. Assume that the issuing expenses and legal fees amount to $2 million. The call price on the existing bond issue is $105 per $100 par value. The firm must pay, adjusted for taxes, the sum of call premium and expenses. To simplify the calculations, assume a 30% tax rate. This sum is then $11,190,000.4 Such a transaction would save the firm a yearly sum of $4,620,000 in interest (which equals the interest of $30 million on the existing bond less the $23.4 million on the new, adjusted for taxes) for the next 15 years.5 The rate of return on a payment of $11,900,000 now in exchange for a savings of $4,620,000 per year for 15 years is about 38%. This rate far exceeds the firm’s after-tax cost of debt (now at 7.8% times 0.7, or 5.46%) and makes the refunding a profitable economic transaction.

In municipal securities, refunding often refers to something different, although the concept is the same. Municipal bonds can be prerefunded prior to maturity (usually on a call date). Here, instead of issuing new bonds to retire the debt, the municipality will issue bonds and use the proceeds to purchase enough risk-free securities to fund all the cash flows on the existing bond issue. It places these in an irrevocable trust. Thus the municipality still has two issues outstanding, but the old bonds receive a new label—they are “prerefunded.” If Treasury securities are used to prerefund the debt, the cash flows on the bond are guaranteed by Treasury obligations in the trust. Thus they become AAA rated and trade at higher prices than previously. Municipalities often find this an effective means of lowering their cost of debt.

**Sinking-Fund Provision**

The *sinking-fund provision*, which is typical for publicly and privately issued industrial bonds and not uncommon among certain classes of utility debt, requires the obligor to retire a certain amount of the outstanding debt each year. Generally, the retirement occurs in one of two ways. The firm may purchase the amount of bonds to be retired in the open market if their price is below par, or the company may make payments to the trustee who is empowered to monitor the indenture and who will call a certain number of bonds chosen by lottery. In the latter case, the investor would receive the prearranged call price, which is usually par value. The schedule of retirements varies considerably from issue to issue. Some issuers,
particularly in the private-placement market, retire most, if not all, of their debt before maturity. In the public market, some companies may retire as little as 20 to 30% of the outstanding par value before maturity. Further, the indenture of many issues includes a deferment period that permits the issuer to wait five years or more before beginning the process of sinking-fund retirements.

There are three advantages of a sinking-fund provision from the investor’s perspective. The sinking-fund requirement ensures an orderly retirement of the debt so that the final payment, at maturity, will not be too large. Second, the provision enhances the liquidity of some debt, especially for smaller issues with thin secondary markets. Third, the prices of bonds with this requirement are presumably more stable because the issuer may become an active participant on the buy side when prices fall. For these reasons, the yields on bonds with sinking-fund provisions tend to be less than those on bonds without them.

The sinking fund, however, can work to the disadvantage of an investor. Suppose that an investor is holding one of the early bonds to be called for a sinking fund. All the time and effort put into analyzing the bond has now been wasted, and the investor will have to choose new instruments for purchase. Also, an investor holding a bond with a high coupon at the time rates begin to fall is still forced to relinquish the issue. For this reason, in times of high interest rates, one might find investors demanding higher yields from bonds with sinking funds than from other debt.

The sinking-fund provision also may harm the investor’s position through the optional acceleration feature, a part of many corporate bond indentures. With this option, the corporation is free to retire more than the amount of debt the sinking fund requires (and often a multiple thereof) and to do it at the call price set for sinking-fund payments. Of course, the firm will exercise this option only if the price of the bond exceeds the sinking-fund price (usually near par), and this happens when rates are relatively low. If, as is typically the case, the sinking-fund provision becomes operative before the lapse of the call-deferment period, the firm can retire much of its debt with the optional acceleration feature and can do so at a price far below that of the call price it would have to pay in the event of refunding. The impact of such activity on the investor’s position is obvious: The firm can redeem at or near par many of the bonds that appear to be protected from call and that have a market value above the face value of the debt.

**Put Provisions**

A *putable bond* grants the investor the right to sell the issue back to the issuer at par value on designated dates. The advantage to the investor is that if interest rates rise after the issue date, thereby reducing the value of the bond, the investor can force the issuer to redeem the bond at par. Some issues with put provisions may restrict the amount that the bondholder may put back to the issuer on any one put date. Put options have been included in corporate bonds to deter unfriendly takeovers. Such put provisions are referred to as “poison puts.” Put options can be classified as *hard puts* and *soft puts*. A hard put is one in which the security must be redeemed by the issuer only for cash. In the case of a soft put, the issuer has the
option to redeem the security for cash, common stock, another debt instrument, or a combination of the three. Soft puts are found in convertible debt, which we describe next.

**Convertible or Exchangeable Debt**

A *convertible bond* is one that can be exchanged for specified amounts of common stock in the issuing firm. The conversion cannot be reversed, and the terms of the conversion are set by the company in the bond’s indenture. The most important terms are *conversion ratio* and *conversion price*. The conversion ratio indicates the number of shares of common stock to which the holder of the convertible has a claim. For example, Amazon.com issued $1.25 billion in convertibles in January 1999 that mature in 2009. These convertibles carry a 4.75% coupon with a conversion ratio of 6.408 shares for each bond. This translates to a conversion price of $156.055 per share ($1,000 par value divided by the conversion ratio 6.408) at the time of issuance. The conversion price at issuance is also referred to as the *stated conversion price*.

The conversion privilege may be permitted for all or only some portion of the bond’s life. The conversion ratio may decline over time. It is always adjusted proportionately for stock splits and stock dividends. Convertible bonds are typically callable by the issuer. This permits the issuer to force conversion of the issue. (Effectively, the issuer calls the bond, and the investor is forced to convert the bond or allow it to be called.) There are some convertible issues that have call protection. This protection can be in one of two forms: Either the issuer is not allowed to redeem the issue before a specified date, or the issuer is not permitted to call the issue until the stock price has increased by a predetermined percentage price above the conversion price at issuance.

An *exchangeable bond* is an issue that can be exchanged for the common stock of a corporation other than the issuer of the bond. For example, Bell Atlantic Corp. issued 5.75% coupon exchangeable bonds in February 1998 that can be exchanged for shares in Telecom Corp. of New Zealand. There are a handful of issues that are exchangeable into more than one security. One significant innovation in the convertible bond market was the “Liquid Yield Option Note” (LYON) developed by Merrill Lynch Capital Markets in 1985. A LYON is a zero-coupon, convertible, callable, and putable bond.

**II. WARRANTS**

A *warrant* is an option a firm issues that permits the owner to buy from the firm a certain number of shares of common stock at a specified price. It is not uncommon for publicly held corporations to issue warrants with new bonds. A valuable aspect of a warrant is its rather long life: Most warrants are in effect for at least two years from issuance, and some are perpetual. Another key feature of the warrant is the *exercise price*, the price at which the warrant holder can buy stock from the corporation. This price is normally set at about 15% above the market price of common stock at the time the bond, and thus the warrant, is issued. Frequently, the exercise price will rise through time, according to the schedule in the bond’s indenture.
Another important characteristic of the warrant is its detachability. *Detachable warrants* are often actively traded on the American Stock Exchange. Other warrants can be exercised only by the bondholder, and these are called *nondetachable warrants*. The chief benefit to the investor is the financial leverage the warrant provides.

**III. PREFERRED STOCK**

*Preferred stock* is a class of stock, not a debt instrument, but it shares characteristics of both common stock and debt. Like the holder of common stock, the preferred stockholder is entitled to dividends. Unlike those on common stock, however, preferred stock dividends are a specified percentage of par or face value. The percentage is called the *dividend rate*; it need not be fixed but may float over the life of the issue.

Failure to make preferred stock dividend payments cannot force the issuer into bankruptcy. Should the issuer not make the preferred stock dividend payment, usually paid quarterly, one of two things can happen, depending on the terms of the issue. First, the dividend payment can accrue until it is fully paid. Preferred stock with this feature is called *cumulative preferred stock*. Second, if a dividend payment is missed and the security holder must forgo the payment, the preferred stock is said to be *noncumulative preferred stock*. Failure to make dividend payments may result in imposition of certain restrictions on management. For example, if dividend payments are in arrears, preferred stockholders might be granted voting rights.

Unlike debt, payments made to preferred stockholders are treated as a distribution of earnings. This means that they are not tax deductible to the corporation under the current tax code. (Interest payments, on the other hand, are tax deductible.) Although the after-tax cost of funds is higher if a corporation issues preferred stock rather than borrowing, there is a factor that reduces the cost differential: A provision in the tax code exempts 70% of qualified dividends from federal income taxation if the recipient is a qualified corporation. For example, if Corporation A owns the preferred stock of Corporation B, for each $100 of dividends received by A, only $30 will be taxed at A’s marginal tax rate. The purpose of this provision is to mitigate the effect of double taxation of corporate earnings. There are two implications of this tax treatment of preferred stock dividends. First, the major buyers of preferred stock are corporations seeking tax-advantaged investments. Second, the cost of preferred stock issuance is lower than it would be in the absence of the tax provision because the tax benefits are passed through to the issuer by the willingness of buyers to accept a lower dividend rate.

Preferred stock has some important similarities with debt, particularly in the case of cumulative preferred stock: (1) The payments to preferred stockholders promised by the issuer are fixed, and (2) preferred stockholders have priority over common stockholders with respect to dividend payments and distribution of assets in the case of bankruptcy. (The position of noncumulative preferred stock is considerably weaker than cumulative preferred stock.) It is because of this second feature that preferred stock is called a *senior security*. It is senior to common stock. On a balance sheet, preferred stock is classified as equity.
Preferred stock may be issued without a maturity date. This is called *perpetual preferred stock*. Almost all preferred stock has a sinking-fund provision, and some preferred stock is convertible into common stock. A trademark product of Morgan Stanley is the Preferred Equity Redemption Cumulative Stock (PERCS). This is a preferred stock with a mandatory conversion at maturity. Historically, utilities have been the major issuers of preferred stock, making up more than half of each year’s issuance. Since 1985, major issuers have been in the financial industry—finance companies, banks, thrifts, and insurance companies.

There are three types of preferred stock: (1) fixed-rate preferred stock, (2) adjustable-rate preferred stock, and (3) auction and remarkeitred preferred stock. The dividend rate on an adjustable-rate preferred stock (ARPS) is reset quarterly and based on a predetermined spread from the highest of three points on the Treasury yield curve. Most ARPS are perpetual, with a floor and ceiling imposed on the dividend rate of most issues. For auction preferred stock (APS), the dividend rate is reset periodically, as with ARPS, but the dividend rate is established through an auction process. In the case of remarkeitred preferred stock (RP), the dividend rate is determined periodically by a remarkeitrement agent who resets the dividend rate so that any preferred stock can be tendered at par and be resold (remarkekted) at the original offering price. An investor has the choice of dividend resets every 7 days or every 49 days.

IV. RESIDENTIAL MORTGAGE-BACKED SECURITIES

A residential mortgage-backed security (MBS) is an instrument whose cash flow depends on the cash flows of an underlying pool of mortgages. There are three types of mortgage-backed securities: (1) mortgage pass-through securities, (2) collateralized mortgage obligations, and (3) stripped mortgage-backed securities.

Mortgage Cash Flows

Because the cash flow for these securities depends on the cash flow from the underlying pool of mortgages, the first thing to define is a mortgage. A mortgage is a pledge of real estate to secure the loan originated for the purchase of that real estate. The mortgage gives the lender (mortgagee) the right to foreclose on the loan and seize the property in order to ensure that the loan is paid off if the borrower (mortgagor) fails to make the contracted payments. The types of real estate properties that can be mortgaged are divided into two broad categories: residential and nonresidential (i.e., commercial and farm properties). The mortgage loan specifies the interest rate of the loan, the frequency of payment, and the number of years to maturity. Each monthly mortgage payment consists of the monthly interest, a scheduled amount in excess of the monthly interest that is applied to reduce the outstanding loan balance (this is called the scheduled repayment of principal), and any payments in excess of the mortgage payment. The latter payments are called prepayments.

In effect, the lender has granted the homeowner the right to prepay (or “call”) all or part of the mortgage balance at any time. Homeowners prepay their mortgages for one of several reasons. First, they prepay the
entire mortgage when they sell their home. Homes are sold for many reasons, among them a change of employment that requires moving or the purchase of a more expensive home. Second, if mortgage rates drop substantially after the mortgage loan was obtained, it may be beneficial for the homeowner to refinance the loan (even after paying all refinancing costs) at the lower interest rate. Third, if homeowners cannot meet their mortgage obligations, their property is repossessed and sold. The proceeds from the sale are used to pay off the mortgage loan. Finally, if the property is destroyed by fire or another insured catastrophe occurs, the insurance proceeds are used to pay off the mortgage.

**Mortgage Pass-Through Securities**

A *mortgage pass-through security* (or simply *pass-through*) is created when one or more holders of mortgages form a collection (pool) of mortgages and sell shares or participation certificates in the pool. A pool may consist of several thousand mortgages or only a few mortgages. The cash flow of a pass-through depends on the cash flow of the underlying mortgages, which, as just explained, consists of monthly mortgage payments representing interest, the scheduled repayment of principal, and any prepayments. Payments are made to security holders each month.

There are three major types of pass-through securities, guaranteed by the following organizations: Government National Mortgage Association (“Ginnie Mae”), Federal Home Loan Mortgage Corporation (“Freddie Mac”), and Federal National Mortgage Association (“Fannie Mae”). The last two are government sponsored entities. The Government National Mortgage Association is a federal government agency within the Department of Housing and Urban Development. The securities associated with these three entities are known as *agency pass-through securities*. There are also *nonagency pass-through securities*, issued by thrifts, commercial banks, and private conduits that are not backed by any agency.

**Collateralized Mortgage Obligations**

The *collateralized mortgage obligation (CMO)* structure was developed to broaden the appeal of mortgage-backed products to traditional fixed income investors. A CMO is a security backed by a pool of pass-throughs or a pool of mortgage loans. CMOs are structured so that there are several classes of bondholders with varying maturities. The different bond classes are called *tranches*. The rules for the distribution of the principal payments and the interest from the underlying collateral among the tranches are specified in the prospectus. By redirecting the cash flow (i.e., principal payments and interest) from the underlying collateral, issuers have created classes of bonds that have different degrees of prepayment and interest rate risk and are thereby more attractive to institutional investors to satisfy asset/liability objectives than a pass-through.

Numerous innovations in structuring CMOs have created classes of bonds with one or more of the following characteristics: (1) greater stability of cash flow over a wide range of prepayment speeds, (2) better
matching of floating-rate liabilities, (3) substantial upside potential in a declining interest-rate environment but less downside risk in a rising interest-rate environment, or (4) properties that allow them to be used for hedging mortgage-related products. The various types of bonds include sequential-pay bonds, planned amortization class (PAC) bonds, accrual (or Z) bonds, floating-rate bonds, inverse floating rate bonds, targeted amortization class (TAC) bonds, support bonds, and very accurately determined maturity (VADM) bonds.

**Stripped Mortgage-Backed Securities**

A pass-through divides the cash flow from the underlying collateral on a pro rata basis to the security holders. *Stripped mortgage-backed securities*, introduced by Fannie Mae in 1986, are created by altering the distribution of principal and interest from a pro rata distribution to an *unequal* distribution.

Why are stripped mortgage-backed securities created? It is sufficient to say at this juncture that the risk/return characteristics of these instruments make them attractive for the purpose of hedging a portfolio of pass-throughs and mortgage loans.

There are two types of stripped MBSs: synthetic-coupon pass-throughs and interest-only/principal-only securities. The first generation of stripped mortgage backed securities consisted of the synthetic-coupon pass-throughs because the unequal distribution of coupon and principal resulted in a synthetic coupon rate that was different from the underlying collateral. In early 1987, stripped MBSs began to be issued in which all the interest is allocated to one class (the interest-only, or IO, class) and the entire principal to the other class (the principal-only, or PO, class). The IO class receives no principal payments, and the PO class receives no interest.

**V. COMMERCIAL MORTGAGE-BACKED SECURITIES**

*Commercial mortgage-backed securities* (CMBSs) are backed by a pool of commercial mortgage loans on income-producing property—multifamily properties (i.e., apartment buildings), office buildings, industrial properties (including warehouses), shopping centers, hotels, and health care facilities (i.e., senior housing care facilities). The basic building block of the CMBS transaction is a commercial loan that was originated either to finance a commercial purchase or to refinance a prior mortgage obligation. There are two major types of CMBS deal structures that have been of interest to bond investors, multi-property single borrowers and multi-property conduits. The fastest-growing segment of the CMBS is conduit-originated transactions. *Conduits* are commercial-lending entities that are established for the sole purpose of generating collateral to securitize.

Unlike residential mortgage loans, where the lender relies on the ability of the borrower to repay and has recourse to the borrower if the payment terms are not satisfied, commercial mortgage loans are nonrecourse loans. This means that the lender can only look to the income-producing property backing the loan for
interest and principal repayment. If there is a default, the lender looks to the proceeds from the sale of the property for repayment and has no recourse to the borrower for any unpaid balance. Basically, this means that the lender must view each property as a stand-alone business and evaluate each property using measures that have been found useful in assessing credit risk.

VI. ASSET-BACKED SECURITIES

Asset-backed securities are securities collateralized by assets that are not mortgage loans. In structuring an asset-backed security, issuers have drawn from the structures used in the mortgage-backed securities market. Asset-backed securities have been structured as pass-throughs and as structures with multiple bond classes called pay-throughs, which are similar to CMOs. Credit enhancement is provided by letters of credit, overcollateralization, or senior/subordination.

Three common types of asset-backed securities are those backed by credit card receivables, home equity loans, and automobile loans. There are also asset-backed securities supported by a pool of manufactured homes, Small Business Administration (SBA) loans, student loans, boat loans, equipment leases, recreational vehicle loans, senior bank loans, and possibly, the future royalties of your favorite entertainer.

A collateralized debt obligation (CDO) is an asset-backed security backed by a diversified pool of one or more of the following types of debt obligations: U.S. domestic investment-grade and high-yield corporate bonds, emerging market bonds, residential mortgage-backed securities, commercial mortgage-backed securities, asset-backed securities, real estate investment trusts debt, U.S. domestic bank loans, special situation loans and distressed debt, foreign bank loans, or other CDOs. CDOs are classified as either cash CDOs or synthetic CDOs. A cash CDO is backed by a pool of cash market debt instruments. A synthetic CDO is a CDO where the investor has economic exposure to a pool of debt instrument, but this exposure is realized via credit derivative instruments rather than the purchase of the cash market instruments.

3. Risks associated with investing in fixed income securities

The return obtained from a fixed income security from the day it is purchased to the day it is sold can be divided into two parts: (1) the market value of the security when it is eventually sold and (2) the cash flows received from the security over the time period that it is held, plus any additional income from reinvestment of the cash flow. Several environmental factors affect one or both of these two parts. We can define the risk in any security as a measure of the impact of these market factors on the return characteristics of the security. The different types of risk that an investor in fixed income securities is exposed to are as follows:

• Market, or interest-rate, risk

2 Internet material (written by Ravi Dattareya, Frank Fabozzi)
• Reinvestment risk
• Timing, or call, risk
• Credit risk
• Yield-curve, or maturity, risk
• Inflation, or purchasing-power, risk
• Liquidity risk
• Exchange-rate, or currency, risk
• Volatility risk
• Political or legal risk
• Event risk
• Sector risk

MARKET, OR INTEREST-RATE, RISK

The price of a typical fixed income security moves in the opposite direction of the change in interest rates: As interest rates rise (fall), the price of a fixed income security will fall (rise). For an investor who plans to hold a fixed income security to maturity, the change in its price before maturity is not of concern; however, for an investor who may have to sell the fixed income security before the maturity date, an increase in interest rates will mean the realization of a capital loss. This risk is referred to as market risk, or interest-rate risk, which is by far the biggest risk faced by an investor in the fixed income market.

It is customary to represent the market by the yield levels on Treasury securities. Most other yields are compared to the Treasury levels and are quoted as spreads off appropriate Treasury yields. To the extent that the yields of all fixed income securities are interrelated, their prices respond to changes in Treasury rates. The actual magnitude of the price response for any security depends on various characteristics of the security, such as coupon, maturity, and the options embedded in the security (e.g., call and put provisions).

To control interest-rate risk, it is necessary to quantify it. The most commonly used measure of interest-rate risk is duration. Duration is the approximate percentage change in the price of a bond or bond portfolio due to a 100 basis point change in yields.

REINVESTMENT RISK

The cash flows received from a security are usually (or are assumed to be) reinvested. The additional income from such reinvestment, sometimes called interest-on-interest, depends on the prevailing interest rate levels at the time of reinvestment, as well as on the reinvestment strategy. The variability in the returns from reinvestment from a given strategy due to changes in market rates is called reinvestment risk. The risk here is that the interest rate at which interim cash flows can be reinvested will fall. Reinvestment risk is
greater for longer holding periods. It is also greater for securities with large, early cash flows such as high-coupon bonds.

It should be noted that interest-rate risk and reinvestment risk oppose each other. For example, interest-rate risk is the risk that interest rates will rise, thereby reducing the price of a fixed income security. In contrast, reinvestment risk is the risk that interest rates will fall. A strategy based on these two offsetting risks is called “immunization”.

**TIMING, OR CALL, RISK**

Bonds may contain a provision that allows the issuer to retire, or “call,” all or part of the issue before the maturity date. The issuer usually retains this right to refinance the bond in the future if market interest rates decline below the coupon rate.

From the investor’s perspective, there are three disadvantages of the call provision. First, the cash-flow pattern of a callable bond is not known with certainty. Second, because the issuer may call the bonds when interest rates have dropped, the investor is exposed to reinvestment risk. That is, the investor will have to reinvest the proceeds received when the bond is called at lower interest rates. Finally, the capital appreciation potential of a bond will be reduced because the price of a callable bond may not rise much above the price at which the issuer may call the bond.

Agency, corporate, and municipal bonds may have embedded in them the option on the part of the borrower to call, or terminate, the issue before the stated maturity date. All mortgage-backed securities have this option. Even though the investor is usually compensated for taking the risk of call by means of a lower price or a higher yield, it is not easy to determine if this compensation is sufficient. In any case, the returns from a bond with call risk can be dramatically different from those obtained from a noncallable bond. The magnitude of this risk depends on the various parameters of the call, as well as on market conditions. Timing risk is so pervasive in fixed income portfolio management that many market participants consider it second only to interest-rate risk in importance.

In the case of mortgage-backed securities, the cash flow depends on prepayments of principal made by the homeowners in the pool of mortgages that serves as collateral for the security. The timing risk in this case is called *prepayment risk*. It includes *contraction risk*—the risk that homeowners will prepay all or part of their mortgage when mortgage interest rates decline. If interest rates rise, however, investors would benefit from prepayments. The risk that prepayments will slow down when mortgage interest rates rise is called *extension risk*. Thus, timing risk in the case of mortgage-backed securities is called *prepayment risk*, which includes contraction risk and extension risk.

**CREDIT RISK**

The *credit risk* of a bond includes
1. The risk that the issuer will default on its obligation (default risk).

2. The risk that the bond’s value will decline and/or the bond’s price performance will be worse than that of other bonds against which the investor is compared because either (a) the market requires a higher spread due to a perceived increase in the risk that the issuer will default or (b) companies that assign ratings to bonds will lower a bond’s rating.

The first risk is referred to as *default risk*. The second risk is labeled based on the reason for the adverse or inferior performance. The risk attributable to an increase in the spread or, more specifically, the credit spread demanded by the market is referred to as *credit spread risk*; the risk attributable to a lowering of the credit rating (i.e., a downgrading) is referred to as *downgrade risk*.

A *credit rating* is a formal opinion given by a specialized company of the default risk faced by investing in a particular issue of debt securities. The specialized companies that provide credit ratings are referred to as “rating agencies.” The three nationally recognized rating agencies in the United States are Moody’s Investors Service, Standard & Poor’s Corporation, and Fitch Ratings.

Once a credit rating is assigned to a debt obligation, a rating agency monitors the credit quality of the issuer and can reassign a different credit rating to its bonds. An “upgrade” occurs when there is an improvement in the credit quality of an issue; a “downgrade” occurs when there is deterioration in the credit quality of an issue. As noted earlier, downgrade risk is the risk that an issue will be downgraded.

Typically, before an issue’s rating is changed, the rating agency will announce in advance that it is reviewing the issue with the potential for upgrade or downgrade. The issue in such cases is said to be on “rating watch” or “credit watch.” In the announcement, the rating agency will state the direction of the potential change in rating—upgrade or downgrade. Typically, a decision will be made within three months.

In addition, rating agencies will issue rating outlooks. A *rating outlook* is a projection of whether an issue in the long term (from six months to two years) is likely to be upgraded, downgraded, or maintains its current rating. Rating agencies designate a rating outlook as either positive (i.e., likely to be upgraded), negative (i.e., likely to be downgraded), or stable (i.e., likely to be no change in the rating).

**Gauging Default Risk and Downgrade Risk**

The information available to investors from rating agencies about credit risk are (1) ratings, (2) rating watches or credit watches, and (3) rating outlooks. A study by Moody’s found that for corporate bonds, its ratings combined with its rating watches and rating outlook status provides a better gauge for default risk than using the ratings alone. Moreover, periodic studies by the rating agencies provide information to investors about credit risk.
Below we describe how the information provided by rating agencies can be used to gauge two forms of credit risk: default risk and downgrade risk.

For long-term debt obligations, a credit rating is a forward-looking assessment of (1) the probability of default and (2) the relative magnitude of the loss should a default occur. For short-term debt obligations (i.e., obligations with initial maturities of one year or less), a credit rating is a forward-looking assessment of the probability of default. Consequently, credit ratings are the rating agencies’ assessments of the default risk associated with a bond issue.

Periodic studies by rating agencies provide information about two aspects of default risk—default rates and default loss rates. First, rating agencies study and make available to investors the percentage of bonds of a given rating at the beginning of a period that have defaulted at the end of the period. This percentage is referred to as the default rate. A default loss rate is a measure of the magnitude of the potential of the loss should a default occur.

Rating transition tables published periodically by rating agencies also provide information. A rating transition table shows the percentage of issues of each rating at the beginning of a period that were downgraded or upgraded by the end of the time period. Consequently, by looking at the percentage of downgrades for a given rating, an estimate can be obtained of the probability of a downgrade, and this can serve as a measure of downgrade risk.

**YIELD-CURVE, OR MATURITY, RISK**

In many situations, a bond of a given maturity is used as an alternative to another bond of a different maturity. An adjustment is made to account for the differential interest-rate risks in the two bonds. However, this adjustment makes an assumption about how the interest rates (i.e., yields) at different maturities will move. To the extent that the yield movements deviate from this assumption, there is yield-curve, or maturity, risk.

In general, yield-curve risk is more important in hedging situations than in pure investment decisions. For example, if a trader is hedging a position, or if a pension fund or an insurance company is acquiring assets so as to enable it to meet a given liability, then yield-curve risk should be examined carefully. However, if a pension fund has decided to invest in the intermediate-term sector, then the fine distinctions in maturity are less important.

Another situation where yield-curve risk should be considered is in the analysis of bond-swap transactions, where the potential incremental returns are dependent entirely on the parallel-shift (or other equally arbitrary) assumption for the yield curve.

**INFLATION, OR PURCHASING POWER, RISK**
Inflation risk, or purchasing power risk, arises because of the variation in the value of cash flows from a security due to inflation, as measured in terms of purchasing power. For example, if an investor purchases a five-year bond in which he or she can realize a coupon rate of 7%, but the rate of inflation is 8%, then the purchasing power of the cash flow has declined. For all but inflation-adjusted securities, and adjustable- or floating-rate bonds, an investor is exposed to inflation risk because the interest rate the issuer promises to make is fixed for the life of the security. To the extent that interest rates reflect the expected inflation rate, floating-rate bonds have a lower level of inflation risk.

LIQUIDITY RISK

Liquidity risk is the risk that the investor will have to sell a bond below its true value where the true value is indicated by a recent transaction. The primary measure of liquidity is the size of the spread between the bid price and the ask price quoted by a dealer. The wider the bid-ask spread, the greater is the liquidity risk.

A liquid market generally can be defined by “small bid-ask spreads which do not materially increase for large transactions.” How to define the bid-ask spread in a multiple-dealer market is subject to interpretation.

From the perspective of the market overall, the bid-ask spread can be computed by looking at the best bid price (high price at which one of the dealers is willing to buy the security) and the lowest ask price (lowest offer price at which one of the dealers is willing to sell the security). This liquidity measure is called the market bid-ask spread.

For investors who plan to hold a bond until maturity and need not mark a position to market, liquidity risk is not a major concern. An institutional investor who plans to hold an issue to maturity but is periodically marked to market is concerned with liquidity risk. By marking a position to market, it is meant that the security is revalued in the portfolio based on its current market price. For example, mutual funds are required to mark to market at the end of each day the holdings that are in their portfolio in order to compute the net asset value (NAV). While other institutional investors may not mark to market as frequently as mutual funds, they are marked to market when reports are periodically sent to clients or the board of directors or trustees.

Where are the prices obtained to mark a position to market? Typically, a portfolio manager will solicit indicative bids from several dealers and then use some process to determine the bid price used to mark the position. The less liquid the issue, the greater the variation there will be in the bid prices obtained from dealers. With an issue that has little liquidity, the price may have to be determined by a pricing service rather than by dealers. Moreover, lack of dealer indicative bids and concern with models used by pricing services may lead the manager to occasionally override a bid (subject to internal approval beyond the control of the manager).

EXCHANGE-RATE, OR CURRENCY, RISK
A non-dollar-denominated bond (i.e., a bond whose payments occur in a foreign currency) has unknown U.S. dollar cash flows. The dollar cash flows are dependent on the foreign-exchange rate at the time the payments are received. For example, suppose that an investor purchases a bond whose payments are in Japanese yen. If the yen depreciates relative to the U.S. dollar, then fewer dollars will be received. The risk of this occurring is referred to as exchange-rate risk, or currency risk. Of course, should the yen appreciate relative to the U.S. dollar, the investor will benefit by receiving more dollars.

In addition to the change in the exchange rate, an investor is exposed to the interest-rate, or market, risk in the local market. For example, if a U.S. investor purchases German government bonds denominated in Euros, the proceeds received from the sale of that bond prior to maturity will depend on the level of interest rates in the German bond market, in addition to the exchange rate.

**VOLATILITY RISK**

As will be explained in later chapters, the price of a bond with an embedded option depends on the level of interest rates and factors that influence the value of the embedded option. One of the factors is the expected volatility of interest rates. Specifically, the value of an option rises when expected interest-rate volatility increases. In the case of a callable bond or mortgage-backed security, because the investor has granted an option to the borrower, the price of the security falls because the investor has given away a more valuable option. The risk that a change in volatility will adversely affect the price of a security is called volatility risk.

**POLITICAL OR LEGAL RISK**

Sometimes the government can declare withholding or other additional taxes on a bond or declare a tax-exempt bond taxable. In addition, a regulatory authority can conclude that a given security is unsuitable for investment entities that it regulates. These actions can adversely affect the value of the security. Similarly, it is also possible that a legal or regulatory action affects the value of a security positively. The possibility of any political or legal actions adversely affecting the value of a security is known as political or legal risk.

To illustrate political or legal risk, consider investors who purchase tax-exempt municipal securities. They are exposed to two types of political risk that can be more appropriately called tax risk. The first type of tax risk is that the federal income tax rate will be reduced. The higher the marginal tax rate, the greater is the value of the tax-exempt nature of a municipal security. As the marginal tax rates decline, the price of a tax-exempt municipal security will decline. For example, proposals for a flat tax with a low tax rate significantly reduced the potential tax advantage of owning municipal bonds. As a result, tax-exempt municipal bonds began trading at lower prices. The second type of tax risk is that a municipal bond issued as tax exempt eventually will be declared taxable by the Internal Revenue Service (IRS). This may occur because many municipal (revenue) bonds have elaborate security structures that could be subject to future adverse congressional actions and IRS interpretations. As a result of the loss of the tax exemption, the
A municipal bond will decline in value in order to provide a yield comparable to similar taxable bonds. For example, in June of 1980, the Battery Park City Authority sold $97.315 million in construction loan notes. At the time of issuance, the legal counsel thought that the interest on the note would be exempt from federal income taxation. In November of 1980, however, the IRS held that interest on these notes was not exempt, resulting in a lower price for the notes. The issue was not resolved until September 1981 when the Authority and the IRS signed a formal agreement resolving the matter so as to make the interest on the notes tax exempt.

**EVENT RISK**

Occasionally, the ability of an issuer to make interest and principal payments is seriously and unexpectedly changed by (1) a natural or industrial accident or (2) a takeover or corporate restructuring. These risks are referred to as *event risk*. The cancellation of plans to build a nuclear power plant illustrates the first type of event in relation to the utility industry.

An example of the second type of event risk is the takeover in 1988 of RJR Nabisco for $25 billion via a financing technique known as a *leveraged buyout* (LBO). In such a transaction, the new company incurred a substantial amount of debt to finance the acquisition of the firm. Because the corporation was required to service a substantially larger amount of debt, its quality rating was reduced to non-investment-grade quality. As a result, the change in yield spread to a benchmark Treasury, demanded by investors because of the LBO announcement, increased from about 100 to 350 basis points.

There are also spillover effects of event risk on other firms. For example, if there is a nuclear accident, this will affect all utilities producing nuclear power.

**SECTOR RISK**

Bonds in different sectors of the market respond differently to environmental changes because of a combination of some or all of the preceding risks, as well as others. Examples include discount versus premium coupon bonds, industrial versus utility bonds, and corporate versus mortgage-backed bonds. The possibility of adverse differential movement of specific sectors of the market is called *sector risk*.

**OTHER RISKS**

The various risks of investing in the fixed income markets reviewed in this chapter do not represent the entire range of risks. In the marketplace, it is customary to combine almost all risks other than market risk (interest-rate risk) and refer to it as *basis risk*. 
1. THE TIME VALUE OF MONEY

An enterprise must select the best combination on investment, financing and dividends. The decision to purchase new plants and equipments and to introduce a new product in the market requires the use of capital allocating techniques. The firm must determine whether future benefits are sufficiently large to justify current outlays.

The first step towards making capital allocating decisions is to develop the mathematical tools of the time value of money. The passage of time between the outflows and inflows in a typical investment situation results in different current values associated with cash flows that occur at different points in time.

It is not rational to assess an investment by adding up all the cash inflows and outflows and by comparing the values without considering when the cash flows occur.

A monetary unit received in the future is worth less than a monetary unit received at the present for four primary reasons:

a). the presence of positive rates of inflation reduces the purchasing power of a monetary unit through time.

b). the opportunity cost of lost earnings as the monetary unit could have been invested and earned a return between now and a certain time point in the future.

c). the uncertainty of future values due to the risk of default or nonperformance of investments.
d). human preferences typically involve impatience or the preference to consume goods and services now rather than in the future.

Interest rates represent the price paid to use money for some period of time. Interest rates are meant to compensate lenders and savers for foregoing the use of money for some interval of time. Lenders of capital receive interest, and borrowers pay interest due to the positive time value of money.

For example, a lender who provides 1100 lei today at a 10\% interest per year is paid back 1100 lei at the end of the year. The 100 lei compensate the lender for not making an alternative investment, for giving up personal consumption or for the risk that the money might not have been repaid.

Managers are often confronted to investment options with different length lives, different sized investments, differing financing terms, differing tax implications, etc. In all cases the cash flows associated with an investment are converted to similar terms and then converted to their equivalent values at a common point in time by using tools and techniques that collectively comprise the concepts known as the Time Value of Money.

1). Simple and compound interest. Future Values of Present Sums

Consider an initial value \( V_0 \) deposited in an accumulating account at an annual interest rate \( r \). Assuming that the interest earnings are never withdrawn, after one period the account will be worth the initial principal plus interest earnings \( V_1 = V_0 + r \times V_0 = V_0 \times (1 + r) \)

For the second period of time the amount will be worth its initial value at the beginning of the period \( V_0 \times (1 + r) \) plus the interest \( r \times V_0 \times (1 + r) \).

\[
V_2 = V_0 \times (1 + r) + r \times V_0 \times (1 + r) = V_0 \times (1 + r)^2
\]

\[
\vdots
\]

\[
V_n = V_0 \times (1 + r)^n
\]

\[
FV = PV \times (1 + r)^n
\]

\( n \) = the final period in time

\( FV = \) future value

\( PV = \) present value

\( r = \) the interest rate per period of time

2). Present Values of Future Sums

This is the first basic principle in finance. The present value of a delayed payoff may be found by
multiplying the payoff by a discount factor which is less than 1.

Calculate the present value of 100 lei to be received 1, 2, 3, 4 and 5 years from now at 7% interest.

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discount factor</td>
<td>$1/1.07 = 0.934$</td>
<td>$1/1.07^2 = 0.873$</td>
<td>$1/1.07^3 = 0.816$</td>
<td>$1/1.07^4 = 0.763$</td>
<td>$1/1.07^5 = 0.713$</td>
</tr>
<tr>
<td>Present value</td>
<td>93.4</td>
<td>87.3</td>
<td>81.6</td>
<td>76.3</td>
<td>71.3</td>
</tr>
</tbody>
</table>

3). Analyzing Investments

Money is invested now for an expected return sometime in the future.

Net cash flows for three hypothetical investments are shown in the next table. Each investment has a life of 4 years and brings a total net cash flow of 120000 lei. The discount rate is 8%.

<table>
<thead>
<tr>
<th>Year</th>
<th>Investment A</th>
<th>Investment B</th>
<th>Investment C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Net cash flow</td>
<td>Discount factor</td>
<td>Present value</td>
</tr>
<tr>
<td>1</td>
<td>30000</td>
<td>0.925</td>
<td>27777</td>
</tr>
<tr>
<td>2</td>
<td>30000</td>
<td>0.857</td>
<td>25720</td>
</tr>
<tr>
<td>3</td>
<td>30000</td>
<td>0.793</td>
<td>23815</td>
</tr>
<tr>
<td>4</td>
<td>30000</td>
<td>0.735</td>
<td>22051</td>
</tr>
<tr>
<td>Total</td>
<td>120000</td>
<td>-</td>
<td>99363</td>
</tr>
</tbody>
</table>

These three situations illustrate the importance of the flow of funds for an investment. All three investments show a total undiscounted return of 120000 lei.

Though the total sum is the same, investment C receives most of its flow in the early years, investment A receives the same amount each year and investment B receives most of its money in the later years.

4). Significance of the discount rate

The discount rate or the normal rate of return for a project is determined according to the formula:

$$r = R_f + \text{the risk premium}$$
The risk free rate $R_f$ is composed of the minimum real rate of return in the economy $R_r$ and the inflation premium $R_f \cdot r_i$, where $r_i$ is the rate of inflation.

$$R_f = R_r + R_f \cdot r_i$$

The initial cost of an investment project is of 50000 lei. The project generates in the following year a cash flow of 70000 lei with a probability of 30% and of 48000 lei with a probability of 70%. The average discounted cash flow equals the cost of investment. Determine the risk premium of the project knowing that the risk free rate is 4%.

$$I = 50000 \text{ lei}$$

$$\overline{CF} = 70000 \times 30\% + 48000 \times 70\% = 54600 \text{ lei}$$

$$50000 = \frac{54600}{1 + r} \rightarrow r = 9.2\%; \quad R_f = 4\%; \quad \text{risk premium} = 5.2\%$$

2. **INVESTMENT CRITERIA**

Capital budgeting is the planning process used to determine whether a firm’s long term investments such as new machinery, replacement machinery, new plants, new products and research and development projects are worth pursuing.

Capital budgeting methods are divided into two categories:

a). simplified or traditional methods such as the accounting rate of return, return on investment or payback period.

b). discount based methods such as net present value, internal rate of return, profitability index, modified internal rate of return, modified net present value, equivalent annuity, discounted payback period.

There are two equivalent decision rules for capital investment:

1). Net present value rule: accept investments with positive net present values.

2). Rate of return rule: accept investments that offer rates of return in excess of their opportunity cost of capital.

The rate of return of an investment is simply the profit as a proportion of the initial outlay:

1. **Net Present Value NPV**

*The net present value is the total present value of a time series of cash flows.* This method uses the time value of money in order to appraise long term projects. Future cash inflows and outflows are discounted.
back to their present value and then are summed up.

\[
NPV = \sum_{t=0}^{n} \frac{CF_t}{(1 + r)^t}
\]

\(t\) = the time of the cash flow
\(r\) = the discount rate
\(CF_t\) = the net cash flow at time \(t\) (inflow minus outflow)

Usually the first cash flow \(CF_0\) is a negative one, a cash outflow that equals the initial required investment which is the funding of the project.

The discount rate is often referred to as the hurdle rate or the opportunity cost of capital. The opportunity cost of capital for a project is the expected rate of return demanded by investors in common stocks and other securities subject to the same risk as the project. For example, if the capital required for a project A can earn a certain percent elsewhere we will use this discount rate in the NPV calculation to allow a direct comparison to be made between project A and the alternative. When you discount the project’s expected cash flow at its opportunity cost of capital, the resulting present value is the amount that investors (including your own company’s shareholders) would be willing to pay for the project.

As an alternative to the opportunity cost of capital the firm’s weighted average cost of capital after tax is often used as a discount factor.

As a conclusion, the selection of the discount rate is dependent on the use to which it will be put. If the intent is simply to determine whether a project will add value to the company, using the firm’s weighted average cost of capital may be appropriate. If trying to decide between alternative investments in order to maximize the value of the firm, the opportunity cost of capital would probably be a better choice.

The concept of net present value allows efficient separation of ownership and management of the corporation. A manager who invests only in assets with positive net present values serves the best interest of each one of the firm’s owners. Each shareholder wants three things:

a). to be as rich as possible, that is to maximize current wealth;

b). to transform that wealth into whatever time pattern of consumption he or she desires, providing they have free access to competitive capital markets;

c). to choose the risk characteristics of that consumption plan. They can also choose the risk characteristics of their consumption plan by investing in more or less risky securities.
Managers of the corporation have just one fundamental task: *to maximize net present value.*

Check: A corporation must decide whether to adopt an investment project. The project implies costs and incoming cash flows over five years. The immediate cash outflow is 50000 lei (the investment initial cost), while the other cash outflows for the following years are expected to be 5000 lei per year. Starting with the following year the expected cash inflows are 40000 lei per year. The required rate of return is 10%. Using the NPV criteria decide whether this project should be adopted.

### 2. Internal Rate of Return IRR

The internal rate of return is the annualized effective compounded return rate which can be earned on the invested capital. It is an indicator of the efficiency or quality of an investment as opposed to the net present value, which indicates the magnitude of an investment.

The IRR is compared to any alternate cost of capital including an appropriate risk premium (investing in other projects, buying bonds, putting money in a bank account, etc). If the IRR is greater than the rate of return that could be earned by alternate investments of equal risk then the project is a good investment.

In general if the IRR is greater than the project’s cost of capital the project will add value for the company. Given a series of cash flows involved in a project, the IRR is that rate for which the net present value equals zero.

\[ \sum_{t=0}^{n} \frac{CF_t}{(1 + r)^t} = 0 \]

### 3. ACCOUNTING STATEMENTS AND CASH FLOW

#### 1. The balance sheet

The balance sheet is the accountant’s picture of the firm’s accounting value at a certain moment. The two sides of the balance sheet (assets on the left and liabilities plus stockholder’s equity on the right) illustrate what the firm owns and how it is financed. The strength of a company’s balance sheet can be evaluated by three broad categories of investment – quality measurements: *working capital adequacy, asset performance* and *capital structure.*

The accounting definition that underlines the balance sheet and describes the balance is:

\[ \text{Assets} \equiv \text{Liabilities} + \text{Stockholder’s equity} \]

a) The assets in the balance sheet are listed in order by the length of time it normally takes to convert them to cash. The asset side depends on the nature of the business and how management chooses to conduct it.
Management must make decisions about cash versus marketable securities, credit versus cash sales, whether to make or buy commodities, whether to lease or purchase items, the types of business in which to engage, and so on.

*Current assets* are the most liquid and include cash and those assets that will be turned into cash within a year from the date of the balance sheet. *Accounts receivable* is the amount not yet collected from customers for goods and services sold to them. *Inventory* is composed of raw materials to be used in production, work in process and finished goods.

*Fixed assets* are the least liquid kind of assets. Tangible fixed assets include property, plant and equipment. These assets do not convert to cash from normal business activity and they are not usually used to pay expenses, such as payroll. Some fixed assets are not tangible. We include here the value of a trademark or the value of a patent.

So, accounting liquidity refers to the ease and quickness with which assets can be converted to cash. The more liquid a firm’s assets, the less likely the firm is to experience problems meeting short-term obligations. Thus, the probability that a firm will avoid financial distress can be linked to the firm’s liquidity. Unfortunately, liquid assets frequently have lower rates of return than fixed assets (cash for example don’t generate any investment income).

To the extent to which a firm invests in liquid assets, it sacrifices an opportunity to invest in more profitable investment vehicles.

b). The liabilities and the shareholder’s equity are listed in the order in which they must be paid. They reflect the two types and proportions of financing, which depend on management's choice of capital structure, as between debt and equity and between current debt and long-term debt.

*Liabilities* are obligations of the firm that require a payout of cash within a stipulated time period. Many liabilities involve contractual obligations to repay a stated amount and interest over a period. Liabilities are debts and are frequently associated with nominally fixed cash burdens, called *debt service*.

*The stockholder’s equity* is defined as the difference between the assets and the liabilities of the firm. Actually equity is what stockholders would have remaining after the firm discharged its obligations. Stockholders’ equity is a claim against the firm’s assets that are residual and not fixed. In general terms, when the firm borrows, it gives the bondholders first claim on the firm’s cash flow. Bondholders can sue the firm if the firm defaults on its bond contracts. This may lead the firm to declare itself bankrupt.

c). *Value versus cost*. The accounting value of a firm’s assets is frequently referred to as the carrying value or the *book value* of the assets. The terms carrying value and book value are unfortunate. They specifically
say value when in fact the accounting numbers are based on cost. This misleads many readers of financial statements to think that the firm’s assets are recorded at the true market values. Market value is the price at which willing buyers and sellers trade the assets. It would be only a coincidence if accounting value and market value were the same. In fact, management’s job is to create a value for the firm that is higher than its cost.

The same balance sheet offers different information to different analysts. It depends on what the analyst wishes to extract. A banker may look at a balance sheet for evidence of accounting liquidity and working capital. a supplier may also note the size of accounts payable and therefore the general promptness of payments. Many users of financial statements, including managers and investors, want to know the value of the firm not its cost. This isn’t found on the balance sheet. In fact, many of the true resources of the firm do not appear on the balance sheet: good management, proprietary assets, favorable economic conditions, and so on.

2. The Income Statement

The income statement measures performance over a specific period of time, usually a year. The accounting definition of income is:

\[
\text{Revenue} - \text{Expenses} = \text{Income}
\]

The income statement includes several sections. The operations section reports the firm’s revenues and expenses from principal operations. Revenue is recognized on an income statement when the earnings process is virtually completed and an exchange of goods or services has occurred. Therefore, the unrealized appreciation in owning property will not be recognized as income. This provides a device for smoothing income by selling appreciated property at convenient times. Among other things, the nonoperating section of the income statement includes all financing costs, such as interest expense. A second section may report as a separate item taxes on income, meanwhile the last section reveals the net income and its destination. Net income is sometimes expressed per share of common stock (earnings per share EPS).

The matching principle dictates that revenues be matched with expenses. Thus the income is reported when it is earned or occurred, even though no cash flow has necessarily occurred.


Net working capital is current assets minus current liabilities. Net working capital is positive when current assets are greater than current liabilities. This means the cash that will become available over the next year is greater than the cash that must be paid out.

\[
\text{Current assets} - \text{Current liabilities} = \text{Net Working Capital}
\]
In addition to investing in fixed assets a firm can invest in net working capital. This is called the \textit{change in net working capital} and is the difference between the net working capital in two running years. The change in the net working capital is usually positive in a growing corporation.

The most important item that can be extracted from financial statements is the actual cash flow.

Cash flow is not the same as the net working capital. For example, increasing inventory requires the use of cash. Because both inventory and cash are current assets, the net working capital is not affected by this process, meanwhile the cash flow decreases.

If the value of a firm’s assets is always equal to the value of the liabilities, and the value of the equity, the cash flow from the firm’s assets \( CF(A) \) must equal the cash flows to the firm’s creditors \( CF(B) \) and equity investors \( CF(S) \):

\[
CF(A) \equiv CF(B) + CF(S)
\]

The first step in determining cash flows of the firm is to figure out the cash flow from operations. Operating cash flow is generated by business activities, including sales of goods and services. Operating cash flow reflects tax payments but not financing, capital spending or changes in net working capital. Another component of cash flow involves changes in fixed assets. The net change in fixed assets equals sales of fixed assets minus the acquisition of fixed assets. The result is the cash flow used for capital spending. Finally cash flows are also used for making investments in net working capital.

\textit{Total cash flow = Operating cash flow – Capital spending – Additions to net working capital}

The economic value of assets is intimately connected to their future incremental cash flows. However, cash flow does not appear on an income statement. There are several noncash items that are expenses against revenues, but do not affect cash flow. The most important of these is \textit{depreciation}. Depreciation reflects the accountant’s estimation of the cost of equipment used up in the production process. Even if from an accounting perspective depreciation is a cost, from a finance perspective the cost of the asset is the actual negative cash flow incurred when the asset is acquired and no the annual installments of depreciation expense deducted from revenues during several years by the accountants. Another noncash expense is \textit{deferred taxes} which derive from differences between accounting income and true taxable income. From an accounting perspective deferred taxes represent a liability for the firm and are reflected on the balance sheet as deferred tax liability. From a financial perspective, though, deferred taxes are not a cash outflow.

\textbf{4. OPERATIONAL LEVERAGE AND TERMINAL VALUE PROJECTION}

Managers and analysts often cite improvement in a company’s productivity as an important benefit arising from new investments or changes in operating processes. Often, increases in productivity are the most
important benefit of an investment or process change. This seems true particularly when the investment or process change is technology related. However, most productivity improvements in such assertions are often never quantified. There may be a total dollar benefit to compare with a proposed or actual cost, but the portion of the benefit resulting from a productivity change is not calculated. This may be true because determining dollar benefit accompanying a change in productivity is not straightforward. Productivity is measured as output per unit of input.

\[
\text{Productivity rate} = \frac{\text{output}}{\text{input}}
\]

One difficulty in measuring productivity in some organizations is in determining what \textit{output} is. The problem measuring output is greater in governmental and not-for-profit organizations. Most for-profit entities can clearly identify their output.

In addition to keeping assets active and productive, managers seek to use all available operating capacity. It is costly for a company to own and pay for unused capacity. The cost of unused capacity is frequently calculated as a production variance, although unlike production variances such as a labor efficiency variance, or raw material usage variances, there is not much a production manager can do to increase production and reduce the capacity usage variance. Sales must obtain orders from customers that in turn cause increases in production. Additional production in the absence of additional sales is dysfunctional.

Most of a company’s capacity costs are committed fixed costs—committed in that management must incur the costs to maintain the capability to operate. The costs are called fixed because changes in operating activity do not generally cause changes in total capacity cost. Capacity costs are composed of charges such as such as lease payments on equipment, supervisory salaries, insurance, property taxes, and so forth.

Operating costs, other than capacity costs, are largely variable costs that are not always necessary to maintaining the capacity to produce, and do change in total when total production activity changes.

Balancing the relative components of variable and fixed cost to generate an increase in profit is called maximizing \textit{operating leverage}. There is, however, a downside to leverage. Not only does an increase in sales yield a larger increase in profit, a decrease in sales also yields a larger decrease in profit. In other words, the behavior of profit is more volatile when operating leverage is high. The mix of fixed and variable costs after automation leverages, or magnifies, the effect of any change in sales.

A company’s operating leverage is measured at a particular proportion of fixed and variable costs. Operating leverage is the percentage change in operating earnings (i.e., earnings before interest and taxes and any non operating income) that accompanies a percentage change in contribution margin, when in sales
volume is changed. The percentage change in sales is the same as the percentage change in contribution margin.

\[ \text{Degree of operating leverage} = \frac{\text{Contribution margin in}}{\text{Operating income}} \]

Operating leverage is sometimes called first-stage leverage, while financial leverage is sometimes called second-stage leverage.

**Sales**

Operating expenses \( \text{First-stage operating leverage} \)

Operating earnings

Interest and taxes \( \text{Second-stage financial leverage} \)

**Net income**

The terminal value of a share equals the present value at a future point in time of all future cash flows at stable growth rate. If the firm is publicly traded it has a potentially infinite life.

\[ \text{Value of the firm} = \sum_{t=1}^{\infty} \frac{CF_t}{(1 + r)^t} \]

As cash-flows can’t be estimated forever the terminal value is used in order to reflect the value of the corporation at a certain future moment.

\[ \text{Value of the firm} = \sum_{t=1}^{n} \frac{CF_t}{(1 + r)^t} + \frac{\text{Terminal value}}{(1 + r)^n} \]

The terminal value projection is often used in multi-stage discounted cash flow analysis because it allows for the limitation of cash flow projections to a several-year period. Forecasting results beyond such a period is impractical and exposes such projections to a variety of risks limiting their validity, primarily the great uncertainty involved in predicting industry and macroeconomic conditions beyond a few years. The terminal value allows for the inclusion of the value of future cash flows occurring beyond a several-year projection period while satisfactorily mitigating many of the problems of valuing such cash flows. The terminal value is calculated in accordance with a stream of projected future free cash flows in discounted cash flow analysis.
There are three basic approaches to projecting the terminal value of a stock:

a). the liquidation value that is mainly used when assets are separable and marketable;

There are two ways in which the liquidation value can be estimated. The first one is to base it on the book value of the assets, adjusted for any inflation during the period.

\[
\text{Expected Liquidation value} = \text{Book Value of Assets} \times (1 + \text{inflation rate})^{\frac{1}{\text{Average life of assets}}}
\]

The major limitation of this approach is that it is based upon accounting book value and does not reflect the earning power of the assets.

The other approach implies the estimation of the value based upon the earning power of the assets. The expected cash flows from the assets are estimated firstly and afterwards these cash flows are discounted back to the present, using an appropriate discount rate.

There is one additional step that needs to be taken when equity is evaluated. The estimated value of debt outstanding in the terminal year has to be subtracted from the liquidation value to arrive at the liquidation proceeds for equity investors.

b). the multiple approach which estimates the future value of the firm by applying a multiple to the firms earnings in the considered year;

When equity is valued price earning ratios can be used as equity multiples in order to determine the terminal value. By using such a multiple the valuation becomes a relative one and not a discounted based valuation. A discounted cash flow valuation is meant to provide an estimation of the intrinsic value of the share. If the multiple is estimated using fundamental models, it converges on the stable growth model. The most reliable method of estimating terminal value is the stable growth model.

c). stable growth model which is constructed on the hypothesis that cash flows will grow forever at a constant rate.

\[
\text{Terminal value} = \frac{\text{Cashflow}_{t+1}}{r - g_{\text{stable}}}
\]

The foremost limitation of the stable growth model is related to the constant rate which cannot exceed the growth rate of the economy but it can be lower. If the economy is composed of high growth and stable growth firms, the growth rate of these firms is expected to be lower than the growth rate of the economy.

The stable growth rate can also be negative. In this case the terminal value will be lower and the will be expected to disappear over a period of time.
5. THE CAPITAL STRUCTURE OF THE CORPORATION

A firm’s basic resource is the stream of cash flows produced by its assets. When the firm is financed entirely by common stock, all those cash flows belong to the stockholders. When it issues both debt and equity securities it undertakes to split up the cash flows into two streams, a relatively safe stream that goes to the debt holders and a more risky one that goes to the stockholders.

The firm’s mix of different securities is known as its capital structure. The choice of capital structure is fundamentally a marketing problem. The firm attempts to find the particular combination of securities that maximizes its overall market value.

After analyzing a number of factors, a firm establishes a target capital structure it believes is optimal, which is then used as a guide for raising funds in the future. This target might change over time as conditions vary, but at any given moment the firm’s management has a specific capital structure in mind, and individual financing decisions should be consistent with this target. If the actual proportion of debt is below the target level, new funds will probably be raised by issuing debt, whereas if the proportion of debt is above the target, stock will probably be sold to bring the firm back in line with the target debt/assets ratio.

Capital structure policy involves a trade-off between risk and return. Using more debt raises the riskiness of the firm’s earnings stream, but a higher proportion of debt generally leads to a higher expected rate of return. A higher risk associated with greater debt tends to lower the stock’s price. Therefore, the optimal capital structure is the one that strikes a balance between risk and return to achieve the ultimate goal of maximizing the price of the stock.

Capital structure decisions are influenced by four primary factors:

1. The first is the firm’s business risk, or the riskiness that would be inherent in the firm’s operations if it used no debt. The greater the firm’s business risk, the lower the account of debt that is optimal.

2. The second key factor is the firm’s tax position. A major reason for using debt is that interest is tax deductible, which lowers the effective cost of debt. However, if much of a firm’s income is already sheltered from taxes by accelerated depreciation or tax loss carry forwards, its tax rate will be low, and debt will not be as advantageous as it would be to a firm with a higher effective tax rate.

3. The third important consideration is financial flexibility, or the ability to raise capital on reasonable terms under adverse conditions. Corporate treasures are aware that a steady supply of capital is necessary for stable operations, which, in turn, are vital for long-run success. When money is tight in the economy, or when a firm is experiencing operating difficulties, a strong balance sheet is needed
to obtain funds from suppliers of capital. Thus, it might be advantageous to issue equity to strengthen the firm’s capital base and financial stability.

4. The fourth debt-determining factor has to do with managerial attitude (conservatism or aggressiveness) with regard to borrowing. Some managers are more aggressive than others, hence some firms are more inclined to use debt in an effort to boost profits. This factor does not affect the optimal, or value-maximizing capital structure, but it does influence the target capital structure a firm actually establishes.

These four points largely determine the target capital structure, but operating conditions can cause the actual capital structure to vary from the target at any given time.

Miller and Modigliani who showed that dividend policy doesn’t matter in perfect capital markets also showed that financing decisions don’t matter in perfect markets. Their famous “proposition I” states that a firm cannot change the total value of its securities just by splitting its cash flows into different streams as the firm’s value is determined by its real assets not by the securities it issues. Thus capital structure is irrelevant as long as the firm’s investment decisions are taken as given.

1. The effect of leverage in a competitive tax-free economy

Every corporation tries to find the combination of securities that has the greatest overall appeal to investors – the combination that maximizes the market value of the firm. It is necessary for the policy which maximizes firm value to also maximize the wealth of the shareholders.

Let D and E denote the market values of the outstanding debt and equity of a company. The company’s 1000 shares sell for 50 lei apiece. Thus:

\[ E = 1000 \text{ shares} \times 50 \text{ lei/share} = 50000 \text{ lei} \]

The company has also borrowed 25000 lei and so the aggregate market value of all the company’s outstanding securities is:

\[ V = D + E = 75000 \text{ lei} \]

The company’s stock is known as levered equity. The stockholders face the benefits and costs of financial leverage or gearing.

Suppose that the company “levers up” still further by borrowing an additional 10000 lei and paying the proceeds out to shareholders as a special dividend of 10 lei per share. This substitutes debt for equity capital with no impact on the company’s assets. The question is what the company’s equity will be worth after the special dividend is paid.
Debt = 35000 (old debt 25000 + new debt 10000)

Equity = ?

Firm value = ?

If the value V is 75000 lei as before then E must be V-D = 75000 – 35000 = 40000 lei. Stockholders have suffered a capital loss which exactly offsets the 10000 lei special dividend. But if V increases to 80000 lei as a result of the change in capital structure then E = 45000 lei and the stockholders are 5000 lei ahead. In general any increase or decrease in V caused by a shift in capital structure affects the firm’s stockholders. It can be concluded that a policy which maximizes the market value of the firm is also best for the firm’s stockholders.

This conclusion rests on two important assumptions: first that the company can ignore dividend policy and second that after the change in capital structure the old and new debt is worth 35000 lei.

2. Impact of leverage on returns

Consider the following situation of a corporation:

<table>
<thead>
<tr>
<th>Current structure</th>
<th>Proposed structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>All equity</td>
<td>Equal debt and equity</td>
</tr>
<tr>
<td>Expected earnings per share</td>
<td>1.5</td>
</tr>
<tr>
<td>Price per share</td>
<td>10</td>
</tr>
<tr>
<td>Expected return on share</td>
<td>15</td>
</tr>
</tbody>
</table>

Leverage increases the expected stream of earnings per share but not the share price. The change in the expected earnings stream is exactly off-set by a change in the rate at which the earnings are capitalized. The expected return on the share (which for a perpetuity is equal to the earnings-price ratio) increases from 15% to 20%.

The expected return on assets $r_A$ is equal to the expected operating income dividend by the total market value of the firm’s securities.

$$\text{Expected return on assets} = r_A = \frac{\text{expected operating income}}{\text{market value of all securities}}$$

In perfect capital markets the company’s borrowing decision does not affect either the firm’s operating income or the total market value of its securities. Therefore the borrowing decision also does not affect the expected return of the firm’s assets $r_A$. 
Suppose that an investor holds all of a company’s debt and all of its equity. This investor would be entitled to the entire firm’s operating income. Therefore the expected return on the portfolio would be equal to $r_A$. The expected return on a portfolio is equal to a weighted average of the expected returns on the individual holdings.

Therefore the expected return on a portfolio consisting of all the firm’s securities is:

\[
\text{expected return on assets} = \text{proportion in debt} \times \text{expected return on debt} + \text{proportion in equity} \times \text{expected return on equity}
\]

By rearranging this equation we can obtain the expected return on the equity of a levered firm:

\[
r_E = r_A + \frac{D}{E} \times (r_A - r_E)
\]

This is Miller and Modigliani “proposition II”. It states that the expected rate of return on the common stock of a levered firm increases in proportion to the debt-equity ratio ($D/E$) expressed in market value. The rate of increase depends on the spread between $r_A$, the expected rate of return on a portfolio of all the firm’s securities and $r_D$, the expected return on the debt. For a firm with no debt $r_E$ equals $r_A$.

6. DIVIDENDS AND DIVIDENDS POLICIES

The dividend policy is the trade-off between retaining earnings on the one hand and paying out cash and issuing new shares on the other.

1. Types of Dividends

The dividend is set by the firm’s board of directors. Dividends come in different forms:


Stock dividends and stock splits are very much alike. Both increase the number of shares but the company’s assets, profits and total value are unaffected. So, both reduce value per share. The distinction between them is technical. A stock dividend is shown in the accounts as a transfer from retained earnings to equity capital, whereas a split is shown as a reduction in the par value of each share. When a firm wants to pay cash to its shareholders it usually declares a cash dividend. The alternative is to repurchase its own stocks. The required shares are usually kept in the company’s treasury and can be resold if the company needs money.

2. Method of Dividend Payments
The announcement of the dividend states that the payment will be made to all those stockholders who are registered on a particular record date. When dividend has been declared it becomes a debt of the firm and cannot be rescinded. Shares are normally bought and sold with dividend or cum dividend until a few days before the record date, at which point they trade ex-dividend. The stock price should fall by the amount of the dividend.

Before ex date: Dividend = 0  Price = P + D

After ex date:  Dividend = D  Price = P

e.g. On the 15 of April a firm declares that on May 15 it will pay dividends to all stockholders registered until the first of May. Under the stock exchange rule shares are traded ex-dividend on and after the third business day before the record date.

| 15 of April | 28 of April | 1 of May | 15 of May |
| declaration date | ex-dividend date | record date | payment date |

3. **Dividend Payout Ratio**

The dividend payout ratio is the percentage of earnings paid to shareholders in dividends.

\[
\text{Dividend payout ratio} = \frac{\text{Yearly Dividend per Share}}{\text{Earnings per Share}}
\]

\[
\text{Current Dividend Yield} = \frac{\text{Dividends}}{\text{Net Income}}
\]

The part of the earnings not paid to investors is left for investment to provide for future earnings growth. Investors seeking high current income and limited capital growth prefer companies with high dividend payout ratio. Investors seeking capital growth may prefer lower payout ratio because capital gains are taxed at a lower rate. High growth firms in early life generally have low or zero payout ratios. As they mature they tend to return more of the earnings back to investors.

4. **Dividend policy**

The optimal dividend policy should maximize the price of the firm’s stock holding the number of shares outstanding constant.

\[
P_0 = \frac{D_1}{k_e - g}
\]

A decision to increase dividends will raise \(D_1\) putting upward pressure on \(P_0\). Increasing dividends however means reinvesting fewer dollars, lowering \(g\) and putting downward pressure on \(P_0\).
There are three parties of economists upholding three dividend theories:

a). *the middle-of-the road party* claims that given the investment decision of the firm, the dividend policy is irrelevant. Increasing and decreasing dividends have not effect on stock price.

Representants: Miller and Modigliani (1961); Black and Scholes (1974); Miller and Scholes (1978)

The middle-of-the-road party supports the dividend irrelevance theory. Miller and Modigliani showed that as long as the firm is realizing the returns expected by the market, it doesn’t matter whether that return comes back to the shareholders now as dividend or is reinvested and leads to an appreciation in dividend or price.

The shareholder can create their own dividend by selling the stock when he needs cash. This theory is based on some unrealistic assumption such as:

- no transaction costs;
- no taxes;
- perfect information;
- cost of equity not affected by the dividend policy.

b). *the rightists* claim that if the firm increases the level of dividends the stock price will also increase.

Representants: Graham and Dodd (1951); Gordon (1963); Lintner (1962).

The rightists support the bird-in-the-hand theory. Gordon argued that the dividend-in-the-hand is worth more than the present value of a future dividend.

\[ k_e = \frac{D_1}{P_0} + g \]

The risk premium on the dividend yield is higher than the risk premium on the growth rate. Dividends are less risky and therefore, high dividend payout ratios will lower the cost of equity, reducing the cost of capital and will increase stock price.

c). *the leftists* claim that if the firm increases the level of dividends the stock price will decrease.

Representant: Michael Brennan (1970)

The leftists support the differential theory or tax preference theory. Dividends received are taxable in the current period meanwhile taxes on capital gains are deferred into the future when the stock is actually sold. In addition the tax on capital gain is usually lower than the tax rate on dividends (ordinary income).
Therefore low dividends payout ratios will lower the cost of capital, will raise g and will increase the stock price.

5. Dividend policy in practice

In practice investors prefer to have the firm retain and reinvest earnings if they can earn a higher risk adjusted return.

a). the residual dividend policy suggests that dividends should be that part of earnings which cannot be invested at a rate at least equal to the WACC.

Residual dividend policy steps:

1. determine the optimal capital budget;
2. determine the retained earnings that can be used to finance the capital budget;
3. use retain earning to supply as much of the equity investment in the capital budget as necessary;
4. pay dividends only if there are left-over earnings.

b). the stable (predictable) dividend policy according to which firms try to keep the dividend constant. It is never reduced. However it may be increased if management is certain that future earnings will support such a high dividend.

Stable dividend policy steps:

1. pay a predictable dividend every year;
2. base optimal capital budget on residual retained earnings.

The greatest danger in adopting a stable dividend policy is that once it is established it cannot be changed without seriously affecting investors’ attitude and the financial standing of the company.

7. FINANCIAL ANALYSIS

The objective of financial analysis is to rearrange data from financial statements into financial ratios that provide information about the main areas of financial performance such as:

1. Short-term solvency measures the ability of a firm to meet its short-run financial obligations. If a corporation has sufficient cash flow it is able to avoid defaulting on its financial obligations and thus avoid experiencing financial distress.

Accounting liquidity measures short-term solvency and is often associated with net working capital, the difference between current assets and current liabilities (debts that are due within one year from the data of the balance sheet). The basic source from which to pay current liabilities is current assets.
a). \( \text{current ratio} = \frac{\text{Total current assets}}{\text{Total current liabilities}} \)

If a firm is having financial difficulty it may not be able to pay its bills (accounts payable) on time or it may need to extend its bank credit (notes payable). As a consequence current liabilities may rise faster than current assets and the current ratio may fall as a sign of financial trouble.

The current ratio should be calculated over several years for a historical perspective and it should be compared to the current ratios of other firms with similar operating activities.

b). \( \text{quick ratio} = \frac{\text{Quick assets}}{\text{Total current liabilities}} \)

Quick assets are those current assets that are quickly convertible into cash. They are obtained by subtracting inventories from current assets. It is important to determine a firm’s ability to pay off current liabilities without relying on the sale of inventories.

2. **Ratios of activity** are constructed to measures how effectively the firm’s assets are being managed. By comparing assets with sales we can find out how quickly assets are used to generate sales.

a). \( \text{total asset turnover} = \frac{\text{Total operating revenues}}{\text{Total assets}} \)

This ratio is intended to indicate how effectively a firm is using its assets. If the asset turnover ratio is high the firm is presumably using its assets effectively in generating sales. If the ratio is low, the firm is not using its assets up to their capacity and must either increase sales or dispose of some of the assets. One problem in interpreting this ratio is that it is maximized by using older assets because their accounting value is lower than newer assets. Also firms with relatively small investments in fixed assets, such as retail and wholesale trade firms tend to have high ratios of total asset turnover when compared with firms that require a large investment in fixed assets, such as manufacturing firms.

b). \( \text{receivables turnover} = \frac{\text{Total operating revenues}}{\text{Receivables}} \)

\[ \text{average collection period} = \frac{\text{Days in period}}{\text{receivables turnover}} \]

The receivable turnover ratio and the average collection period provide some information on the success of the firm in managing its investment in accounts receivable. The actual value of these ratios reflects the firm’s credit policy. If a firm has a liberal credit policy the amount of its receivables will be higher than would otherwise be the case. One common rule of thumb that financial analysis use is that the average collection period of a firm should not exceed the time allowed for payment in the credit terms by more than 10 days.

c). \( \text{inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Inventory}} \)
The inventory ratios measure how quickly inventory is produced and sold. They are significantly affected by the production technology of goods being manufactured. (It takes longer to produce a gas turbine engine than a loaf of bread.) The ratios also are affected by the perishability of the finishing goods.

The ratio of days in inventory is the number of days it takes to get goods produced and sold. It is called shelf life for retail and wholesale trade firms. A large increase in the ratio of days in inventory could suggest an ominously high inventory of unsold finished goods or a change in the firm’s product mix to goods with longer production periods.

The method of inventory valuation can materially affect the computed inventory ratios. Thus, financial analysts should be aware of the different inventory valuation methods and how they might affect ratios.

3. **Financial leverage** is related to the extent to which a firm relies on debt financing rather than equity. Measures of financial leverage are tools in determining the probability that the firm will default on its debt contracts. The more debt a firm has the more likely it is that the firm will become unable to fulfill its contractual obligations. In other words, too much debt can lead to a higher probability of insolvency and financial distress.

On the positive side debt is an important form of financing and provides a significant tax advantage because interest payments are tax deductible. If the firm uses debt, creditors and equity investors may have conflicts of interest. Creditors may want the firm to invest in less risky ventures than those the equity investors prefer.

a). \[ \text{debt ratio} = \frac{\text{Total debt}}{\text{Total assets}} \]

\[ \text{debt-equity ratio} = \frac{\text{Total debt}}{\text{Total equity}} \]

\[ \text{equity multiplier} = \frac{\text{Total assets}}{\text{Total equity}} \]

Debt ratios provide information about protection of creditors from insolvency and the ability of firms to obtain additional financing for potentially attractive investment opportunities. The accounting value of debt may differ substantially from its market value because no adjustment is made for the current level of interest rates which may be higher or lower than when the debt was originally issued or risk.

b). \[ \text{interest coverage} = \frac{\text{Earnings before interest and taxes}}{\text{Interest expense}} \]

This ratio emphasizes the ability of the firm to generate enough income to cover interest expense. Interest expense is an obstacle that a firm must surmount if it is to avoid default. The ratio of interest coverage is directly connected to the ability of the firm to pay interest. However, it would probably make sense to add depreciation to income in computing this ratio and to include other financing expenses, such as payments of principal and lease payments.
A large debt burden is a problem only if the firm's cash flow is insufficient to make the required debt service payments. This is related to the uncertainty of future cash flows. Firms with predictable cash flows are frequently said to have more debt capacity than firms with high uncertain cash flows. One possible way to do this is to calculate the standard deviation of cash flows relative to the average cash flow.

4. **Profitability ratios** measure the extent to which a firm is profitable. Accounting profits are the difference between revenues and costs. However the real profitability of a firm is difficult to conceptualize and to measure.

Many business opportunities involve sacrificing current profits for future profits. All new products require large start-up costs and as a consequence produce low initial profits. Thus current profits can be a poor reflection of true future profitability. Another problem with accounting based measures of profitability is that they ignore risk. It would be false to conclude that two firms with identical current profits were equally profitable if the risk of one was greater than the other.

a). \[ \text{net profit margin} = \frac{\text{Net income}}{\text{Total operating revenue}} \]

\[ \text{gross profit margin} = \frac{\text{Earnings before interest and taxes}}{\text{Total operating revenues}} \]

Profit margins express profits as a percentage of total operating revenue. They reflect the firm's ability to produce a project or service at a low cost or a high price. Profit margins are not direct measures of profitability because they are based on total operating revenue not on the investment made in assets by the firm or equity investors. Trade firms tend to have low margins and service firms tend to have high margins.

b). \[ \text{net return on assets} = \frac{\text{Net income}}{\text{Total assets (average)}} \]

\[ \text{gross return on assets} = \frac{\text{Earnings before interest and taxes}}{\text{Total assets (average)}} \]

One of the interesting aspects of return on assets (ROA) is how some financial ratios can be linked together to compute ROA. One implication of this is usually referred to as the DuPont system of financial control. This system highlights the fact that ROA can be expressed in terms of the profit margin and asset turnover. The basic components of the system are as follows:

\[ \text{ROA} = \text{Profit margin} \times \text{Asset turnover} \]

\[ \text{ROA (net)} = \frac{\text{Net income}}{\text{Total operating revenue}} \times \frac{\text{Total operating revenue}}{\text{Average total assets}} \]

\[ \text{ROA (gross)} = \frac{\text{Earnings before interest and taxes}}{\text{Total operating revenue}} \times \frac{\text{Total operating revenue}}{\text{Average total assets}} \]
Firms can increase ROA by increasing profit margins and asset turnover. Competition limits their ability to do so simultaneously so they tend to face a trade-off between turnover and margin.

c). \[ ROE = \frac{\text{Net income}}{\text{Shareholder's equity}} \times 100 \]

The most important difference between ROA and ROE is due to financial leverage.

\[ \text{ROE} = \text{Profit margin} \times \text{Asset turnover} \times \text{Equity multiplier} \]

\[ \text{ROE} = \frac{\text{Net income}}{\text{Total operating revenue}} \times \frac{\text{Total operating revenue}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Stockholder's equity}} \]

Apparently financial leverage always magnifies ROE. Actually this occurs only when ROA (gross) is greater than the interest rate on debt.

d). payout ratio = \[ \frac{\text{Cash dividends}}{\text{Net income}} \]

retention ratio = \[ \frac{\text{Retained earnings}}{\text{Net income}} \]

\[ \text{retained earnings} = \text{net income} – \text{dividends} \]

The payout ratio is the proportion of net income paid out in cash dividends and the retention ratio is the proportion of net income retained by the corporation for future investments.
1. RISK, RETURN AND CAPITAL MARKET EQUILIBRIUM

Securities derive their value from the *cash flow they are expected to generate*. Since the cash flow will be received over future periods, there is need to discount these future flows in order to derive a present value or price for the security.

Assuming that we are valuing the security over a single holding period (say, a year) we can illustrate the process of valuation with a particularly simple model:

\[ P_0 = \frac{\text{Cash Flow} + P_1}{(1+r)}, \quad r = \text{discount rate} \quad (1) \]

The model indicates that the present value or current price \(P_0\) of the security is the cash flow (dividends or coupons) received over the period plus the expected price at the end of the period \(P_1\), discounted back at the rate \(r\).

The *discount rate* is alternatively referred to as a required return and is composed of two elements:

\[ r = R_f + \text{the risk premium} \quad (2) \]

a). *a risk free return* \(R_f\), which is generally considered to comprise a real return component and an inflation premium. The *real return* \(R_r\) is the basic investment compensation that investors demand for forgoing current consumption; that is the compensation for saving. Investors also require a premium to compensate for inflation. The real return and *inflation premium* are a basic return demanded by all investors, so the risk free return is a return component required of all securities.

b). *a risk premium* which is made up of the following elements: (1) interest rate risk, (2) purchasing power risk, (3) business risk and (4) financial risk. The premium that investors require to compensate the risk will differ across securities as the perceived exposure to the risk elements is high or low for the security.

By rearranging equation (1) we can obtain directly the discount rate \(r\). In this form it is usual to think of the discount rate as a return expected by investors, that is, an expected return.

\[ \frac{\text{Expected return}}{P_0} = r = \frac{\text{Cash Flow} + (P_1 - P_0)}{P_0} \quad (3) \]

We can also use equation (3) for calculating the return earned on a security over a past period (realized return). This time we would insert a realized return for the cash flow and an actual ending period price rather than expected values of these variables.
In calculating the return for a common stock, it is helpful to think of the realized return as consisting of a yield component – dividend divided by beginning-of-period-price – and a capital gain component, which is the percentage change in price over the period.

\[
\text{Return} = \frac{D}{P_0} + \frac{P_t - P_0}{P_0} \quad (5)
\]

*The estimated or expected return of a portfolio of securities* is merely a weighted average of the expected returns of the individual securities of which the portfolio is composed.

\[
\bar{r}_{\text{p,est}} = \sum_{i=1}^{N} w_i \times \bar{r}_i \quad (6)
\]

\[
\bar{r}_i = \frac{1}{T} \times \sum_{t=1}^{T} r_{it} \quad (7)
\]

\(w_i\) = the security’s proportion of the portfolio;

\(\bar{r}_i\) = the expected return of security i (average return of a period);

\(r_{it}\) = the realized return of stock i at time t;

\(N\) = the total number of securities comprised in the portfolio;

\(T\) = the total number of observations (time moments).

eg. What is the expected return of a portfolio of which stock A with an expected return of 10% constitutes 60% and of which stock B with an expected return of 12% constitutes 40%?

\[
r_{\text{p,est}} = 10\% \times 60\% + 12\% \times 40\% = 10.8\%
\]

In addition to determining the rate of return it is also important to assess the risk or uncertainty that may be associated with earning the return.

The *variance* of return and *standard deviation* of return are alternative statistical measures that are proxies for the uncertainty or risk of return. These statistics in effect measure the extent to which returns are expected to vary around an average over time. Extensive variations around the average would indicate great uncertainty regarding the return to be expected.

The variance is merely the average of the squared deviations of the individual returns from the average.

\[
\text{var}(r_i) = \frac{1}{T} \times \sum_{t=1}^{T} (r_{it} - \bar{r}_i)^2 \quad (8)
\]

\[
\text{Standard deviation} = \sqrt{\text{var}} \quad (9)
\]
2. CAPITAL MARKET THEORY AND TOOLS OF PORTFOLIO MANAGEMENT

While standard deviation and variance measure the riskiness of a security in an absolute sense, there is also need to consider the riskiness of a security within the context of an overall portfolio of securities.

The riskiness of a portfolio will depend on how a security blends with the existing securities and contributes to the overall risk of a portfolio. The covariance is a statistic that measures the riskiness of a security relative to others in a portfolio of securities.

In essence the way securities vary with each other affects the overall variance, hence the risk of the portfolio.

\[
\text{cov}(r_i, r_j) = \frac{1}{T} \sum_{t=1}^{T} (r_{it} - \bar{r}_i) (r_{jt} - \bar{r}_j)
\]

If the securities move counter to each other than the covariance is a negative value. If the securities move consistently in tandem than the covariance is positive.

To facilitate interpretation it is useful to standardize the covariance. Dividing the covariance between two securities by the product of the standard deviation of each security produces a variable with the same properties as the covariance but scaled to a range of -1 to +1. The measure is called the correlation coefficient.

\[
\rho_{ij} = \frac{\text{cov}(r_i, r_j)}{\sigma_i \cdot \sigma_j}
\]

Negative correlation is desirable in a security because such a security has great risk reducing potential in a portfolio context. Anyway in pragmatic settings it is difficult to find negatively correlated securities.

So the variance or risk of a portfolio is not simply a weighted average of the variances of the individual securities in the portfolio. There is also need to consider the relationship between each security in the portfolio and every other security as measured by the covariance of returns.

For a portfolio of two securities i and j the risk measured by the portfolio variance is calculated as follows:

\[
\text{var}(r_{\text{portef}}) = \sigma^2(r_{\text{porerf}}) = w_i^2 \cdot \sigma^2(r_i) + w_j^2 \cdot \sigma^2(r_j) + 2 \cdot w_i \cdot w_j \cdot \text{cov}(r_i, r_j)
\]

where \(w_i\) and \(w_j\) are the proportions that securities i and j represent in the portfolio.

The risk of a portfolio measured by the variance is a weighted average of the variances of the individual securities plus the covariance between each security and every other security in the portfolio. By
Diversifying the portfolio (increasing the number of securities) investors manage to substantially reduce the risk. Diversification works because prices of different stocks do not move exactly together. Yet most of the stocks that the investor can actually buy are tied together in a web of positive covariances which set the limit to the benefits of diversification.

The risk that potentially can be eliminated by diversification is called diversifiable risk, specific risk, unsystematic risk or residual risk. This specific risk stems from the fact that many of the perils that surround an individual company are peculiar to that company and perhaps its immediate competitors.

But there is also some risk that can’t be avoided regardless of how much the portfolio is diversified. This risk is generally known as market risk, systematic risk or undiversifiable risk. Market risk stems from the fact that there are other economy wide perils which threaten all businesses. That is why stocks have a tendency to move together. And that is why investors are exposed to market uncertainties no matter how many stocks they hold.

In order to determine the contribution of an individual security to the risk of a well diversified portfolio it is necessary to measure its market risk. The sensitivity of a security to market movements is called beta (\(\beta\)).

\[
\beta_i = \frac{\text{cov}(r_i, r_m)}{\sigma^2(r_m)} = \frac{\sigma_{im}}{\sigma_m^2}
\]

where \(\sigma_{im}\) is the covariance between stock i’s return and the market return and \(\sigma_m^2\) is the risk of the market measured by the variance of the market return.

Stocks with beta greater than 1 tend to amplify the overall movements of the market and are called offensive or aggressive stocks. Stocks with betas between 0 and 1 tend to move in the same direction as the market but not as far. They are called defensive stocks.

The difference between the return on the market and the risk free rate is termed the market risk premium \((r_m - r_f)\). The return on the risk-free asset is not affected by what happens to the market. The risk free asset has a beta of zero. The risk free asset has a risk premium of zero. The market portfolio has a beta of 1 and a risk premium of \((r_m - r_f)\).

But what is the expected risk premium when beta is not 0 or 1? The answer to that question is given by the capital asset pricing model CAPM. In a competitive market the expected risk premium varies in direct proportion to beta.

\[
\text{CAPM: } r_i - r_f = \beta_i (r_m - r_f)
\]

\[
\text{expected risk premium} = \text{beta} \times \text{market risk premium}
\]
When the equation of the CAPM is plotted in expected return-beta coordinates it yields a straight line. The line is determined by the return on the risk-free asset which has a beta of zero and the expected return on the market which has a beta of one.

**3. PORTFOLIO OPTIMIZATION** (source: Wikipedia)

Every possible combination of the risky assets, without including any holdings of the risk-free asset, can be plotted in risk-expected return space, and the collection of all such possible portfolios defines a region in this space. The upper edge of this region is the *efficient frontier* in the absence of a risk-free asset (sometimes called "the Markowitz bullet"). Combinations along this upper edge represent portfolios (including no holdings of the risk-free asset) for which there is lowest risk for a given level of expected return. Equivalently, a portfolio lying on the efficient frontier represents the combination offering the best possible expected return for given risk level.
When a risk-free asset is introduced, the half-line shown in the figure is the new efficient frontier. It is tangent to the hyperbola at the pure risky portfolio with the highest Sharpe ratio. Its horizontal intercept represents a portfolio with 100% of holdings in the risk-free asset; the tangency with the hyperbola represents a portfolio with no risk-free holdings and 100% of assets held in the portfolio occurring at the tangency point; points between those points are portfolios containing positive amounts of both the risky tangency portfolio and the risk-free asset; and points on the half-line beyond the tangency point are leveraged portfolios involving negative holdings of the risk-free asset (the latter has been sold short—in other words, the investor has borrowed at the risk-free rate) and an amount invested in the tangency portfolio equal to more than 100% of the investor's initial capital. This efficient half-line is called the capital allocation line (CAL), and its formula can be shown to be:

\[ E(R_{pf}) = R_f + S \times \sigma_{pf}, \]

where \( S \) is the slope: \( S = (R_M - R_f) / \sigma_M \)

The introduction of the risk-free asset as a possible component of the portfolio has improved the range of risk-expected return combinations available, because everywhere except at the tangency portfolio the half-line gives a higher expected return than the hyperbola does at every possible risk level. The fact that all points on the linear efficient locus can be achieved by a combination of holdings of the risk-free asset and the tangency portfolio is known as the one mutual fund theorem, where the mutual fund referred to is the tangency portfolio.

**Concept check**

1. A share of stock of company A is now selling for 23.5 lei. A financial analyst summarizes the uncertainty about the rate of return on the stock by specifying three possible scenarios:

<table>
<thead>
<tr>
<th>Business conditions</th>
<th>Scenario, s</th>
<th>Probability, p</th>
<th>End-of-year price</th>
<th>Annual dividend</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-growth</td>
<td>1</td>
<td>0.35</td>
<td>35</td>
<td>4.4</td>
</tr>
<tr>
<td>Normal growth</td>
<td>2</td>
<td>0.3</td>
<td>27</td>
<td>4</td>
</tr>
<tr>
<td>No growth</td>
<td>3</td>
<td>0.35</td>
<td>15</td>
<td>4</td>
</tr>
</tbody>
</table>

What are the holding period returns for a one-year investment in this stock for each of the three scenarios? Calculate the expected HPR and standard deviation of the HPR?

2. At the beginning of last year you invested 4000 lei in 80 shares of a corporation. During the year the corporation paid a dividend of 5 lei per share. At the end of the year you sold the 80 shares for 59 lei a share. Compute your total HPY on these shares and indicate how much was due to the price change and how much was due to the dividend income.

3. A portfolio of non-dividend-paying stocks earned a geometric mean return of 5% between January 1, 2004 and December 31, 2010. The arithmetic mean return for the same period was 6%. If the market
value of the portfolio at the beginning of 2004 was 100000 lei, what was the market value of the portfolio at the end of 2010?

4. During the past five years you owned two stocks that had the following annual rates of return:

<table>
<thead>
<tr>
<th>Year</th>
<th>Stock T</th>
<th>Stock B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.19</td>
<td>0.08</td>
</tr>
<tr>
<td>2</td>
<td>0.08</td>
<td>0.03</td>
</tr>
<tr>
<td>3</td>
<td>-0.12</td>
<td>-0.09</td>
</tr>
<tr>
<td>4</td>
<td>-0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>5</td>
<td>0.15</td>
<td>0.04</td>
</tr>
</tbody>
</table>

a). Compute the arithmetic mean annual rate of return for each stock. Which stock is most desirable by this measure?

b). Compute the standard deviation of the annual rate of return for each stock. By this measure which is the preferable stock?

c). Compute the coefficient of variation for each stock. By this relative measure of risk, which stock is preferable?

d). Compute the geometric mean rate of return for each stock. Discuss the difference between the arithmetic mean return and the geometric mean return for each stock.

Relate the difference in the mean returns to the standard deviation of the return for each stock.

5. Consider stocks A and B with the following monthly returns:

<table>
<thead>
<tr>
<th>Stock</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (%)</td>
<td>5</td>
<td>-3</td>
<td>-8</td>
<td>7</td>
<td>9</td>
<td>-4</td>
<td>8</td>
<td>-5</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>-5</td>
</tr>
<tr>
<td>B (%)</td>
<td>10</td>
<td>2</td>
<td>-13</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>10</td>
<td>-2</td>
<td>0</td>
<td>4</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

a. Determine the HPR for an investor who bought the two stocks at January 1 and sold them at December 31.

b. Determine the HPR of a portfolio composed of 70% A and 30% B.

6. During the past year you had a portfolio that combined government T-bills in proportion of 15%, long term government bonds in proportion of 35% and common stocks. The rates of return on each of them were:

T-bills 5.5%  

Long-term government bonds 7.5%

Common Stocks 11.6%

During the year the consumer price index was 120%. Compute the real rate of return on your portfolio.
7. A panel of economists has estimated that the long-run real growth rate over the next five years will average 3%. The central bank estimates that the average annual rate of inflation during this five years will be about 4%. What would your required rate of return be on common stocks if you wanted a 5% risk premium?

8. Consider stocks A and B with the following monthly returns:

<table>
<thead>
<tr>
<th>Stock</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (%)</td>
<td>5</td>
<td>-3</td>
<td>-4</td>
<td>7</td>
<td>9</td>
<td>-4</td>
<td>8</td>
<td>-5</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>-5</td>
</tr>
<tr>
<td>B (%)</td>
<td>10</td>
<td>5</td>
<td>-4</td>
<td>15</td>
<td>2</td>
<td>7</td>
<td>-5</td>
<td>8</td>
<td>-5</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stock</th>
<th>Mean</th>
<th>Variance</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1.42%</td>
<td>0.28%</td>
<td>5.29%</td>
</tr>
<tr>
<td>B</td>
<td>1.92%</td>
<td>0.43%</td>
<td>6.6%</td>
</tr>
</tbody>
</table>

\[ \text{Cov}(A,B) = -0.0563\% \]

a. compute the expected risk and return of a portfolio composed of 40% stock A and 60% stock B.

b. what is the contribution of each stock to portfolio’s return and risk?

9. Consider stocks A and B with the following monthly returns:

<table>
<thead>
<tr>
<th>Stock</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-2%</td>
<td>3%</td>
<td>1%</td>
<td>6%</td>
</tr>
<tr>
<td>B</td>
<td>1%</td>
<td>-2%</td>
<td>4%</td>
<td>5%</td>
</tr>
</tbody>
</table>

a. what is the expected return and risk of a portfolio composed of 30% A and 70% B?

b. what is the contribution of each stock to portfolio’s return and risk?

c. what is the structure of the portfolio of minimum risk?

10. A stock is observed during a semester:

<table>
<thead>
<tr>
<th>Month</th>
<th>December</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>June</th>
<th>July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>650</td>
<td>700</td>
<td>680</td>
<td>710</td>
<td>720</td>
<td>730</td>
<td>750</td>
</tr>
<tr>
<td>Dividend</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>20</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

a. determine the arithmetic and logarithmic returns of this stock;

b. what is the HPR and the average return in each case?

c. measure the risk of this stock;

d. measure the impact of reinvesting the dividend on the return of the stock.
11. Consider the following portfolios:

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Proportion of A</th>
<th>Proportion of B</th>
<th>Return</th>
<th>Variance</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>0%</td>
<td>100%</td>
<td>1.92%</td>
<td>0.436%</td>
<td>6.6%</td>
</tr>
<tr>
<td>P2</td>
<td>20%</td>
<td>80%</td>
<td>1.82%</td>
<td>0.272%</td>
<td>5.22%</td>
</tr>
<tr>
<td>P3</td>
<td>40%</td>
<td>60%</td>
<td>1.72%</td>
<td>0.175%</td>
<td>4.18%</td>
</tr>
<tr>
<td>P4</td>
<td>60%</td>
<td>40%</td>
<td>1.62%</td>
<td>0.144%</td>
<td>3.79%</td>
</tr>
<tr>
<td>P5</td>
<td>80%</td>
<td>20%</td>
<td>1.52%</td>
<td>0.179%</td>
<td>4.23%</td>
</tr>
<tr>
<td>P6</td>
<td>100%</td>
<td>0%</td>
<td>1.42%</td>
<td>0.281%</td>
<td>5.3%</td>
</tr>
</tbody>
</table>

a. Draw the frontier of these portfolios
b. Which ones are efficient portfolios?
c. What is the return and risk of the minimum risk portfolio?

\[
V(R_A) = 0.00280764 \\
V(R_B) = 0.00435764 \\
\text{Cov}(A, B) = -0.0005632
\]

12. Consider three stocks A, B and C with the following characteristics:

<table>
<thead>
<tr>
<th>Stock</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return</td>
<td>1.08%</td>
<td>0.54%</td>
<td>0.57%</td>
</tr>
<tr>
<td>Variance</td>
<td>0.329%</td>
<td>0.082%</td>
<td>0.053%</td>
</tr>
<tr>
<td>Covariance (A,B)</td>
<td>0.164548%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Covariance (A,C)</td>
<td>-0.131639%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Construct 6 portfolios composed of A and B and 6 portfolios composed of A and C using the following proportions: 0%, 20%, 40%, 60%, 80% and 100%. Determine the expected return and risk of each portfolio.
b. What is the return and risk of the minimum risk portfolio composed of A and B? Draw the efficient frontier of P1-P6.
c. What is the return and risk of the minimum risk portfolio composed of A and C? Draw the efficient frontier of P1-P6.

13. Consider three stocks A, B and C with the following matrix of variance and covariance:

<table>
<thead>
<tr>
<th>Stock</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.01</td>
<td>0.0098</td>
<td>0.004</td>
</tr>
<tr>
<td>B</td>
<td>0.0098</td>
<td>0.0196</td>
<td>0.0112</td>
</tr>
<tr>
<td>C</td>
<td>0.004</td>
<td>0.0112</td>
<td>0.04</td>
</tr>
</tbody>
</table>
Knowing that: \( E(R_A) = 0.08; \ E(R_B) = 0.1; \ E(R_C) = 0.12 \) determine the structure and risk of an efficient portfolio of which expected return is:

a). \( E^*(R_{pf}) = 0.09 \)

b). \( E^*(R_{pf}) = 0.1 \)

14. Consider stock A of which expected return is 11.62\% and variance 0.33\% and the risk free rate of 7\%.

a. Construct 6 portfolios composed of A and the risk free asset using the following proportions: 0\%, 20\%, 40\%, 60\%, 80\% and 100\%. Determine the expected return and risk of each portfolio.

b. Draw the efficient frontier of these portfolios. Compute the slope of the efficient frontier.

15. Consider two efficient portfolios which combine the portfolio of risky assets and the risk-free asset and have the following characteristics:

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>( P_1 )</th>
<th>( P_2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( E_{pf} )</td>
<td>11</td>
<td>12.2</td>
</tr>
<tr>
<td>( \sigma_{pf} )</td>
<td>10</td>
<td>12</td>
</tr>
</tbody>
</table>

a. write the equation of the efficient frontier and draw the efficient frontier

b. consider portfolio \( P_3 \) on the efficient frontier constructed only of risky assets. The standard deviation of this portfolio is 14. What is the expected return of this portfolio?

c. explain how can be constructed a portfolio \( P_4 \) with an expected return of 15.

16. Consider three efficient portfolios composed of risky assets only with the following characteristics:

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>( P_1 )</th>
<th>( P_2 )</th>
<th>( P_3 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( E_{pf} )</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>( \sigma_{pf} )</td>
<td>5</td>
<td>7</td>
<td>10</td>
</tr>
</tbody>
</table>

a. estimate the parameters of the efficient frontier represented by the equation: \( E_{pf} = a + b \ \sigma_{pf} + c \ \sigma_{pf}^2 \) and draw it.

b. What is the expected return of portfolio \( P_4 \) of which risk is 6?

c. If you invest 70\% of your financial resources in \( P_3 \) and 30\% in the risk-free asset \( R_f \) what return and risk do you expect?