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ФІНАНСИ ПІДПРИЄМСТВ

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Навчальний посібник присвячений питанням вивчення основ теорії управління фінансами на підприємстві. Наведені методики аналізу фінансового стану підприємства, принципи аналізу в умовах інфляції, методи аналізу фінансової звітності підприємства. Розглянуто зміст та принципи використання традиційних і нових фінансових інструментів. До кожної теми наведено питання для самоконтролю.

Рекомендується студентам економічних спеціальностей вищих навчальних закладів усіх форм навчання, які опановують дисципліну „Фінанси підприємства”, а також керівникам, спеціалістам різних галузей, підприємцям, бізнесменам.

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FINANCE OF ENTERPRISES

Text book

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INTRODUCTION

Money has a universal fascination but few people seem to understand it very well. It is the subject of countless myths, false theories, and illogical beliefs. One of the few organized attempts to study the relationship between money — past, present, and future — and financial markets and financial decision making is provided by the discipline of financial economics. In the course of their work, financial economists have dispelled many of the myths and ad hoc reasoning surrounding traditional financial advice and substituted an insightful and subtle logic firmly grounded in economic analysis.

Our basic objective in writing *Finance of Enterprises* is to make accessible to students and practitioners alike the practical implications for corporate financial management of the exciting new theoretical and empirical breakthroughs in financial economics. The book is written so as to help the reader understand how and why finance matters, regardless of whether the reader intends to pursue a career in finance. I have tried to motivate the nonfinance major by illustrating the application of financial analysis and reasoning to problems faced by executives in marketing, operations, and personnel. It is suitable for use by first-year MBA students taking their introductory corporate finance course, advanced undergraduates, and managers enrolled in executive education programs.

Although the book relies on material that is covered in economics, accounting, and statistics courses, it is self-contained in that prior knowledge of those areas is useful but not essential. The only real prerequisites are algebra and an interest in understanding how the world works.

MODUL 3. FINANCE OF ENTERPRISES

Unit 1. The role of corporate finance And the business environment

1. Financial management and the goal of the firm
2. The decision functions of financial management
3. Organization of the financial management function
4. The business environment
5. The financial environment
6. The tax environment
7. The role of finance in a changing socio-economic scenario

1.1. Financial management and the goal of the firm

We will first define the **goal of the firm** because judgment as to whether or not a financial decision is efficient must be made according to some standard.

Efficient financial management requires the existence of some objective or goal because judgment as to whether or not a financial decision is efficient must be made in light of some standard.

Various objectives have been recommended. The most important are:

- profit maximization (fig 1.1);
- value creation;
- the management's and the shareholders' goals;
- the social responsibility of the firm.

Profit maximization as the goal of financial management

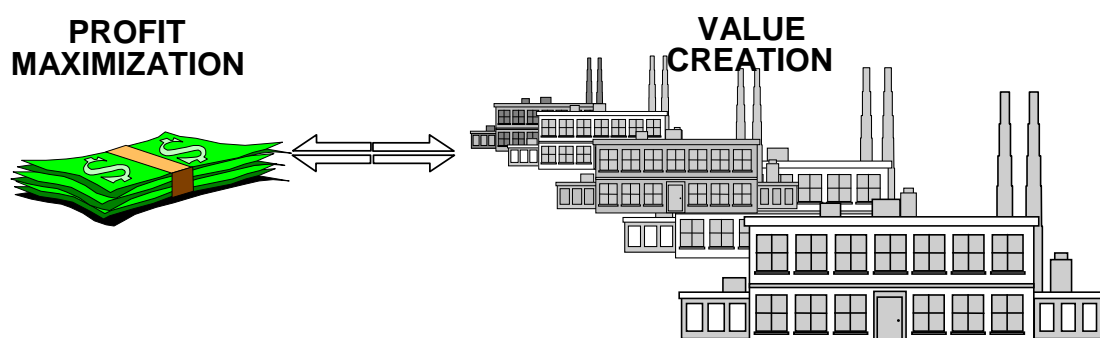


Figure 1.1. Profit maximization versus value creation

1) Maximizing profits (earnings after taxes, EAT) is often offered as the proper objective of the firm.

However, this is basically a single-period or, at the most, a short-term goal. It is usually interpreted to mean the maximization of profits within a given period of time. A firm may maximize its short-term profits at the expense of its long-term profitability and still realize this goal.

2) Maximizing earnings per share (EPS) is advocated as an improved version of profit maximization.

Even this objective is not a fully appropriate goal because it does not specify the timing or duration of expected returns. Risk is not considered, and no allowance is made for the effect of dividend policy. To the extent that the payment of dividends can affect the value of the stock, the maximization of EPS will not be a satisfactory objective by itself.

Value creation as the goal of financial management

Maximization of the market price per share is the most comprehensive goal, since this represents the focal judgment of all market participants as to the value of the particular firm.

It takes into account present and prospective future earnings per share, the timing, duration and risk of these earnings, the dividend policy of the firm, and other factors that bear upon the market price of the stock.

The market price serves as a barometer for business performance; it indicates how well management is doing in behalf of its stockholders. Management is under continuous review. Dissatisfied stockholders may sell their stocks and this will put downward pressure on market price per share.

Table 1.1 outlines the basic objectives of the two most popular definitions of the goal of the firm. It also provides a comparison of the advantages and disadvantages resulting from the selection of each one of the two definitions.

Management versus shareholders

Critics of the modern corporation often claim that it is inefficient because ownership and control are separated: shareholders are the owners of the firm, but the control of the firm is vested in professional managers.

Table 1.1

Profit maximization versus wealth creation

Goal	Objective	Advantages	Disadvantages
Profit maximization	Large amount of profits	1) easy to calculate profits; 2) easy to determine the link between financial decisions	1) emphasizes the short term
Stockholder wealth maximization	Highest market value of common stock	1) emphasizes the long term; 2) recognizes risk or uncertainty; 3) recognizes the timing of returns; 4) considers stock-holders' returns	1) offers no clear relationship between financial decision and stock price; 2) can lead to management anxiety and frustration

Except for the cases in which managers are also large stockholders in the firm, the problem of separating ownership and control is that management has different objectives for the firm than shareholders.

In large corporations, stock may be so widely held that shareholders cannot even make known their objectives or influence management. As a result they delegate decision-making authority to managers that become their agents.

The separation of ownership from management thus creates a situation in which management may act on its own best interests rather than those of the shareholders.

Shareholders are interested in increasing profits and raising the value of their shares. Incumbent managers often have other objectives. They may want to be captains of industry and heads of large firms; they may seek job security or plush corporate headquarters; or they may want to work with friendly rather than complement colleagues. To the extent that managers can pursue such goals at the expense of firm profitability, the separation of ownership and control is a real problem, and shareholder wealth is reduced as a consequence (fig. 1.2).

This problem may be more apparent than real, however. The corporate shareholder is not held in bondage by the corporation's management — he or she can sell shares at any time. Because the shareholder has this salable right in the capital value of the firm, changes in the behavior of managers that produce losses will provide the inducement

to replace inefficient managers with more efficient ones. Such a change may come through a corporate takeover in which another firm or group of investors buys controlling interest in the firm, a stockholder rebellion, or some other means. The point is simply that mechanisms exist to pull errant managers back into line. A subsequent rise in stock price would provide shareholders a gain from the managerial replacement. This potential gain provides a powerful incentive for stockholders to ride herd on management by monitoring the value of their shares (but not by monitoring managerial activities in detail).

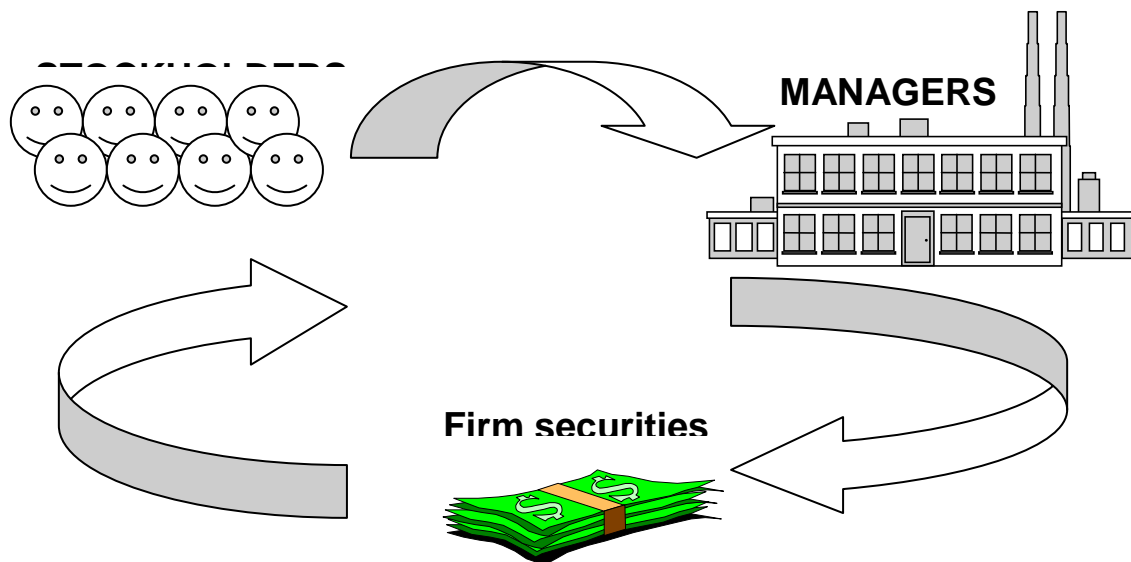


Figure1.2. **The management's and the shareholders' goals**

It has been suggested that the primary monitoring of managers does not come from the owners but from the managerial labour market. Efficient capital markets provide signals about the value of a company's securities and about the performance of its managers. Managers with good performance should have an easier time finding other employment than managers with poor performance records. A competitive managerial labor market will thus tend to discipline the manager. In that situation, the signals given by changes in the total market value of the firm's securities become very important.

The social responsibility of the firm

The maximization of shareholder's wealth does not mean that the firm, in the pursuit of its goal, should neglect relevant social responsibilities such as protecting the consumer, paying fair wages to employees, maintaining fair employment practices and safe working conditions, supporting education, and

becoming involved in environmental issues such as clean air and water (fig. 1.3).

Many have come to the conclusion that today the firm has no choice but to act in socially responsible ways. They argue that shareholder wealth and, ultimately, the corporation's very existence depends on its being socially responsible. Setting clear criteria and consistent policies aimed at enforcing the firm's social responsibility is a difficult task.

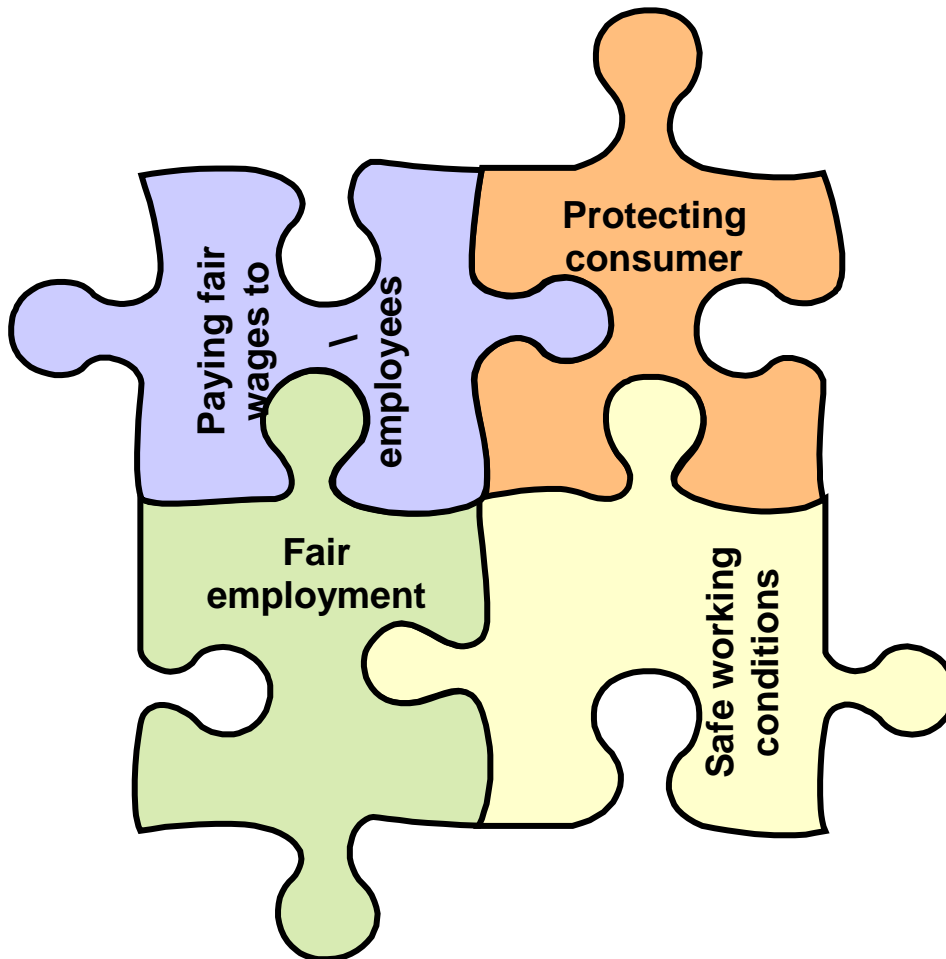


Figure 1.3. **The social responsibility of the firm**

When society establishes the rules governing the balance between social goals and economic efficiency, the task for the corporation is clearer.

1.2. The decision functions of financial management

Financial management is concerned with the acquisition, financing and management of assets in the pursuit of the company's goal.

The decision function of financial management can therefore be broken down into three major areas (fig. 1.4):

- ❖ investment decision;
- ❖ financing decision;
- ❖ asset management decision.

Integral to each decision is the concept of a risk-return trade-off. As we will have the opportunity to see in the following units, all financial decisions involve some sort of risk-return trade-off.

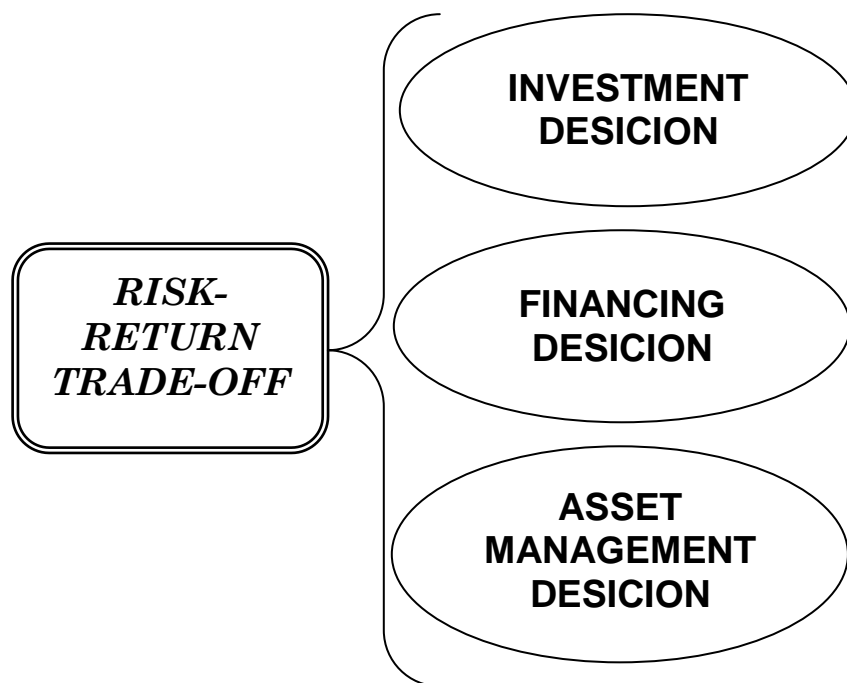


Figure 1.4. **The decision function of financial management**

Profit has been defined as the reward resulting from the decision of bearing a risk.

The greater the risk associated with any financial decision, the greater the return expected from it.

The other side of the coin is that risk is associated with the possibility of incurring losses.

Proper assessment and balance of various risk-return trade-offs available is part of creating a sound stockholder wealth maximization plan.

The investment decision is the most important of the firm's three major decisions. It begins with the determination of the total amount of assets needed to be held by the firm. Even when this number is known, the composition of the assets must still be decided: how much of the firm's total

assets should be devoted to cash, to inventory or to fixed assets.

Finally, assets that can no longer be economically justified may need to be reduced, eliminated, or replaced.

Capital investment decisions [17] are long-term corporate finance decisions relating to fixed assets and capital structure. Decisions are based on several inter-related criteria [17]:

(1) Corporate management seeks to maximize the value of the firm by investing in projects which yield a positive net present value when valued using an appropriate discount rate.

(2) These projects must also be financed appropriately.

(3) If no such opportunities exist, maximizing shareholder value dictates that management must return excess cash to shareholders (i.e., distribution via dividends). Capital investment decisions thus comprise an investment decision, a financing decision, and a dividend decision.

The financing decision is the second major decision of the firm.

If one looks at the mix of financing for firms across industries, he will see marked differences. Some firms have high relative amounts of debt, while others are almost debt-free. Does the type of financing employed make a difference? Is it possible to define the optimal financial structure of the firm?

In addition, dividend policy must be viewed as an integral part of the firm's financing decision. Retaining a greater amount of current earnings in the firm means that the resource base of the firm will be strengthened. At the same time it means that fewer roubles will be available for current dividend payments.

The value of dividends paid to stockholders must therefore be balanced against the opportunity cost of retained earnings lost as a means of equity financing.

Once the mix of financing has been decided, the financial manager must still determine how best to acquire the needed funds.

The mechanics of getting a short-term loan, entering into a long-term lease arrangement, or negotiating a sale of bonds or stock must be understood.

In finance, capital structure refers to the way a corporation finances its assets through some combination of equity, debt, or hybrid securities. A firm's capital structure is then the composition or 'structure' of its liabilities [17].

For example, a firm that sells \$20 billion in equity and \$80 billion in debt

is said to be 20% equity-financed and 80% debt-financed. The firm's ratio of debt to total financing, 80% in this example, is referred to as the firm's leverage. In reality, capital structure may be highly complex and include tens of sources. Gearing Ratio is the proportion of the capital employed of the firm which come from outside of the business finance, e.g. by taking a short term loan etc.

The sources of financing will, generically, comprise some combination of debt and equity financing. Financing a project through debt results in a liability or obligation that must be serviced, thus entailing cash flow implications independent of the project's degree of success. Equity financing is less risky with respect to cash flow commitments, but results in a dilution of ownership, control and earnings. The cost of equity is also typically higher than the cost of debt, and so equity financing may result in an increased hurdle rate which may offset any reduction in cash flow risk [17].

Management must also attempt to match the financing mix to the asset being financed as closely as possible, in terms of both timing and cash flows.

The asset management decision is the third important decision of the firm. The financial manager is charged with varying degrees of operating responsibility over existing assets [1].

The financial manager's responsibilities require that greater concern be placed with the management of current assets than with fixed assets.

Investment decisions have important financial implications, but they are more strategically oriented. As such the financial manager is only one of the parties involved in the decision process.

Current assets management instead falls under the direct responsibility of the financial manager.

Once fixed assets have been acquired, they become factors generating the income which flows into working capital. If we consider that the current assets of a typical manufacturing firm account for over one half of its total assets, it follows that the funds invested in current assets must be managed and controlled.

A failure to devote continuous attention to the financial consequences of working capital often results in losing the profit opportunities embodied in attractive investment projects.

The Dividend Decision is a decision made by the directors of a company. It relates to the amount and timing of any cash payments made to

the company's stockholders. The decision is an important one for the firm as it may influence its capital structure and stock price. In addition, the decision may determine the amount of taxation that stockholders pay [17].

There are three main factors that may influence a firm's dividend decision [16]:

- ❖ Free-cash flow
- ❖ Dividend clienteles
- ❖ Information signalling

Management must also decide on the form of the dividend distribution, generally as cash dividends or via a share buyback. Various factors may be taken into consideration: where shareholders must pay tax on dividends, firms may elect to retain earnings or to perform a stock buyback, in both cases increasing the value of shares outstanding. Alternatively, some companies will pay "dividends" from stock rather than in cash. Today, it is generally accepted that dividend policy is value neutral [15].

1.3. Organization of the financial management function

In large firms, the financial responsibilities are carried out by the treasurer, controller and financial vice president (Chief Financial Officer) (fig. 1.5).

The **controller** is basically concerned with internal matters, such as financial and cost accounting, taxes, budgeting and control functions.

The **treasurer** responsibilities fall into decision areas usually associated with financial management such as investment (pension management), financing (commercial banking and investment banking relationships, investors relations, dividend disbursement) and asset management (cash management, credit management).

The **financial vice president** supervises all phases of financial activity, and serves as the financial adviser to the Board of Directors.

The chart may give the false impression that there is a clear separation between treasurer and controller responsibilities. In a well-functioning firm, information will flow easily back and forth between both branches.

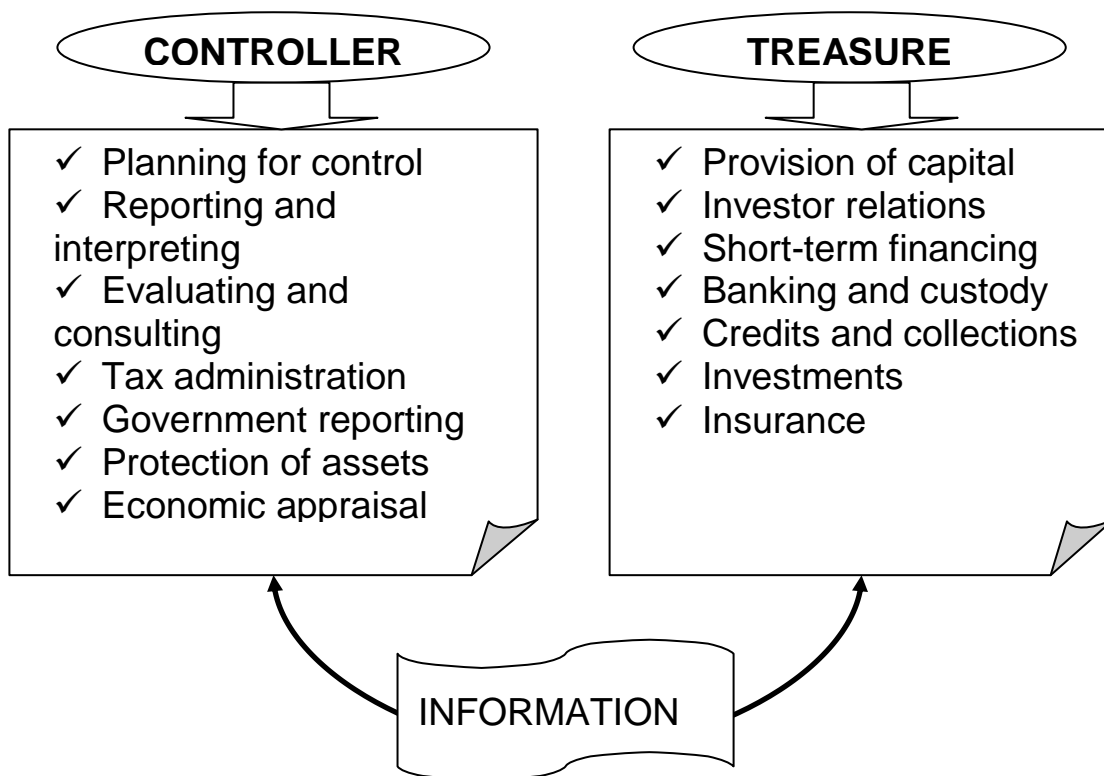


Figure 1.5. **Organization of the financial management function**

In small firms the treasurer and controller functions may be combined into one position with a resulting commingling of activities.

1.4. The business environment

The form of business organization that a firm chooses has important implications both on the financial commitment of the owners to the results of the company and on the way the firm operates.

In some countries, the three basic forms of business organization are:

- 1) sole proprietorship;
- 2) partnership;
- 3) corporation.

The nature of ownership is different in each category.

Sole Proprietorship

Proprietorship is a firm that has a single owner who is liable — or legally responsible — for all the debts of the firm, a condition termed unlimited liability [5]. Main advantages and disadvantages of sole proprietorship are gathered in table 1.2.

The sole proprietor has unlimited liability in the legal sense that if the firm goes bankrupt, the proprietor's personal as well as business property can be used to settle the firm's outstanding debts.

Table 1.2

Main characteristics of sole proprietorship

Advantages

- No formal charter is required;
- Organizational costs are minimal;
- Profit and control are not shared with others

Disadvantages

- It carried unlimited liability for the owner;
- The ability to raise large sums of capital is limited;
- It is limited to the life of the owner

Unlimited liability is a legal term that indicates that the owner or owners of a firm are personally responsible for the debts of a firm up to the total value of their wealth.

More often than not, the sole proprietor also works in the firm as a manager and a laborer. Obviously, most single-owner firms are small. Many small retail establishments are organized as proprietorships.

The primary advantage of the proprietorship is that it allows the small businessperson direct control of the firm and its activities. The owner, who is the residual claimant of profits over and above all wage payments and other expenses, monitors his or her own performance. The sole proprietor faces a market price directly. It is up to the sole proprietor to decide how much effort to expend in producing output. In other words, the sole proprietor can be his or her own boss.

A sole proprietorship can be established with few complications and little expense.

Proprietorships pay no separate income taxes. The owner merely adds any profit or subtracts any losses from the business when determining personal taxable income.

The primary disadvantage of the proprietorship is that the welfare of the firm largely rests on one person. The typical sole proprietor is the chief stockholder, chief executive officer, and chief bottle washer for the firm. Since there are only twenty-four hours in a day, the sole proprietor faces problems in attending to the various aspects of the business.

Another problem with a sole proprietorship is the difficulty in raising capital. Because the life and success of the business is so dependent on a single individual, sole proprietorships may not be as attractive to lenders as other forms of organization.

The proprietorship has a final drawback. In estate planning, no portion of the enterprise can be transferred to members of the family during the proprietor's lifetime.

For these reasons, this form of organization does not afford the flexibility that other forms do.

Partnership

Partnership: Is an extended form of the proprietorship. Rather than one owner, a partnership has two or more co-owners. These partners — who are team members — share financing of capital investments and, in return, the firm's residual claims to profits. Jointly they perform the managerial function within the firm, organizing team production and monitoring one another's behavior to control shirking.

A partnership is a form well suited to lines of team production that involve creative or intellectual skills, an area in which monitoring is difficult. Imagine trying to direct a commercial artist's work in detail or monitoring a lawyer's preparation for a case.

Main advantages and disadvantages of partnership are gathered in table 1.3.

Table 1.3

Main characteristics of partnership

Advantages

- It is easily established with minimal organizational effort and costs;
- It is free from special governmental regulations;
- The ability to raise capital is greater than in the case of sole proprietorship

Disadvantages

- It carried unlimited liability for individual partners;
- It is dissolved upon the withdrawal or death of any of the partners

A partnership is similar to the sole proprietorship except that the business has more than one owner.

Partnerships, like proprietorships, pay no income taxes. Individual partners include their share of profits or losses from the business as a part of their personal taxable income.

One advantage of this business form relative to the proprietorship is the capability of raising a greater amount of capital. More than one owner provide personal capital, and lenders may be more agreeable to provide funds given a larger owner investment base.

In a **general partnership** all partner have unlimited liability. Because each partner can bind the partnership with obligations, general partners should be selected with care.

The unlimited liability condition in a partnership that is shared by all partners is **joint unlimited liability**.

In most cases there is a formal arrangement that sets forth the powers of each partner, the distribution of profits, the amounts of capital to be invested by the partners, and the procedures for reconstituting the partnership in the case of the death or withdrawal of a partner.

Legally the partnership is dissolved if one of the partners dies or withdraws.

The partnership also has certain limitations. Individual partners cannot sell their share of the partnership without the approval of the other partners. The partnership is terminated each time a partner dies or sells out, resulting in costly reorganization. And each partner is considered legally liable for all the debts incurred by the partnership up to the full extent of the individual partner's wealth, a condition called joint unlimited liability. Because of these limitations, partnerships are usually small and are found in businesses where monitoring of production by a manager is difficult.

In a **limited partnership**, the liability of limited partners is confined to the amount of capital they have contributed. There must be, however, at least one general partner, whose liability is unlimited. Limited partners do not participate in all operations of the business.

The limited partners are strictly investors, and they share in the profits or losses of the partnership according to the terms of the partnership agreement.

Corporation

While corporations are not the most numerous form of business organization, they conduct most of the business. This means that many large

firms are corporations and that this form of business organization must possess certain advantages over the proprietorship and the partnership in conducting large-scale production and marketing.

The corporation is a business form separate from its owners. The principal feature of this form of business is that the corporation exists legally separate and apart from its owners.

In a corporation, ownership is divided into equal parts called shares of stock. Share is the equal portions into which the ownership of a corporation is divided.

If any stockholder dies or sells out to a new owner, the existence of the business organization is not terminated or endangered as it is in a proprietorship or partnership.

Main advantages and disadvantages of corporation are gathered in table 1.4.

Table 1.4

Main characteristics of corporation

Advantages

- It has an unlimited life;
- It carries only a limited liability for its owner;
- It has the ability to raise large amounts of capital;
- Ownership is easily transfer of stock

Disadvantages

- It is subject to double taxation on the earnings and dividends paid to stockholders;
- It is difficult and expensive to establish, as a formal charter is required

This type of the business has a series of favourable features [3]:

(1) The firm's life is not limited by the lives of its owners. The corporation can continue even though individual owners die or sell their stock.

(2) Another feature of the corporation that distinguishes it from other forms of business organization is limited liability. This means that corporate shareholders are responsible for the debts or liabilities of the corporation only to the extent that they have invested in it.

Example:

If an investor is a millionaire and has invested \$10 in one share of XYZ corporation, under no circumstances will he or she risk the loss of more than the invested \$10, even if XYZ declares bankruptcy, leaving large

unpaid debts. (By contrast, sole proprietorships and partnerships are characterized by unlimited liability; sole owners or partners are legally responsible for the firm's debts up to the amount of their entire personal wealth.) Many investors prefer investments in which their risk of personal loss is strictly limited; the amount of direct investment in corporations is therefore increased as a result of the limited liability involved.

Limited liability is the legal term indicating that owners of corporations are not responsible for the debts of the firm except for the amount they have invested in shares of ownership.

This is another important advantage, since capital can be raised in the corporation's name without exposing the owners to unlimited liability.

(3) Specialization in ownership means that relatively large amounts of capital can be accumulated because ready transferability of shares renders investment by individuals feasible. Because stock can be traded at the individual owners' discretion, the risk of owning it is reduced. If the firm's performance sags, dissatisfied investors can sell their shares with a minimum of loss.

Many people who have neither the time nor the inclination to bear the burden of management in a firm nevertheless want to invest in firms operated by skilled specialists and to share in the firms' profits. The resources provided by this investment enable the firms to operate on a larger scale. The stockholders primarily bear the changes in value for those resources — both increases and decreases — and thereby partially free the managers from bearing those risks.

(4) Another feature that makes the corporation radically different from other forms of business organization is share transferability — the right of owners to transfer their shares by sale or gift without having to obtain the permission of other shareholders. Most corporations, however, are smaller, and their shares are traded so seldom that they are not even listed on formal stock exchanges. The shares of these firms are traded by independent stockbrokers on the over-the-counter market.

Share transferability is the most economically important feature of the corporation. It allows owners and managers to specialize, increasing efficiency and profitability in the firm. Owners of stock in a corporation do not need to be concerned with the day-to-day operations of the firm. All that owners need to do is observe the changing price of the firm's shares on the

stock market to decide whether the company is being competently managed. If they are dissatisfied with the performance of the company, they can sell their stock. Managers, on the other hand, specialize in reviewing the day-to-day operations of the corporation.

Given these advantages, the corporate form of business organization has grown enormously in the market oriented economies during the last century.

With the large demands for capital that accompany an advanced economy, the proprietorship and partnership have proven unsatisfactory, and the corporation has emerged as the most important organizational form.

A possible disadvantage of the corporation is related to taxes. Corporate profits are subject to double taxation since the company pays taxes on the income it earns and the stockholders must also pay a tax on dividends received

Other disadvantages include the length of time to incorporate and the red tape involved.

1.5. The financial environment

A healthy economy depends heavily on efficient transfer of funds from savers to individuals, businesses, and governments who need capital (fig. 1.6).

A financial institution is a business whose primary activity is buying, selling, or holding financial assets [4].

Most transfers occur through specialized financial institutions which serve as intermediaries between suppliers and users of funds.

It is in the financial markets that entities demanding funds are brought together with those having surplus of funds.

Types of financial Institutions:

1. Depository Institutions

Depository institutions, the first category, are financial institutions whose primary financial liability is deposits in checking accounts. This category includes commercial banks, savings banks, savings and loan associations (S&Ls), and credit unions. The primary financial liability of each is deposits.

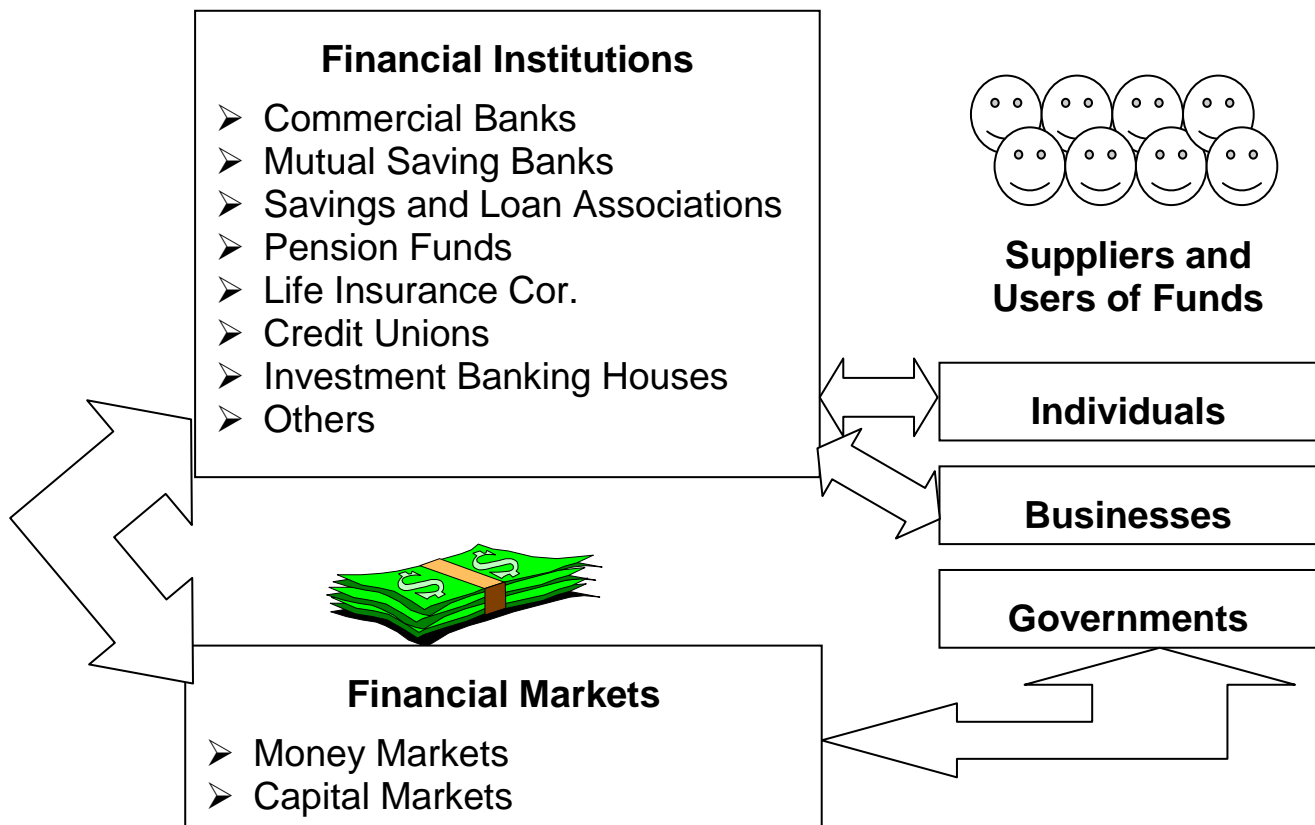


Figure 1.6. **The financial environment**

Commercial banks make money by lending your deposits (primarily in the form of business and commercial loans), charging the borrower a higher interest rate than they pay the depositor. Those loans from banks to borrowers are financial assets of the bank and financial liabilities of the borrower.

Savings banks and S&Ls handled savings accounts and mortgages; they were not allowed to issue checking accounts. Commercial banks were not allowed to hold or sell stock; they did, however, issue checking accounts. These restrictions allowed us to make sharp, clear distinctions among financial institutions. Changes in the laws have eliminated many of these restrictions, blurring the distinctions among the various types of financial institutions. Now all depository institutions can issue checking accounts.

Some differences remain that reflect their history. Commercial banks primary assets are loans and their loans include business loans, mortgages, and consumer loans. Savings banks' and S&Ls' primary assets are the same kind as those of commercial banks, but their loans are primarily mortgage loans.

2. Contractual Intermediaries

The most important **contractual intermediaries** are insurance companies and pension funds. These institutions promise, for a fee, to pay an individual a certain amount of money in the future, either when some event happens (a fire or death) or, in the case of pension funds and some kinds of life insurance, when the individual reaches a certain age or dies. Insurance policies and pensions are a form of individual savings. Contractual intermediaries lend those savings.

3. Investment Intermediaries

Investment intermediaries provide a mechanism through which small savers pool funds to purchase a variety of financial assets rather than just one or two. An example of how pooling works can be seen by considering a mutual fund company, which is one type of investment intermediary.

A mutual fund enables a small saver to diversify (spread out) his or her savings (for a fee, of course). Savers buy shares in the mutual fund which, in turn, holds stocks or bonds of many different companies. When a fund holds many different companies' shares or bonds, it spreads the risk so a saver won't lose everything if one company goes broke.

This is called **diversification**— spreading the risks by holding many different types of financial assets.

A finance company is another type of investment intermediary. Finance companies make loans to individuals and businesses, as do banks, but instead of holding deposits, as banks do, finance companies borrow the money they lend. They borrow from individuals by selling them bonds and commercial paper.

Finance companies charge borrowers higher interest than banks do in part because their cost of funds (the interest rate they pay to depositors) is higher than banks' cost of funds. (The interest rate banks pay on savings and checking accounts is the cost of their funds.) As was the case with depository institutions, a finance company's profit reflects the difference between the interest rate it charges on its loans and the interest rate it pays for the funds it borrows.

4. Financial Brokers

Financial brokers are of two main types: investment banks and brokerage houses.

Investment banks assist companies in selling financial assets such as stocks and bonds. They provide advice, expertise, and the sales force to sell the stocks or bonds. They handle such things as *mergers* and *takeovers* of companies.

A merger occurs when two or more companies join to form one new company.

A takeover occurs when one company buys out another company.

Investment banks do not hold individuals' deposits and do not make loans to consumers. They are nonetheless financial institutions because they assist others in buying and selling financial assets.

Brokerage houses assist individuals in selling previously issued financial assets. Brokerage houses create a secondary market in financial assets, as we'll see shortly.

A financial market is a market where financial assets and financial liabilities are bought and sold. The stock market, the bond market, and bank activities are all examples of financial markets.

Financial institutions buy and sell financial assets in financial markets. When individuals want to sell, they call their broker and their broker calls potential buyers; when individuals want to buy, the broker calls potential sellers. A market is an institution that brings buyers and sellers together; a **financial market** is an institution that brings buyers and sellers of financial assets together.

There are various types of financial markets:

1. Primary financial market is a market in which newly issued financial assets are sold. These markets transfer savings to borrowers who want to invest (buy real assets). Sellers in this market include *venture capital firms* (which sell part ownerships in new companies) and *investment banks* (which sell new stock and new bonds for existing companies). Where investment banks only assist firms in selling their stock venture capital firms often are partnerships that invest their own money in return for part ownership of a new firm.

2. Secondary financial market is a market in which previously issued financial assets can be bought and sold. Financial markets provide a mechanism through which the financial manager may obtain funds from a wide range of sources, including financial institutions.

The financial markets are composed of **money markets** and **capital markets**.

Money markets are the markets for short-term (less than one year) debt securities.

Examples of money market securities include Treasury bills, bankers' acceptances, commercial paper, and negotiable certificates of deposit issued by government, business, and financial institutions.

Capital markets are the markets for long-term debt and corporate stock.

In addition, securities are traded through thousands of brokers and dealers on the over-the-counter market, a term used to denote all buying and selling activities that do not take place on an organized stock exchange.

1.6. The tax environment

Most business decisions are affected either directly or indirectly by taxes. Through taxes governments have a profound influence on the behaviour of businesses and their owners.

The corporate tax structure in western countries includes the following:

1. Corporate income taxes
2. Interest and dividend income
3. Interest and dividends paid by a corporation
4. Capital gain
5. Operating loss carryback and carryforward
6. Depreciation

1. Corporate income taxes

A corporation's taxable income is found by deducting all expenses, including depreciation and interest, from revenues.

The taxable income is then subject to a graduated tax structure, called the **marginal tax rate**.

The **average tax rate** is measured by dividing taxes actually paid by taxable income [7].

For small firms, the distinction between the average and marginal tax rates may be important.

2. Interest and dividend income

Interest income is taxed as ordinary income at the regular corporate tax rate

Dividends income represents the distribution of earnings by a company whose stock is owned by a corporation.

In order to reduce the effects of double taxation, a certain percentage of such dividends is tax exempt.

The remainder is taxed at the corporate tax rate.

3. Interest and dividends paid by a corporation

Interest paid is a tax deductible expense.

Thus, interest is paid with **before-tax** roubles.

Dividends on stock paid by a firm are not deductible, and are therefore paid with **after-tax roubles**.

This means that the tax system favors debt financing over equity financing.

4. Capital gain

Capital gains are one major form of corporate income.

They result when old assets are sold at prices above the original purchase prices.

Capital losses are deductible only against capital gains.

5. Operating loss carryback and carryforward

If a company has an operating loss, such loss may be applied against income in other years.

The loss can be carried back 3 years and then forward for 15 years.

This means that the firm must first apply the loss against the taxable income in the 3 prior years.

If the loss is not completely absorbed by the profits in these 3 years, it may be carried forward to each of the 15 following years.

6. Depreciation

Depreciation is the systematic allocation of the cost of a capital asset over a period of time for reporting and tax purposes.

Depreciation deductions taken on a firm's tax returns are treated as expense items. Thus they lower taxable income.

The main alternative procedures for depreciating capital assets are the straight-line depreciation method and the accelerated depreciation method.

Most firm with taxable income prefer to use an accelerated depreciation method for tax reporting purposes in order to lower their taxable income figure.

1.7. The role of finance in a changing socio-economic scenario

The second half of twentieth century has been characterized by a remarkable change of the corporate scenario.

Conditions of change and uncertainty have become a permanent feature of the economic environment with a consequent sharpening of the risk-opportunities, strengths-weaknesses equation.

The traditional optimization model for company behaviour we were used to seems to have become obsolete, since it refers to stable economic variables.

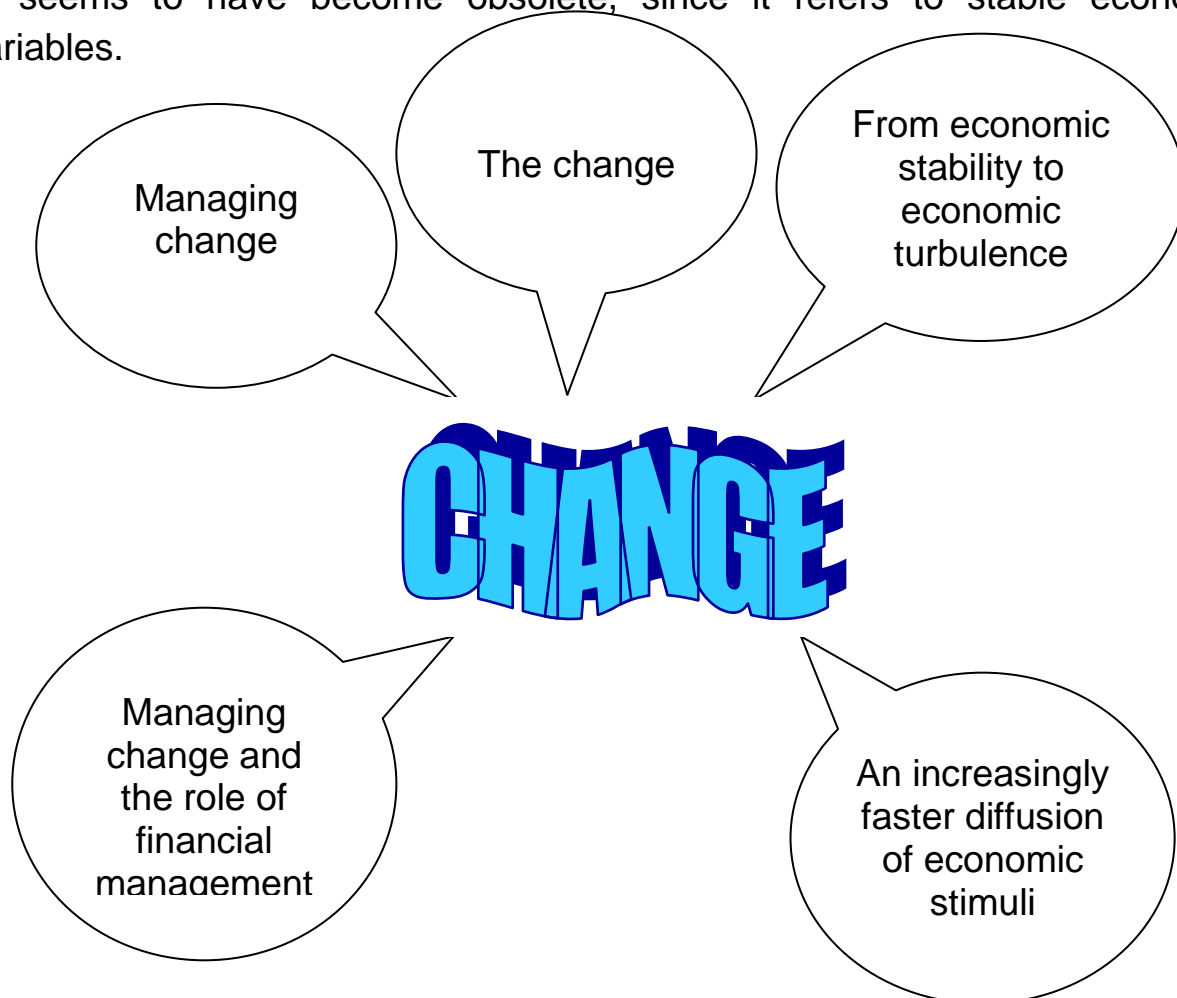


Figure 1.7. The changing socio-economic scenario

The changing points of reference have deemed it necessary to modify company's priorities and behaviour, highlighting the need to identify new models which are more suitable to manage the change.

Change management requires company flexibility and its ability to promptly react to the changing conditions that manifest themselves on the ever-evolving market.

It is not by chance, that finance is playing an increasingly important role in company management, since that function is institutionally called upon to manage three areas which are crucial to change management, i.e. the correct allocation of resources, the procurement of new financial resources, and the management reporting system.

The second half of this century has been characterized by a remarkable change of the corporate scenario.

The process of economic globalization started after the end of World War II manifested itself in a spectacular growth of international trade. Since the late 60's such process has not only involved the "real" economy, e.g. international trade, but also the financial one.

From the beginning of 1970, the growth of international financial markets has been even greater than that recorded in international trade. The fall of the international monetary system in 1971 is the breaking point between two completely different periods. The years between 1950 and 1970 were characterized by substantially stable conditions as far as the main economic variables are concerned (exchange rates, inflation, interest rates).

Companies could therefore count on a wide time horizon in which plan and carry out their activities without having to worry too much about uncertainties arising from the trends of exogenous variables.

The fall down of the Bretton Woods system, oil shocks, reconversion processes aimed at recovering competitiveness, the occurrence of marked inflationary conditions often accompanied by periods of stagnation, the profound changes in exchange rates and high interest rates resulting from the stabilization programs have all been factors contributing to a marked economic-monetary instability.

At the same time, economic cycles have progressively shortened, a phenomenon which has also contributed to these conditions of uncertainty.

Within a particularly unstable economic-monetary environment, the progressive elimination of barriers (especially in Europe) notably contributes

to the speed with which economic stimuli are diffused among nations, thus increasing company vulnerability.

There are no more shelters from national barriers.

If the exchange rate between the currencies of two countries remains stable, and if the cost of factors used by the company of one country increases relative to the other, the producer of the first country can hold his market position provided that he can prove himself capable of eliminating the competitive gap, by working on the efficiency of his production processes.

The economic globalization process, the onset of unstable economic-monetary conditions and the speed, with which economic stimuli are transmitted from one nation to the other, deeply alter the scenario within which companies are operating today.

Conditions of change and uncertainty have become a permanent feature of the economic environment with a consequent sharpening of the risk-opportunities, strengths-weaknesses equation.

The traditional optimization model for company behaviour we were used to seems to have become obsolete, since it refers to stable economic variables.

The changing points of reference have deemed it necessary to modify company's priorities and behaviour, highlighting the need to identify new models which are more suitable to manage the change.

Change is measured by speed, since space and time are the two relevant factors. Change management therefore requires company flexibility and its ability to promptly react to the changing conditions that manifest themselves on the ever-evolving market.

This implies the need to manage two different and often contradictory cycles: turnaround and growth.

In the turnaround cycle, a company must retrench and strive for survival. Thus priority must be given to short-term tactical actions, while attitude toward diversification and opportunities plays a lesser role.

Growth calls for priority to be given to the long-term, favours the change of attitude from reacting to threats to seeking and evaluating opportunities, from defence of weak area to development of strong ones.

To overcome this apparent contradiction, we need to distinguish between tactical and strategic solutions. The first are those aimed at improvement, at defending the company from danger, at recovering an

equilibrium which can guarantee the survival of the company. Strategic answers act on those elements which justify the very existence of the company as an economic entity which finds a reason for existing in the comparative advantage it has in managing real factors (resources, processes, market).

Strategic answers, however, require implementation times which are often incompatible with the increasing dynamics of the market.

Consequently, tactical solutions constitute the necessary precondition upon which the success of the strategic ones is based, since they allow the company to survive while awaiting the effects of strategic answers to take hold.

We have highlighted how flexible and timely reactions constitute two basic fundamentals that must characterize change management.

Renewed attention to the problem of resources management is essential to implementing this new company behaviour.

It is not by chance, that finance has played an increasingly important role in company management, since that function has been institutionally called upon to manage the phenomena which are crucial to change management.

A typical task of the financial function is to ensure correct allocation of resources with respect to an adequate economic/financial balance within the company.

The financial function is also responsible for management reporting, the central nervous system through which operating results are transmitted to and promptly checked by top management so that critical areas as well as opportunities that might arise can be identified.

To the above mentioned factors we could add the procurement of new financial resources, by taking advantage of the opportunities offered by the market.

The converging results of these three phenomena will ensure that the company has the resources needed to cope with the problems arising from change management, either by controlling the correct management of resources or by resorting to the market.

Control questions:

1. The mission of the firm.
2. The issue of risk-return trade-off.
3. The role of financial management in achieving corporate goals.
4. The environmental constraints that affect financial performance.
5. The settings of a firm's financial management.
6. Profit maximization as the goal of financial management
7. Management versus shareholders
8. The social responsibility of the firm
9. The decision functions of financial management
10. Organization of the financial management function

Unit 2. Fundamentals of business accounting and finance

- 2.1. Fundamental of business accounting and finance
- 2.2. Working capital in action

2.1. Fundamental of business accounting and finance

It is seldom appreciated by non-financial managers that their actions will inevitably have a financial implication.

Thus a failure to devote adequate and continuous attention to the financial consequences of their actions may result in losing the profit opportunities embodied in attractive investment projects.

To understand business finance, two things must be clear:

1. How money moves in any business
2. How information evolves from the questions raised by those concerned with business investment - investors and managers.

In order to illustrate the money movements in a business, we will use a business model (fig. 2.2).

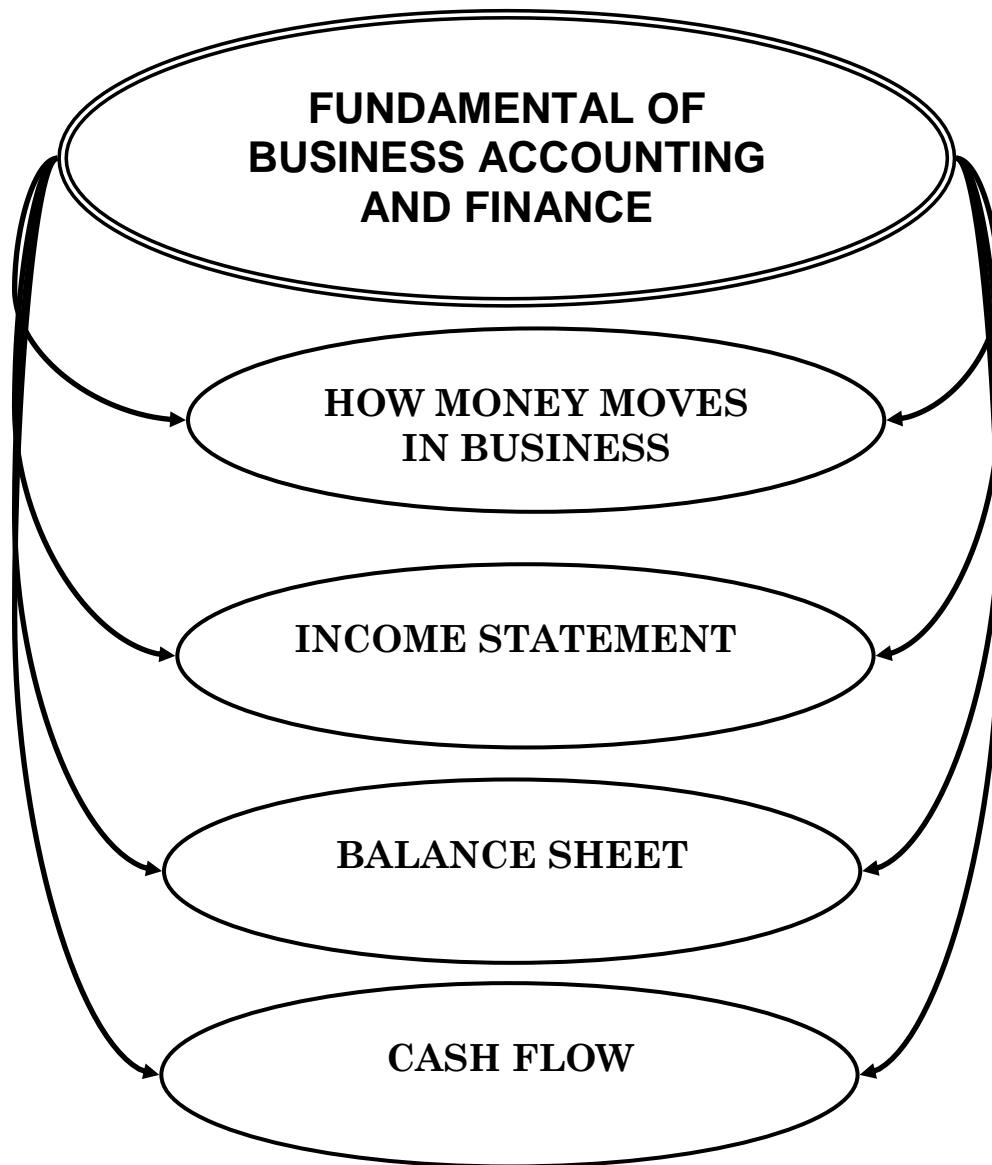


Figure. 2.1. **Fundamental of business accounting and finance**

The model illustrates that every business starts with **capital** (Circle 1) and that this is introduced into the business as **cash** (Circle 2). This in turn is invested either into items which are:

1. not intended for resale (Circle 3), the **fixed assets**, also called the capital expenditure or
2. into items intended for resale. These are set out as Circles 4, 5, 6, 7, 8 less 9, and it is these items which go into the investment area termed the **working capital**.

Capital - Circle 1- stands for the sources of money invested in business [6]. These are either the owner's own funds - for example in the case of a

corporation share capital - or funds obtained from lenders - loan capital. The significance of these two sources are:

- In the case of the **owner's capital** the amount invested is not repayable and the rewards - dividends - are only payable when the business's prosperity allows this to happen.

- In the case of **loan capital** the amount invested is repayable at a fixed future point in time, and the reward - the interest as it is known - is payable however the business has prospered.

The cash merry-go-round

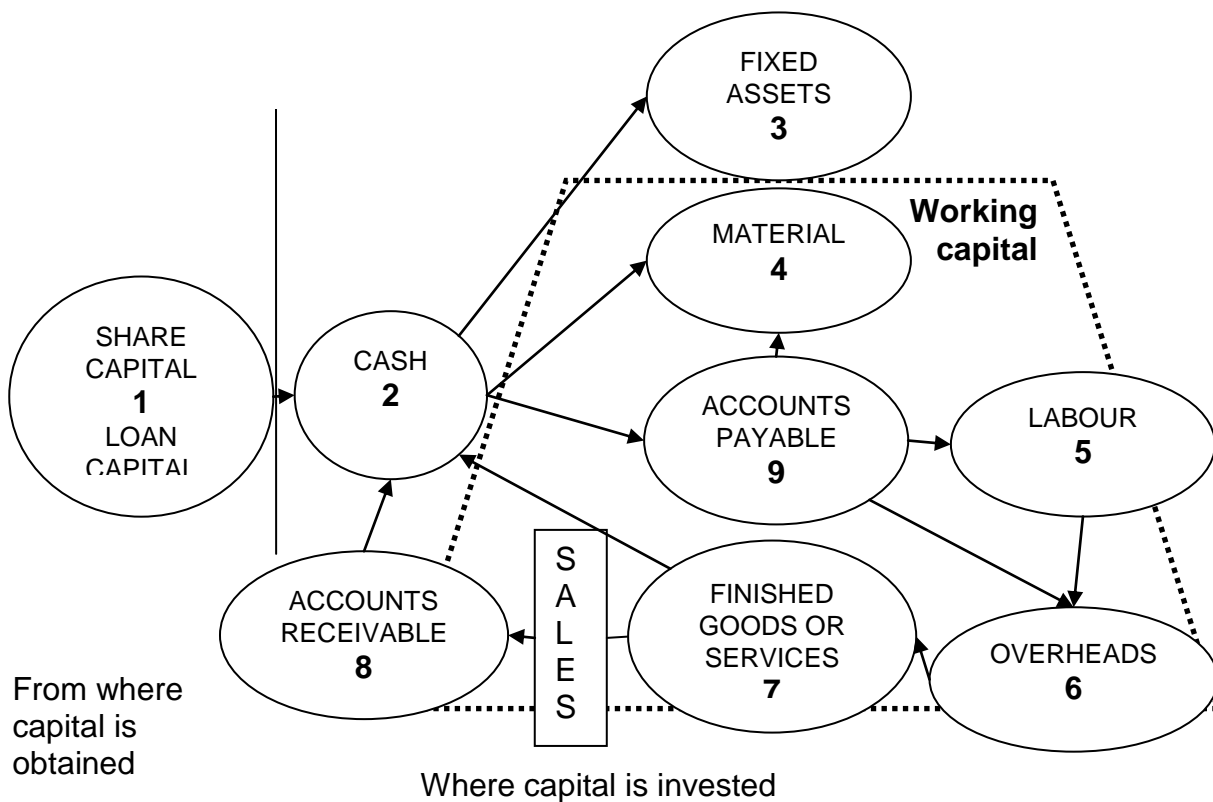


Figure 2.2. **The cash merry-go-round**

From this it can be seen that the more obtained from borrowed sources, the greater the pressure is on the business to pay the necessary interest and eventually to repay the loan itself when it becomes due.

This leads to two questions. Can the business take the pressure? Or should there be more pressure? After all just as business needs to be able to take the pressure, so it may also need at times to have pressure put upon it. It has been found that pressure upon a business created by borrowing, may

make the business, and everyone employed within it, work that little bit harder. The proportion of capital obtained from these two sources is termed the **leverage** of a business. More than 50 per cent of capital obtained from owners is termed low gearing, and more than 50 per cent of the capital obtained from lenders is termed high leverage.

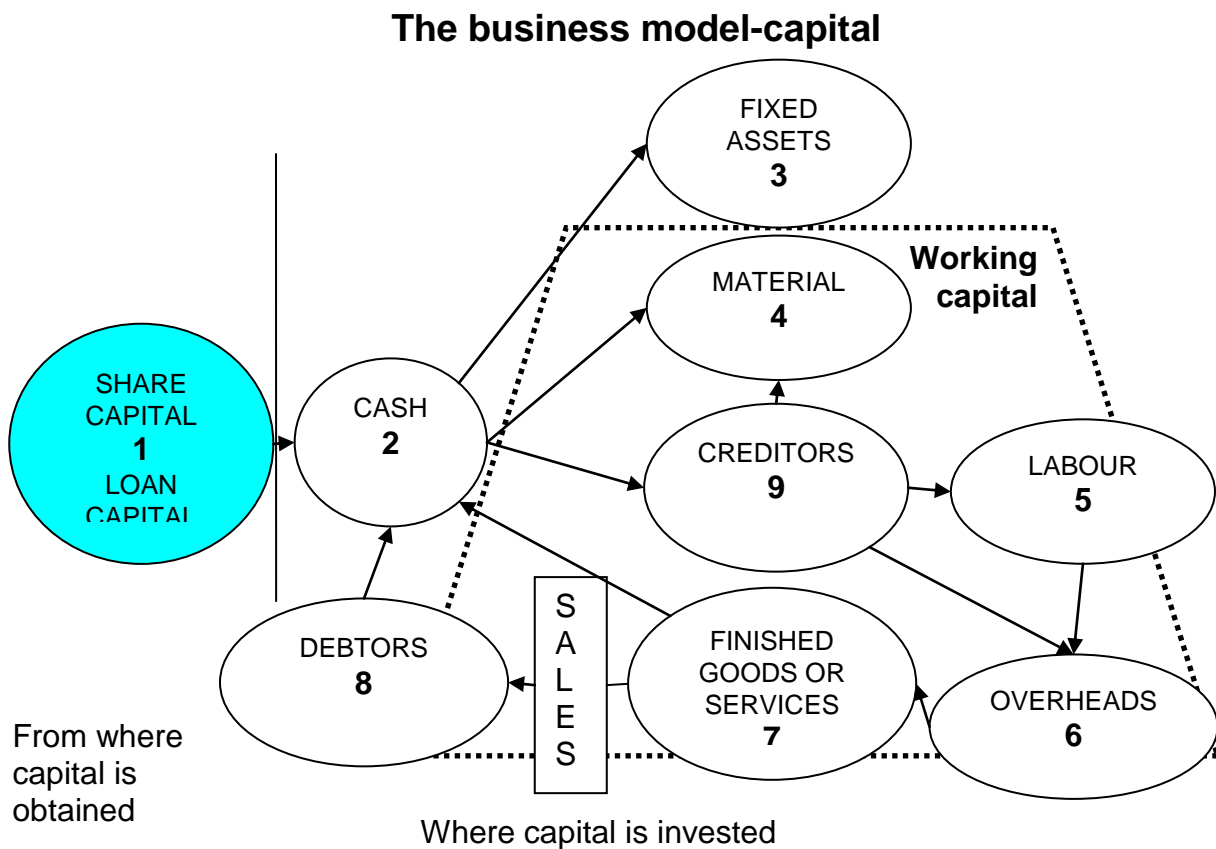


Figure 2.3. **The business model-capital**

Cash (circle 2) is the resource reservoir that is going to be affected by each corporate action.

Such reservoir is going to be increased by inflows resulting from share or loan capital operations, by cash sales, and by collections from the firm's debtors.

On the other hand, it is going to be depleted by outflows resulting from investments, from the production process that ultimately will end with finished goods and services, and from the delayed payments to suppliers.

The business model-cash

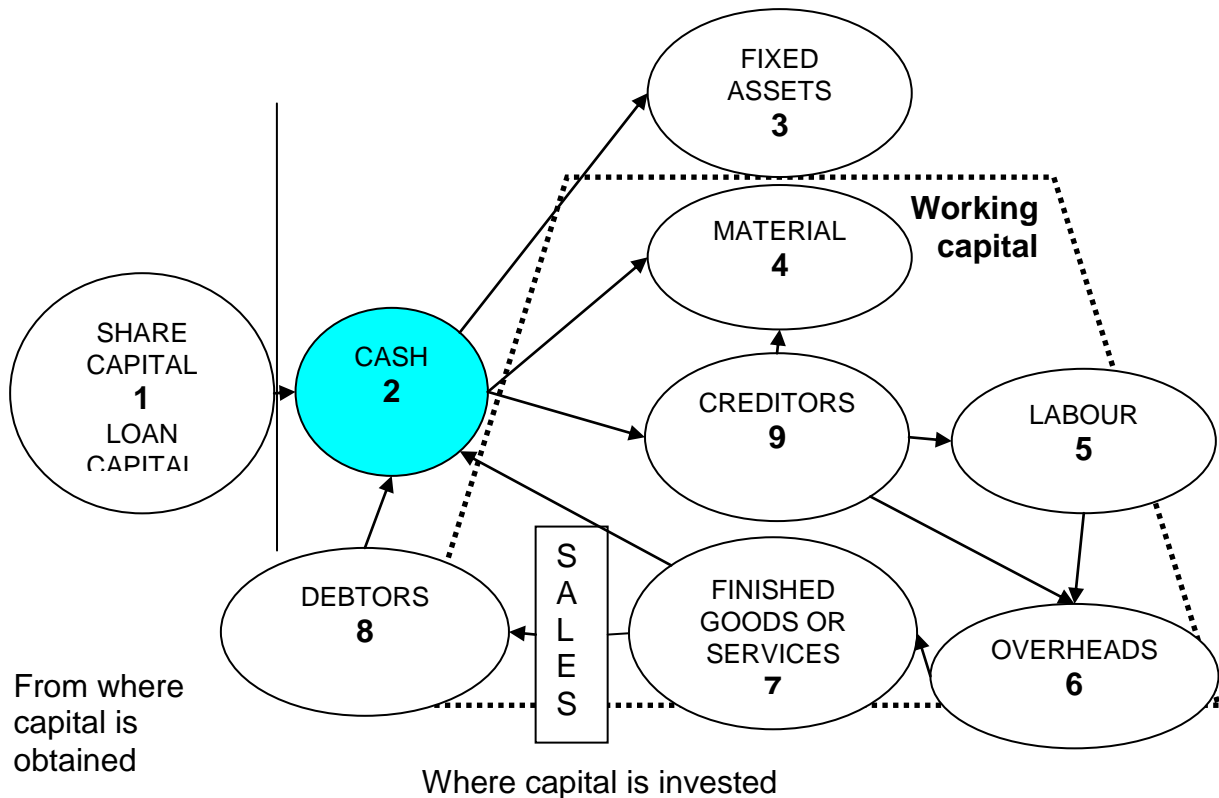


Figure 2.4. The business model-cash

Fixed assets (Circle 3) are items such as land and buildings, motor vehicles, office equipment not bought for resale [7]. Although they are purchased with no intention of resale, they will in many cases, because of their nature, wear out and become obsolete. Consequently two points should be borne in mind if a successful business is to stay successful. It must:

- have the fixed assets needed for the particular business' purpose. After all, once a business has purchased a fixed asset, it is stuck with it!
- be able to replace such investments when they wear out and/or become obsolete.

Working Capital (Circles 4, 5, 6, 7, 8 less 9). These Circles stand for materials, labour and overheads which go into the finished goods or finished services (Circle 7), which the business sells either for cash or to debtors (accounts receivable) Circle 8, the customers who hesitate before they pay.

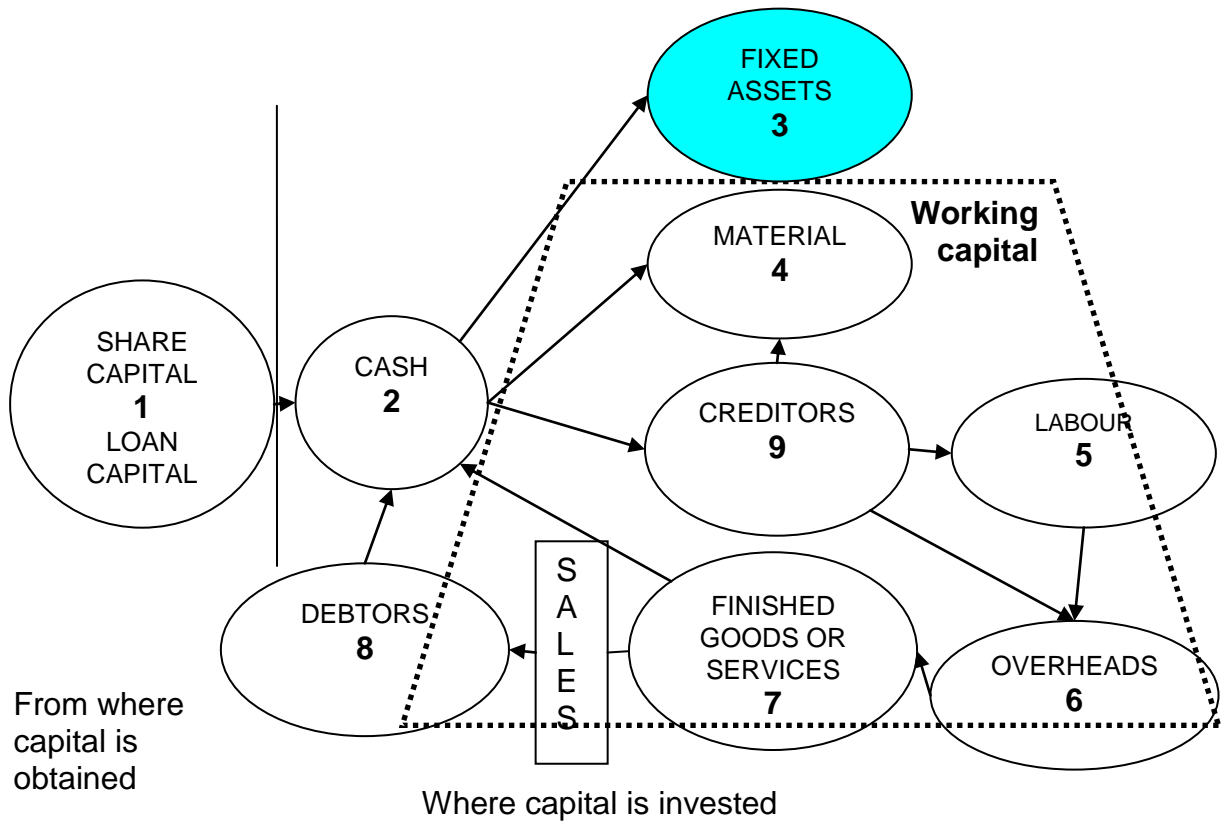


Figure 2.5. The business model-fixed assets

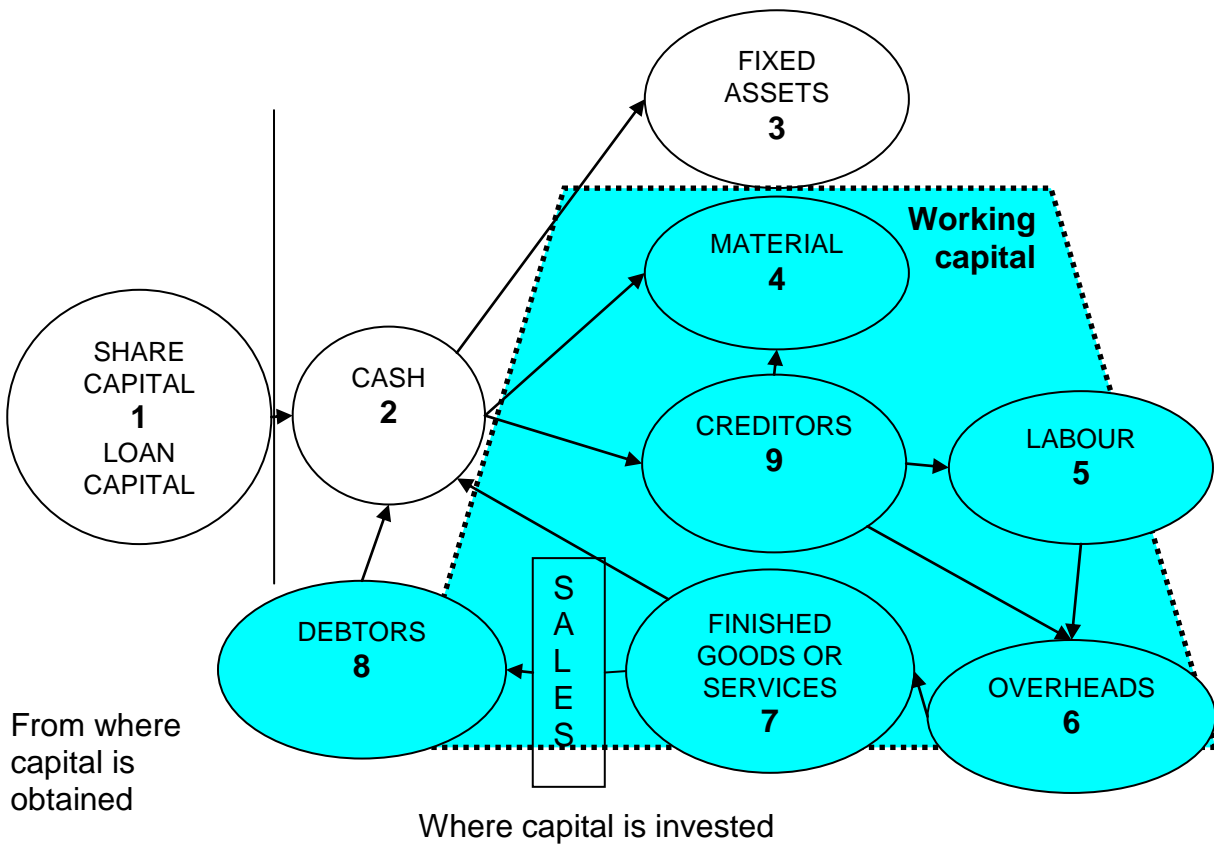


Figure 2.6. The business model-working capital

However, just as a business has customers who do not pay immediately for the services and goods sold to them, so in the same way a business delays payment of what it owes - its bills. This is shown by Circle 9 which is connected in the business model to Circle 4, 5 and 6 and represents the fact that material suppliers are often not paid immediately when the goods are received or again wages are paid at the month or week end and many other expenses like electricity, telephone and advertising are not paid until after their benefits have been received by the business.

Where such delays take place the people or businesses who are awaiting payment are referred to - as shown in Circle 9 as the creditors (accounts payable).

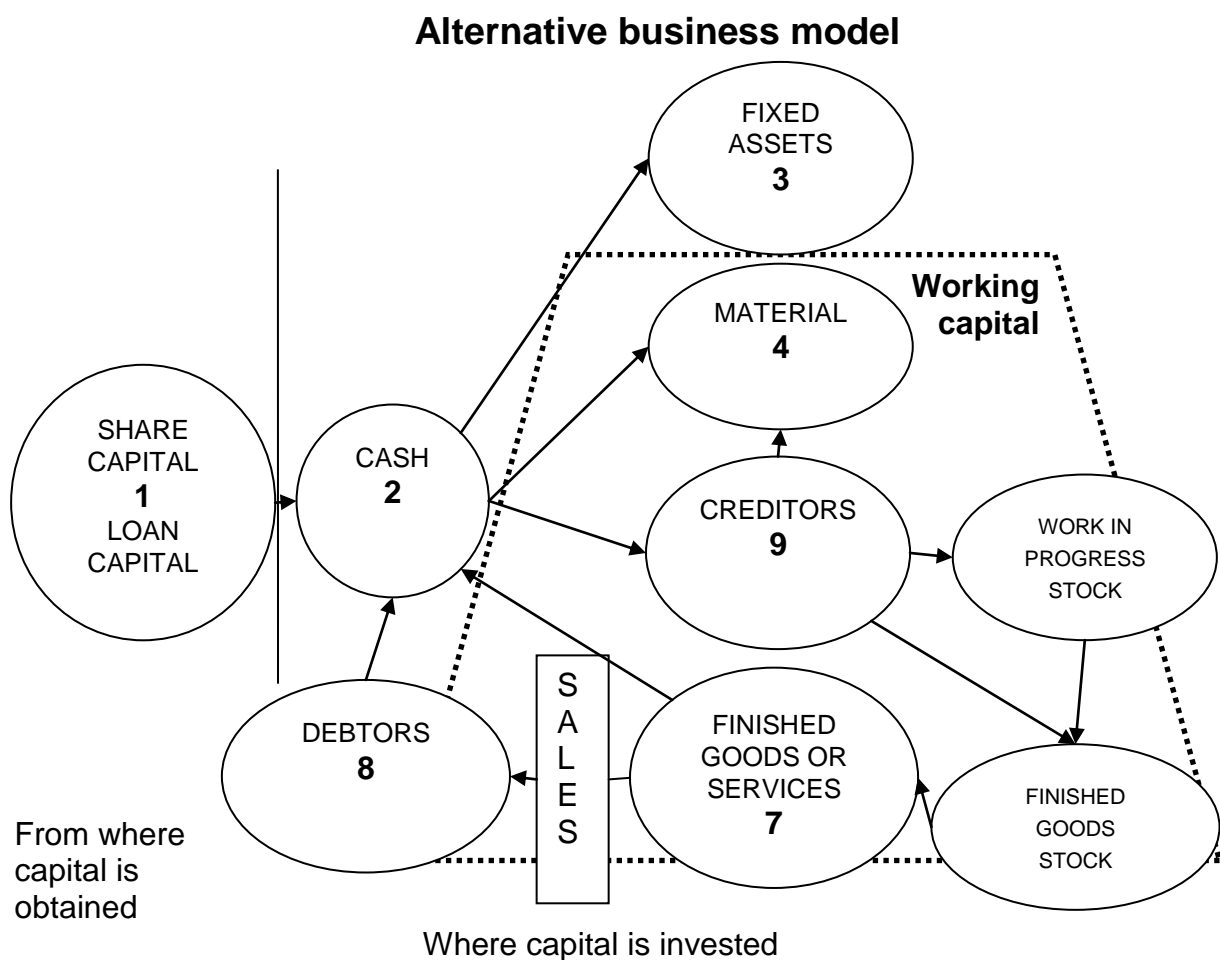


Figure 2.7. Alternative business model

In a way the creditors are helping to finance the materials, labour and overhead cost of the business, and for this reason to calculate the working capital investment it is necessary to deduct Circle 9 from the total of Circles 4, 5, 6, 7 and 8.

2.2. Working capital in action

However it may be clearer in understanding working capital to view it from an **investment point of view**. In the figure the model is set out to show how working capital might be considered in this way.

In this revised model, working capital is seen as four connected investments, each dependent upon what is sold, how it is sold, or to whom it is sold.

These investments are:	
a) Raw material stock	Materials not yet sold
b) Work in progress stock	Made up of materials, labour overheads which have gone
c) Finished goods stock	into the partly finished or finished goods unsold
d) Debtors	The amount owed for the materials, labour and overheads which have gone into the inventory and debtors
e) Less creditors	Amounts the company owes to suppliers for goods and services purchased on credit

WORKING CAPITAL - THE LIQUIDITY QUESTION

Considering the Business Model (fig. 2.2), it can be seen that money is continually moving through Circles 4, 5, 6, 7 and 8 back into cash, and that in the middle, represented by Circle 9, there is a need to pay the creditors - the bills, as and when they become due.

It is this need to pay bills as and when they are due that forms the first vital question that has to be asked when working capital is being considered - the liquidity question, as it is called.

After all if a business cannot pay its bills as and when they become due from the money flowing out of the working capital area, the business will, if its creditors press for payment, have only two courses of action either of which will adversely affect its profitability:

➤ To sell off its fixed assets, which it had no intention of selling and if it does so is likely to do so at a loss, or

➤ To obtain a loan in a hurry, which is never a good thing to have to do! Lenders often recognize the urgency and consequently raise the cost borrowing, the interest rates.

WORKING CAPITAL - THE NEED TO MINIMIZE

However as well as needing liquidity, a business has to be continually aiming at reducing the amount tied up in this area of investment because by minimizing its working capital investment it will maximize the return on its capital invested. To illustrate, this, compare the following situation.

Example

Company A has profits of 60 millions; Company B also has profits of 60 millions (table 2.1).

Table 2.1

Data	COMPANY A	COMPANY B
	in millions	
Fixed assets	400	400
Working capital	200	200
Total capital employed	600	500
Return on capital employed	10%	12%

If you turn to the Alternative Business Model (fig. 2.7), you will see that to minimize working capital it is necessary either to reduce the amounts invested in raw material, work in progress or finished goods stocks and debtors or increase the amounts due to creditors.

This in turn means in practical terms - turning the materials, labour and overheads into something that can be sold - a product or a service- as quickly as possible, and then converting the sale speedily back into cash; whilst at the same time taking the maximum time allowed - without abusing any credit terms agreed - to pay the amounts due to the creditors for materials, labour and overheads.

Outside investments. After a business has been running for any length of time as well as investing in fixed assets and working capital, it may be found useful to place money into outside investments. For instance a company may buy shares in another company, or money may be lent by one business to another [11].

In such cases there is a separate Circle 10 needed to show this additional use of funds.

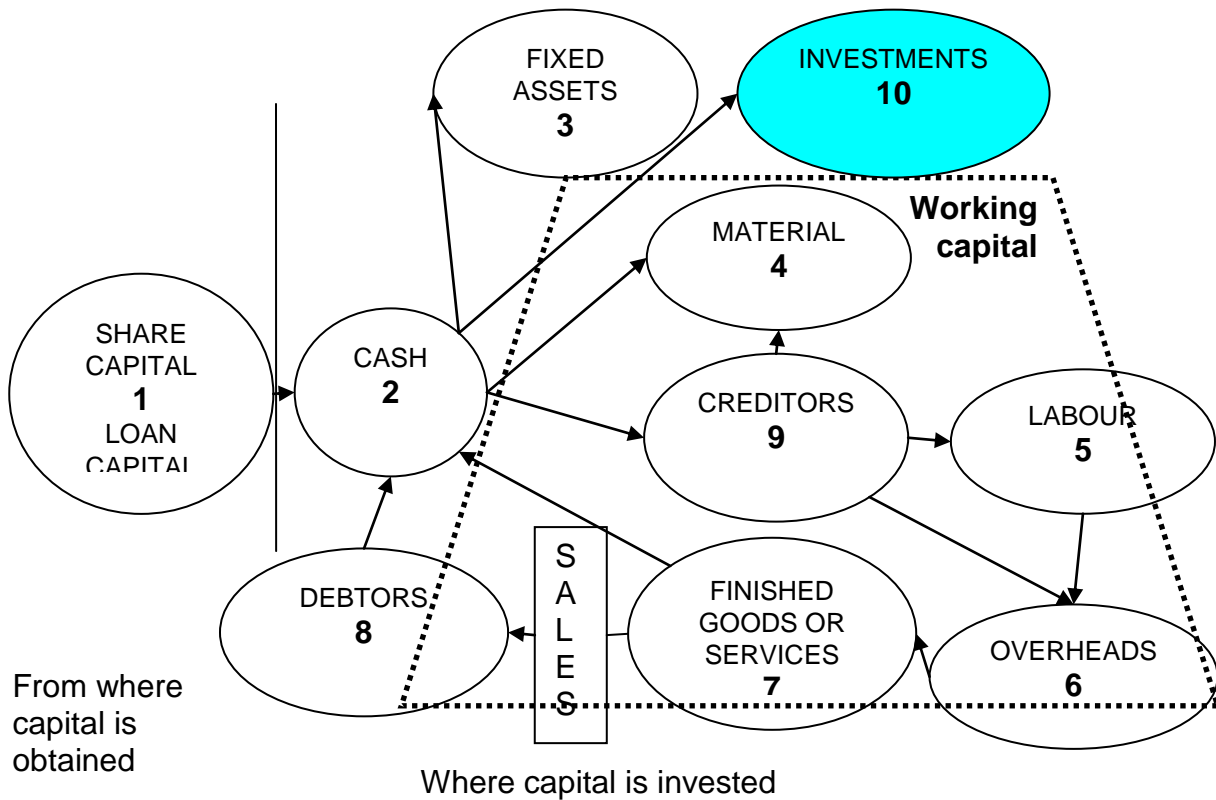


Figure 2.8. **The business model + investments**

The reasons for outside investment are various but include:

- the need to spread risk
- the advantage gained by such investment in a business which supplies a key raw material which will give the investing company useful influence during periods of shortage.

Control questions:

1. Fundamental of business accounting and finance
2. The cash merry-go-round
3. The business model-capital
4. The business model-cash
5. The business model-fixed assets
6. The business model-working capital
7. Alternative business model
8. Working capital in action
9. The business model + investments
10. Working capital

Unit 3. Financial statements and their analysis

3.1. Financial analysis and planning

3.2. Financial statement analysis

3.3. Index analysis

3.1. Financial analysis and planning

Financial analysis is an important tool used to assess the past performance of the firm as well as its prospects for the future (fig. 3.1).

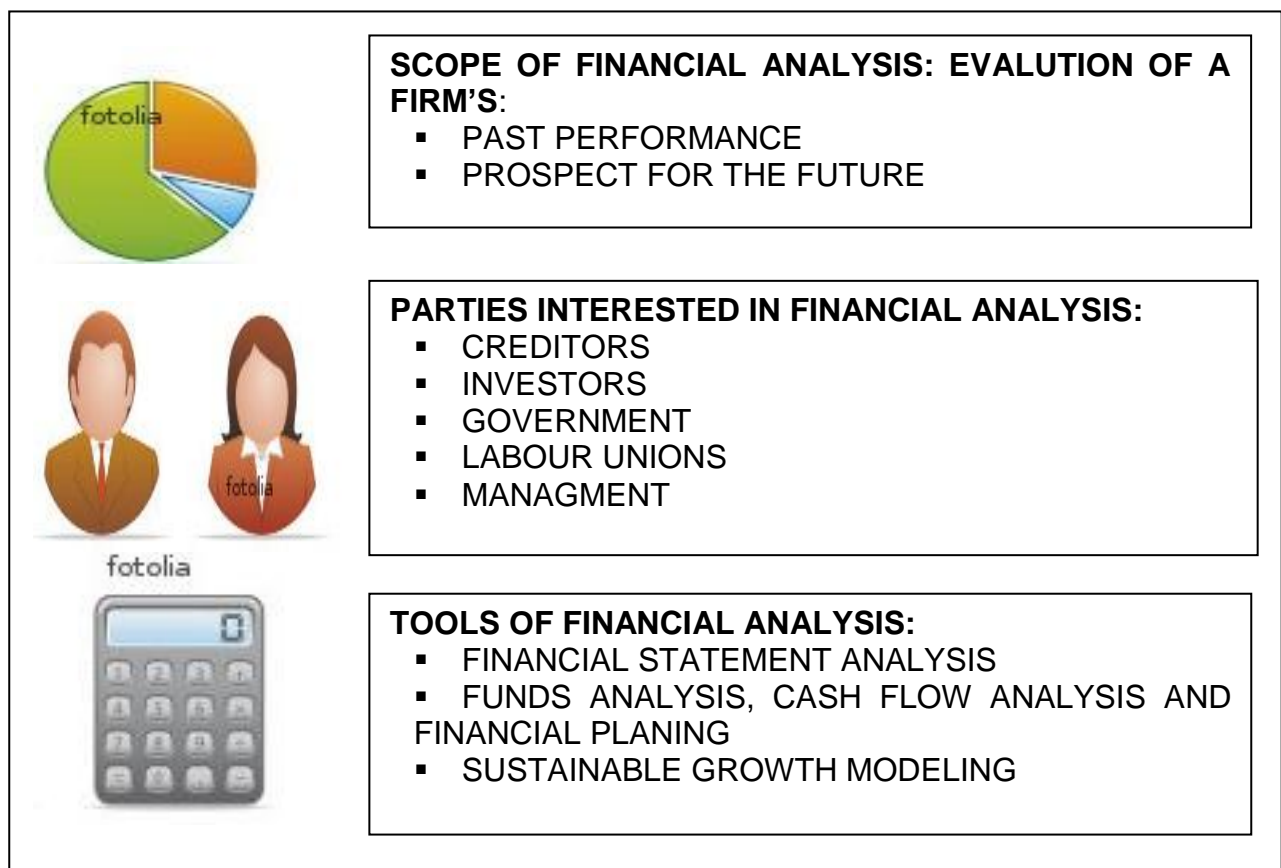


Figure 3.1. **Financial analysis**

The type of analysis varies according to the specific interest of the parties involved.

Trade **creditors** are primarily interested in the liquidity of the firm, whereas bondholders are more interested in the cash flow ability of the firm to service debt.

Investors in a company's stock are principally concerned with the stability of present and expected future earnings, as well as with the firm's financial condition since it may affect the ability of the firm to pay dividends.

Government is interested in the company's performance in order to assess its impact on the economic outlook of the country and to properly plan the economy.

Unions can use financial analysis in order to deal with the company in the process of establishing realistic wages policies

Internally, **management** employs financial analysis for the purpose of financial control and to better provide what capital suppliers seek in financial condition and performance from the firm.

To plan for the future, the financial manager must assess the firm's present financial position and evaluate opportunities in relation to this current position.

With respect to internal control, the financial manager is particularly concerned with the return on investment provided by the various assets of the company, and in the efficiency of assets management.

Finally, to bargain effectively for outside funds, the financial manager needs to be attuned to all aspects of financial analysis that outside suppliers of capital use in evaluating the firm.

Typically financial analysis involves evaluations of the firm's **financial statements** and its **flow of funds**.

Financial statement analysis involves the calculation of various indexes and ratios using the financial statements data in order to determine a meaningful assessment of the company's performance.

Funds flow analysis is an evaluation of the firm's statement of changes in financial position in order to determine the impact that its sources and uses of funds have on the firm's operations and financial condition.

The **cash flow analysis**, using the statement of financial position prepared on the cash basis, enables the assessment of the company's present and future financial strengths and weaknesses

Closely related to flow of funds and cash flow statements are the cash budgets. The cash budget is indispensable to the financial manager in the process of **financial planning**.

Finally, the **sustainable growth modelling** can be used to define the growth rate that is compatible with the company's economic and financial structure.

3.2. Financial statement analysis

Typically financial analysis involves the use of financial statements, the primary source of financial information concerning a company (fig. 3.2).

Financial statements report how capital entrusted to a company by its stockholders and creditors has been used in order to evaluate the potential risks and returns of loaning money to a corporation as creditors or owning shares as stockholders. In addition financial statements permit internal assessment of strengths and weaknesses of the firm [12].

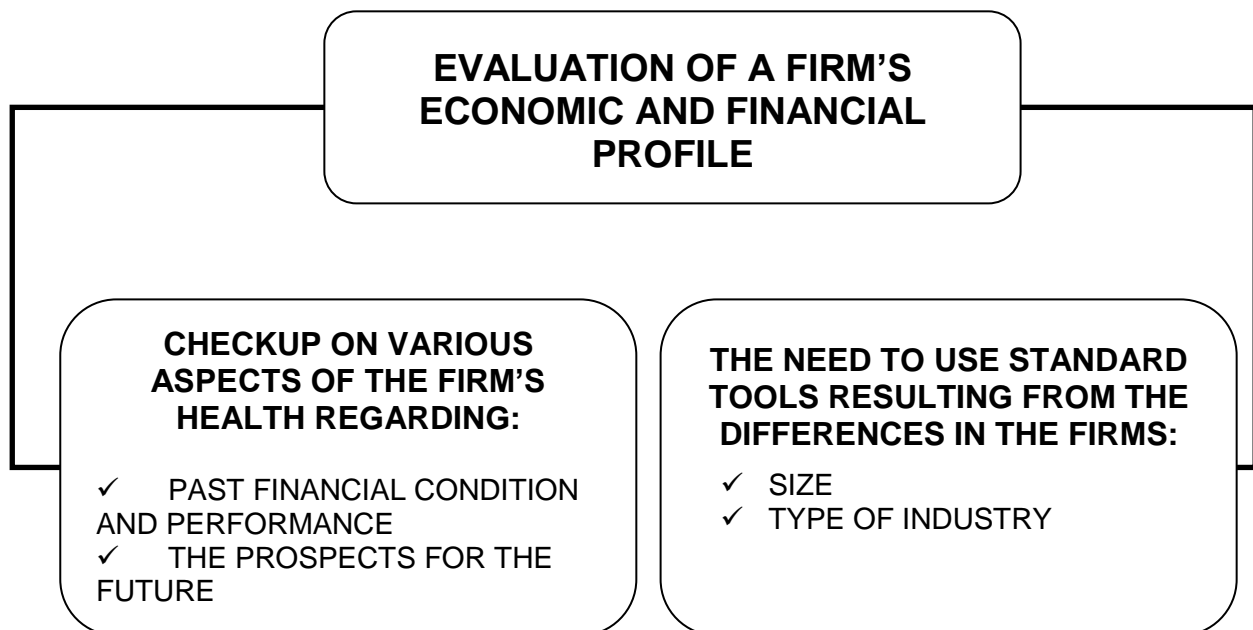


Figure 3.2. **Evaluation of a firm's economic and financial profile**

The complexity of financial statement analysis stems from the fact that no two companies are identical. A large corporation is clearly different from a small or medium company. But how do these companies differ? To answer this question one must analyse the accounting-related data that appear on a company's financial statements using various measuring instruments, including horizontal, vertical and ratio analyses that facilitate this kind of comparative analysis.

Example

Table 3.1

Ratio company			
Comparative the balance sheet as at dec.31			
	2006	2005	2004
ASSETS			
Current assets			
Cash	30.0	35.0	35.0
Accounts receivable	20.0	15.0	10.0
Marketable securities	20.0	15.0	5.0
Inventory	50.0	45.0	50.0
Total current assets	120.0	110.0	100.0
Plant and equipment	100.0	90.0	85.0
Total assets	220.0	200.0	185.0
LIABILITIES			
Current liabilities	55.4	50.0	52.0
Long term liabilities	80.0	75.0	70.0
Total liabilities	135.4	125.0	122.0
STOCKHOLDERS' EQUITY			
Common stock, @10 par value, 4.500 shares	45.0	45.0	45.0
Retained earnings	39.6	30.0	18.0
Total stockholders' equity	84.6	75.0	63.0
Total liabilities and stockholders' equity	220.0	200.0	185.0

Table 3.2

Ratio company			
Comparative income statements For the years ended dec. 31			
	2006	2005	2004
Sales	100.0	110.0	50.0
Sales returns and allowances	20.0	8.0	3.0
Net sales	80.0	102.0	47.0
Cost of goods sold	50.0	60.0	25.0
Gross profit	30.0	42.0	22.0
Operating expenses			
Selling expenses	11.0	13.0	8.0
General expenses	4.0	7.0	4.0
Total operating expenses	15.0	20.0	12.0
Income from operations	15.0	22.0	10.0
Non-operating income	3.0	0.0	1.0
Income before interest expense and taxes	18.0	22.0	11.0
Interest expense	2.0	2.0	1.0
Income before taxes	16.0	20.0	10.0
Income taxes (40% rate)	6.4	8.0	4.0
Net income	9.6	12.0	6.0

3.3. Index analysis

Index analysis uses financial statements to compare one figure of the financial statements to another within the same category (fig. 3.3).

The various accounts of the financial statements can be expressed as a percentage.

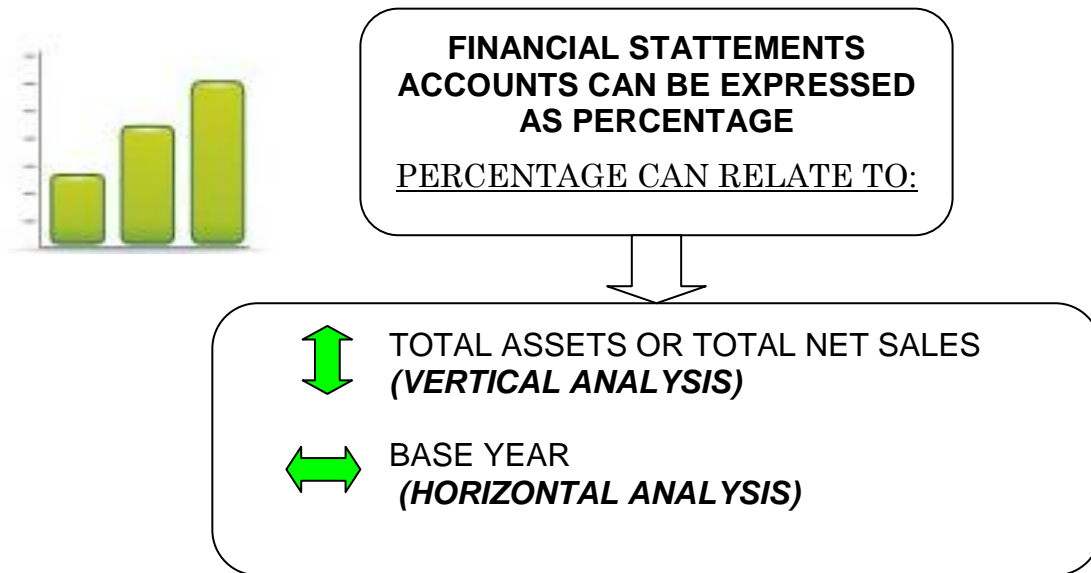


Figure 3.3. **Index analysis**

When the various items are expressed as a percentage of total assets or total net sales, we have **vertical analysis** (or common size analysis).

In **horizontal analysis** (or trend analysis) the various items of the financial statements are expressed as an index relative to a base year.

VERTICAL ANALYSIS

In vertical analysis, a significant item on a financial statement is used as a base value, and all other items on the financial statement are compared to it (fig. 3.4).

In performing vertical analysis for the balance sheet, total assets are assigned 100 percent. Each asset and each liability is expressed as a percentage of total assets.

In the income statement, net sales are given the value of 100 percent and all other accounts are evaluated in comparison to sales.

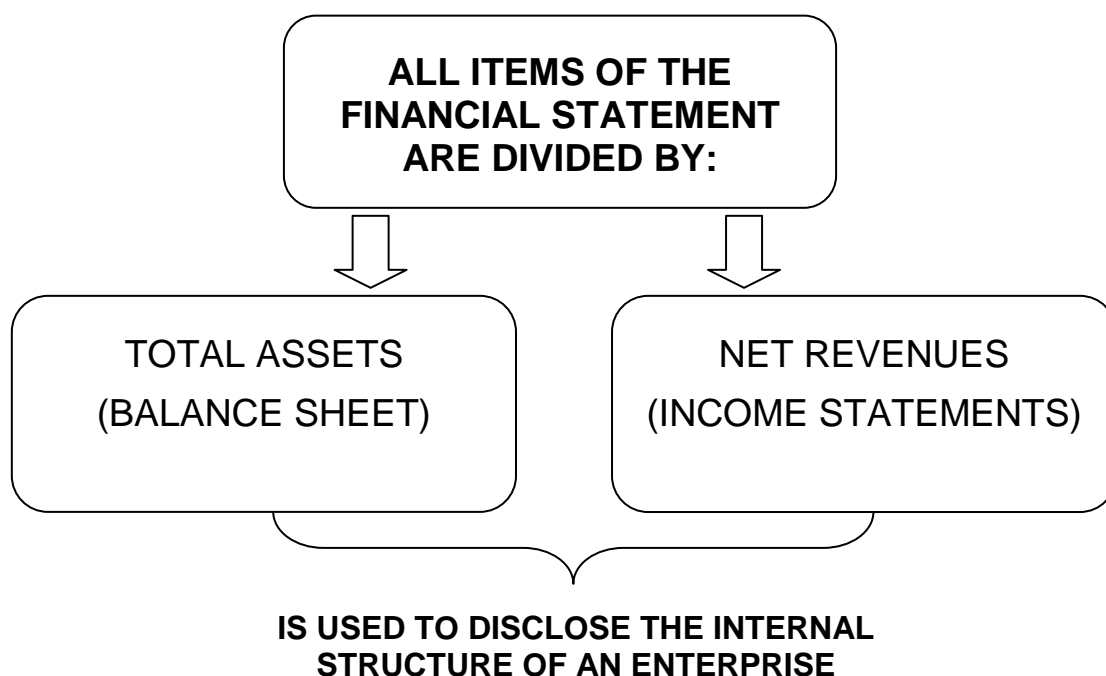


Figure 3.4. Vertical analysis

Vertical analysis is used to disclose the internal structure of an enterprise. It indicates the existing relationship between each income statement account and revenues. On the balance sheet side, it indicates the mix of assets that produces the income and the mix of sources of capital.

Example

Table 3.3

Ratio company

Income statement vertical (common size) analysis for the years ended dec. 31

Data	2006	%	2004	%
Sales	100.0	125.0	110.0	107.8
Sales returns and allowances	20.0	25.0	8.0	7.8
Net sales	80.0	100.0	102.0	100.0
Cost of goods sold	50.0	62.5	60.0	58.8
Gross profit	30.0	37.5	42.0	41.2
Operating expenses				
Selling expenses	11.0	13.8	13.0	12.7
General expenses	4.0	5.0	7.0	6.9
Total operating expenses	15.0	18.8	20.0	19.6
Income from operations	15.0	18.8	22.0	21.6
Non-operating income	3.0	3.8	0.0	0.0
Income before interest expense and taxes	18.0	22.5	22.0	21.6
Interest expense	2.0	2.5	2.0	2.0
Income before taxes	16.0	20.0	20.0	19.6
Income taxes (40% rate)	6.4	8.0	8.0	7.8
Net income	9.6	12.0	12.0	11.8

HORIZONTAL ANALYSIS

Horizontal analysis (or trend analysis) is used to evaluate the trend in the accounts over the year (fig. 3.5).

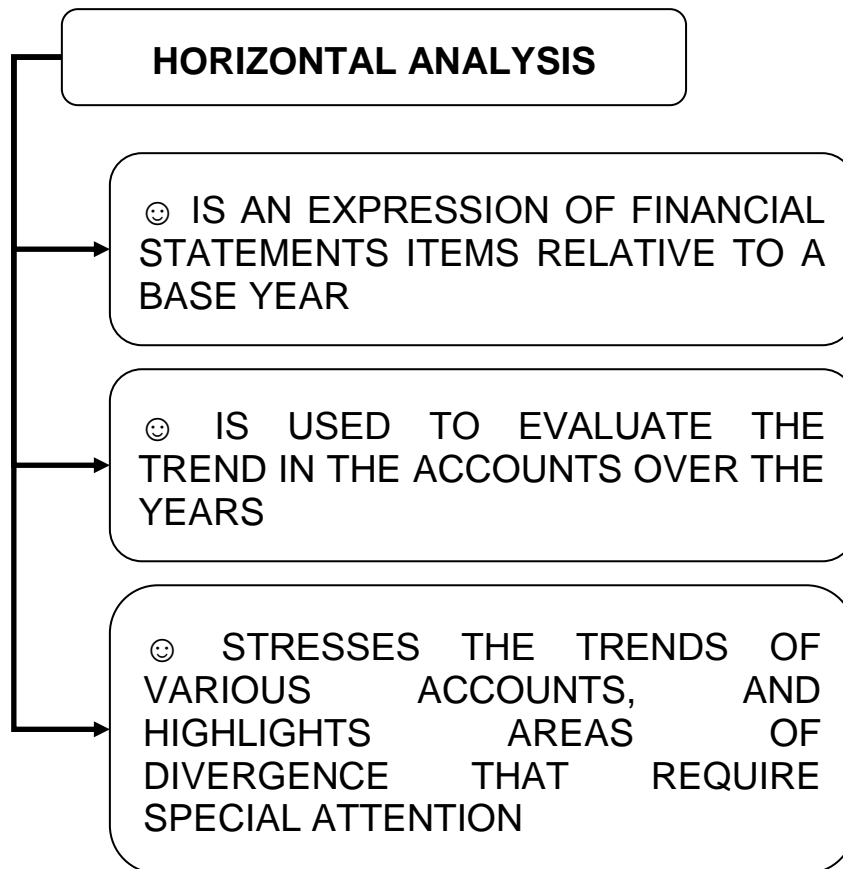


Figure 3.5. **Horizontal analysis**

In this type of analysis the various items of the financial statements are expressed as an index relative to a base year.

Because trend analysis stresses the trends of the various accounts, it is relatively easy to identify area of wide divergence that requires further attention.

FINANCIAL RATIOS

Horizontal and vertical analyses compare one figure to another within the same category.

It is also essential to compare figures from different categories.

This is accomplished through **ratio analysis** that determines the relationship between different items of the financial statements.

There are many ratios that can be used, depending upon what is considered to be an important relationship.

Example

Table 3.4

RATIO COMPANY HORIZONTAL ANALYSIS OF THE BALANCE SHEET (EXPRESSED IN PERCENT) AS AT DEC.31

	2006	2005	2004
ASSETS			
Current assets	120.0	110.0	100.0
Plant and equipment	117.6	105.9	100.0
Total assets	118.9	108.1	100.0
LIABILITIES			
Current liabilities	106.5	96.2	100.0
Long term liabilities	114.3	107.1	100.0
Total liabilities	111.0	102.5	100.0
STOCKHOLDERS' EQUITY			
Common stock, @10 par value, 4.500 shares	100.0	100.0	100.0
Retained earnings	220.0	166.7	100.0
Total stockholders' equity	134.3	119.0	100.0
Total liabilities and stockholders' equity	118.9	108.1	100.0

Financial ratios can be classified into five groups (fig. 3.6, table 3.5):

1. Liquidity ratios
2. Activity ratios
3. Leverage ratios
4. Profitability ratios
5. Market value ratios

Table 3.5

Summary of financial ratios

LIQUIDITY RATIOS	CURRENT RATIO ACID TEST
ACTIVITY RATIOS	<ul style="list-style-type: none"> ➤ Accounts receivable turnover ➤ Average collection period ➤ Inventory turnover ➤ Average age of inventory ➤ Operating cycle ➤ Total asset turnover
LEVERAGE RATIOS	<ul style="list-style-type: none"> ➤ Debt ratio ➤ Debt/Equity ratio ➤ Times interest earned
PROFITABILITY RATIOS	<ul style="list-style-type: none"> ➤ Gross profit margin ➤ Profit margin ➤ Return on total assets (ROA) ➤ Return on equity
MARKET VALUE RATIOS	<ul style="list-style-type: none"> ➤ Earnings per share (EPS) ➤ Price/Value per share

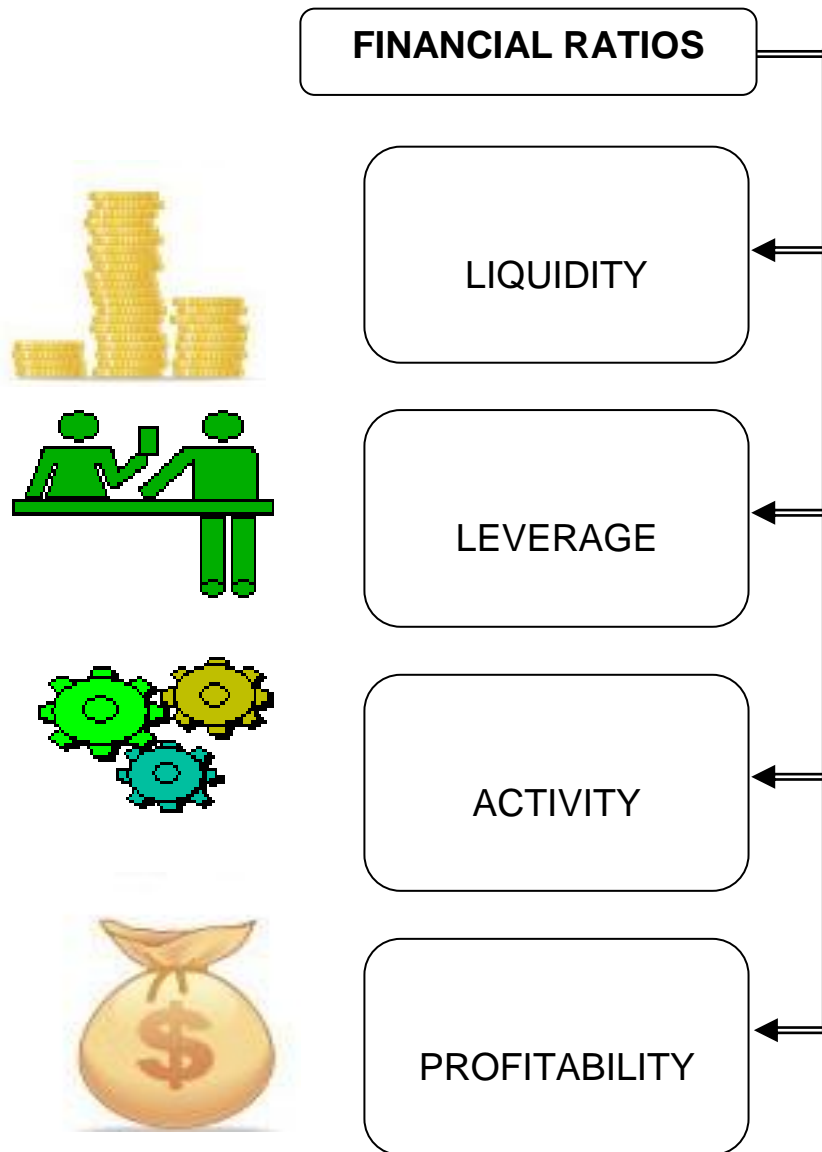


Figure 3.6. **Financial ratios**

LIQUIDITY RATIOS



Liquidity is a company's ability to meet its maturing short- term obligations.

Liquidity is essential to conducting business activity, particularly in times of adversity, such as when operating losses ensue due to an economic recession or a steep rise in the price of raw materials or parts.

Analyzing corporate liquidity is especially important to creditors. If a company has a poor liquidity position, it may be a poor credit risk. We will deal with this issue in unit 7 when we will discuss the credit analysis and selection.

The main liquidity ratios are the Current ratio and the Acid test (or quick ratio) (fig. 3.7).

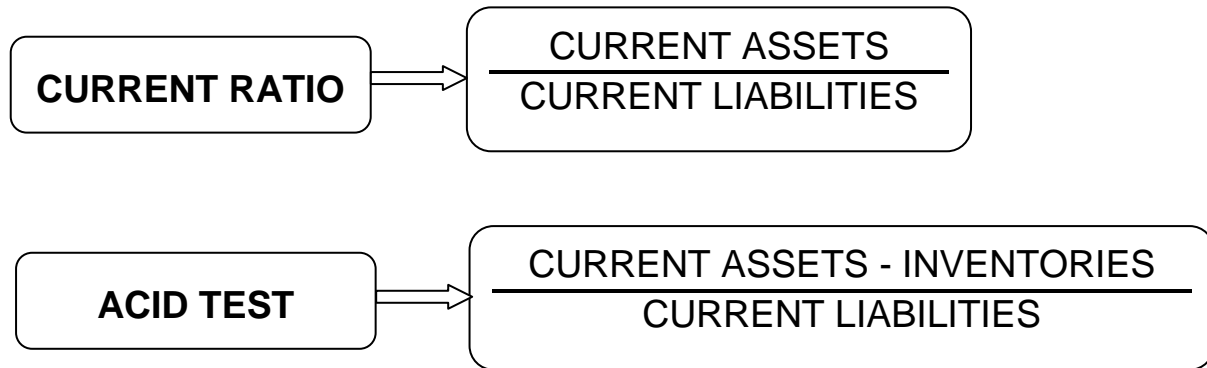


Figure 3.7. **Liquidity ratios**

The **current ratio** is equal to current assets divided by current liabilities. It measures the ability of the firm to meet its current liabilities out of current assets. A high ratio is needed when the firm has difficulty borrowing on a short notice.

A limitation of the current ratio is that it does not consider the liquidity of the current assets components.

The current ratio for the Ratio Company for 2006 is:

$$2,17 = \frac{120.000}{55.400}$$

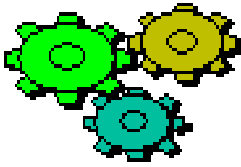
The **acid test**, also known as quick ratio, is a stringent test of liquidity. It measures a firm's ability to meet current liabilities with most liquid assets.

It is found by dividing the most liquid current assets (cash, marketable securities and accounts receivable) by current liabilities. Inventory is not included in current assets because of the length of time needed to convert inventory into cash.

The acid test for the Ratio Company for 2006 is:

$$1,26 = \frac{30.000 + 20.000 + 20.000}{55.400}$$

ACTIVITY RATIOS



Activity ratios are used to determine how quickly various accounts are converted into sales or cash (fig. 3.8).

We have already stressed in Lecture 2 the relevance of cash when we described how money moves in business.

Overall liquidity ratios generally do not give an adequate picture of a company's real liquidity, due to differences in the kinds of current assets and liabilities held by the company.

Thus, it is necessary to evaluate the activity or liquidity of specific current accounts.

Various ratios exist to measure the activity of receivables, inventory and total assets.

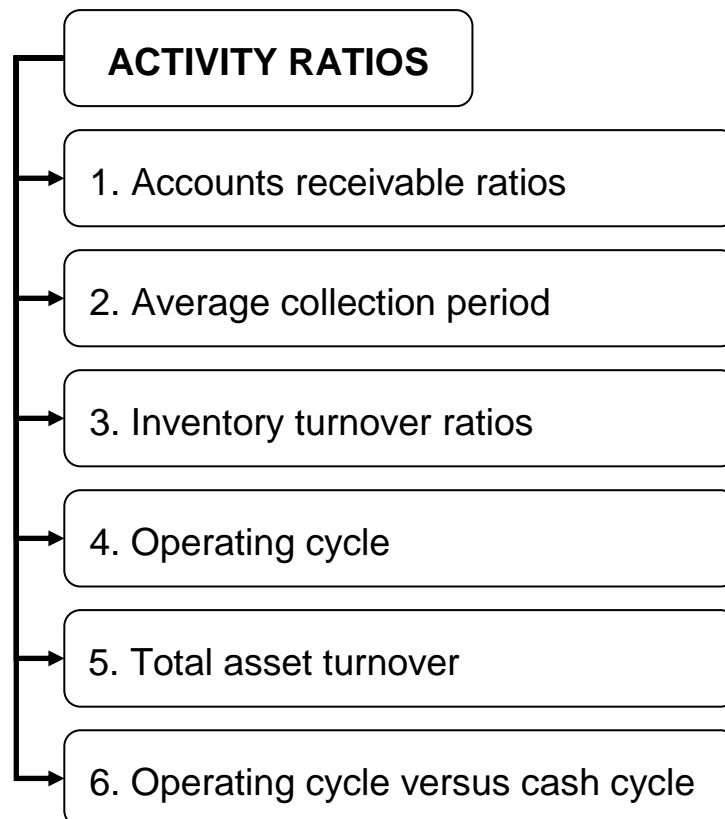


Figure 3.8. **Activity ratios**

1. Accounts receivable ratios

The **accounts receivable turnover** ratio provides an insight into the quality of the firm receivables and how successful the firm is in its collection by indicating the number of times accounts receivable is collected during the year.

It is found by dividing the net credit sales by the average accounts receivable.

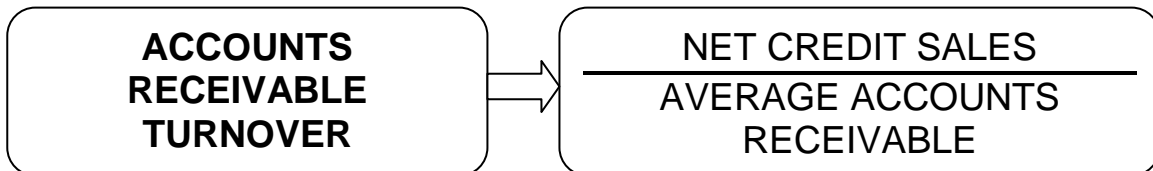


Figure 3.9. **Accounts receivable turnover**

Average accounts receivables typically found by adding beginning and ending inventory and dividing by 2.

In general, the higher the ratio, the better, since the company collecting quickly from its customers and these funds can then be invested.

However, an excessively high ratio may indicate that the firm's credit policy is too stringent.

In the case of the Ratio Company, the average accounts receivable is:

$$\frac{15.000 + 20.000}{2} = 17.500$$

The accounts receivable turnover will then be:

$$\frac{80.000}{17.500} = 4,57 \text{ times}$$

In 2005 the accounts receivable turnover ratio was 8,16. The drop in this ratio in 2006 is serious and indicates a serious problem in collecting from customers.

2. Accounts receivable ratios

The **average collection period** shows the number of days it takes to collect on receivables (fig. 3.10).

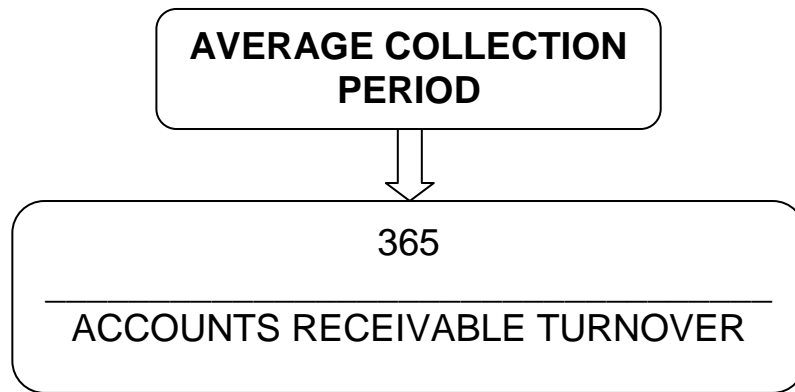


Figure 3.10. **Average collection period**

The Ratio Company's average collection in 2006 is:

$$\frac{365}{4,57} = 79,9days$$

This means that it takes almost 80 days for a sale to be converted into cash.

In 2005 the ratio was 4.47 days. The substantial increase in 2006 indicates that there exists a danger that customers' balances may become uncollectable.

3. Inventory ratios

If a company is holding excess inventory, it means that funds which could be invested elsewhere are being tied up in inventory.

On the other hand, if inventory is too low, the company may lose customers because it has run out of merchandise.

The inventory turnover relates the cost of goods sold to the average inventory (fig. 3.11).

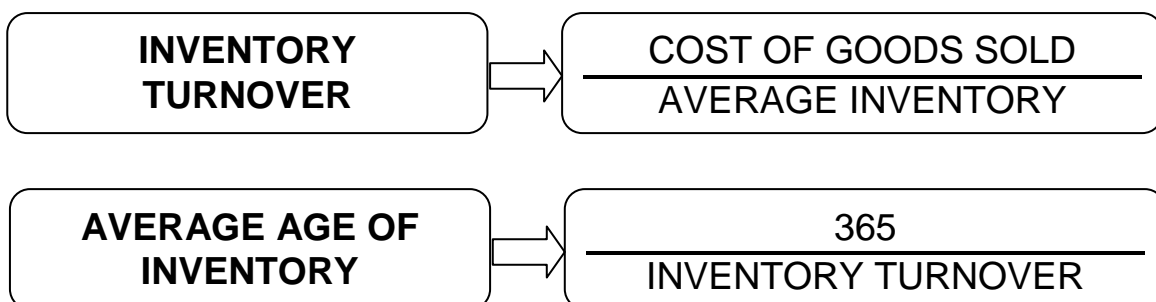


Figure 3.11. **Inventory ratios**

Average inventory is generally found by adding beginning and ending inventory and dividing by 2.

The inventory turnover for the Ratio Company in 2006 is:

$$\frac{50.000}{47.500} = 1,05 \text{ times}$$

This compares with an inventory turnover of 1,26 in 2005. This decline means that the stocking is good.

The average age of inventory tells us how many days, on average, before inventory is turned into accounts receivable through sales.

The average age of inventory in 2006 is:

$$\frac{365}{1,05} = 347,6 \text{ days}$$

These increase in the average age over 2005 (289.7 days) shows a potentially greater risk of obsolescence.

4. Operating cycle

The **operating cycle** measures the length of time from the commitment of cash for purchases until the collection of receivables resulting from sales (fig. 3.12).

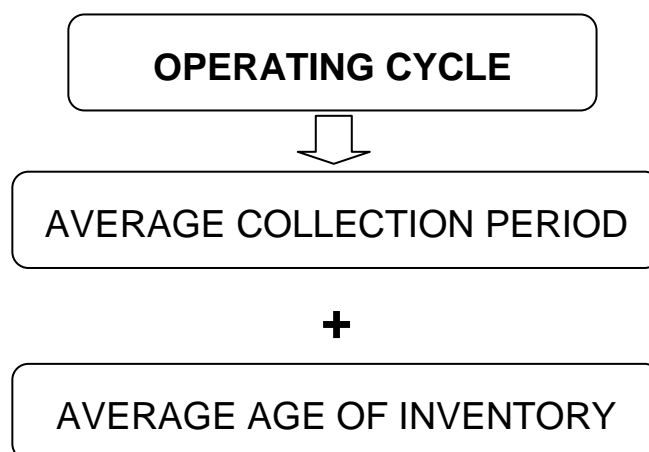


Figure 3.12. **Operating cycle**

A relatively short operating cycle indicates that receivables and inventory are managed effectively, with consequent favourable indications on the firm's liquidity position.

The operating cycle for the Ratio Company is:

$$79.9 \text{ day} + 347.6 \text{ days} = 427.5 \text{ days}$$

The increase in the operating cycle over 2005 (334.4 days) shows that an increased amount of cash is being tied up in no cash assets.

5. Total asset turnover

Total asset turnover is helpful in evaluating a company's ability to use its assets efficiently to generate revenues (fig. 3.13).

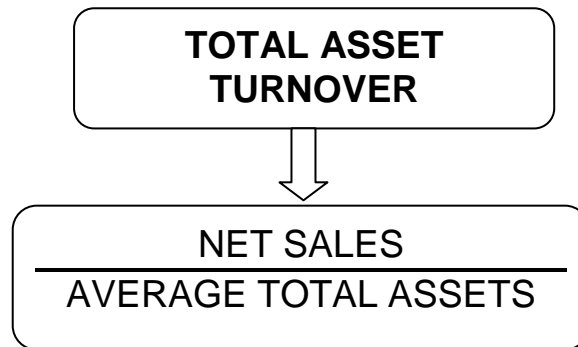


Figure 3.13. **Total asset turnover**

A low ratio should signal the management the need to identify the underlying reasons. For example, is investment in assets excessive when compared with the output being produced?

In 2006, the total asset turnover ratio for the Ratio Company is:

$$\frac{80.000}{210.000} = 0,381$$

In 2005 the ratio was 0,530. The company's use of assets declined significantly and the reasons need to be investigated.

6. Leverage ratios

Leverage ratios show the extent to which the company is financed by debt, and provide an insight of its ability to meet long-term obligations (fig. 3.14).

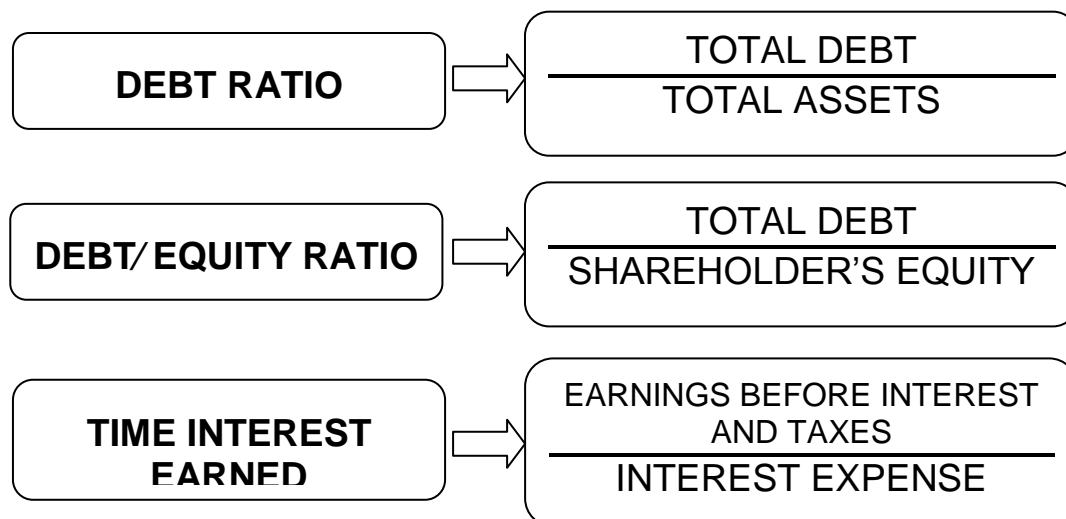


Figure 3.14. **Leverage ratios**

Profitability also plays a role, since in the long run a firm will not be able to meet its obligations unless it is profitable.

The **debt ratio** shows the percentage of invested funds provided by creditors. Creditors prefer a low debt ratio because there is a greater cushion for creditor losses if the firm goes bankrupt. Thus, the higher the ratio, the greater the financial risk for creditors.

For the Ratio Company in 2006 the debt ratio is:

$$\frac{135.400}{220.000} = 0,62$$

In 2005 the ratio was 0,63. There was a slight improvement in the ratio over the year as indicated by the lower degree of debt to total assets.

The **debt/equity** ratio is a significant measure of solvency since a high degree of funds provided by shareholders will make it easier for the company to meet interest charges and principal payment at maturity.

Conversely, excessive debt will result in less financial flexibility since the company will have greater difficulty obtaining funds in a tight money market.

For Ratio Company, the debt/equity ratio in 2006 was 1,60 (135.400/84.600) and 1,67 in 2005.

A desirable debt/equity ratio depends on many variables, including the rates of other companies in the industry, the access for further financing, and the stability of earnings.

The **times interest earned** serves as a measure of the firm's ability to meet its interest payments and thus avoid bankruptcy. The higher the ratio, the greater is the likelihood that the company could cover its interest payments without difficulty.

In 2006, interest of Ratio Company was covered 9 times (18.000/2.000) while in 2005 it was covered 11 times. The decline in the coverage is a negative indicator since fewer earnings are available to meet interest charges.

7. Profitability ratios

An indication of good financial health and how effectively the firm is being managed is the company's ability to earn a satisfactory profit and return on investment.

Investors will be reluctant to do business with a firm that has poor earning potential since the market price of stock and dividend potential will be adversely affected (fig. 3.15).

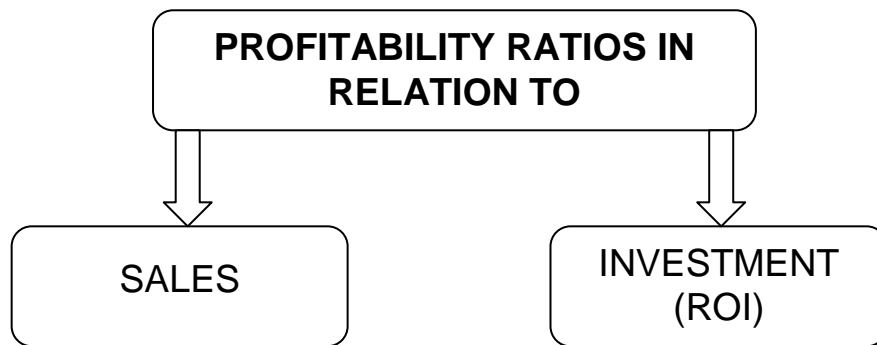


Figure 3.15. Profitability ratios

Creditors will not accept to be involved with companies with poor profitability since the amounts owed to them may not be paid.

There are two types of profitability ratios, those showing **profitability** in relation to **sales** and those showing profitability in relation to **investment** (fig. 3.16).

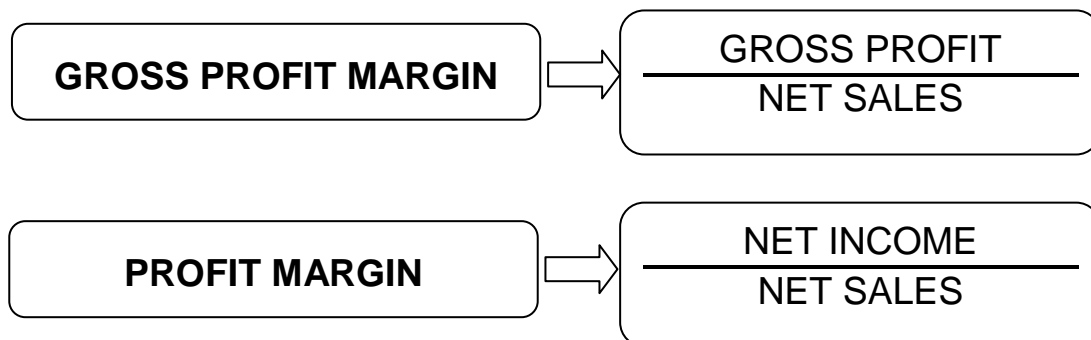


Figure 3.16. Profitability ratios in relation to sales

The **gross profit margin** is a measure of the efficiency of the firm's operations as well as an indication of how products are priced.

It reveals the percentage of each rouble left over after the business has paid for its goods.

The gross profit margin for the Ratio Company in 2006 is:

$$\frac{30.000}{80.000} = 0,38$$

In 2005 the ratio was 0,41. The decline in this ratio indicates the business is earning less gross profit on each sales rouble.

The **profit margin** indicates the profitability generated from revenues. It is an important measure of the firm's operating performance, of its pricing, cost structure and production efficiency.

In 2006 the Ratio Company profit margin is:

$$\frac{9.600}{80.000} = 0,12$$

Return on investment (ROI) is a key, but rough, measure of performance. Although ROI shows the extent to which earnings are achieved on the investment made in the business, the actual value is generally somewhat distorted.

There are basically two ratios that evaluate the return on investment. One is the **return on total assets**, and the other is the **return on owners' equity**.

The **return on total assets (ROA)** reflects the earning power and effective use of all the resources of the company.

For the Ratio Company in 2006 the ROA is:

$$\frac{9.600}{(220.000 + 200.000)/2} = 0,0457$$

In 2005 the return was 0,0623. The productivity of assets in deriving the income deteriorated in 2006.

The ROA can be evaluated from the point of view of the relationship between the profit margin and the return on total assets.

The relationship is:

$$\frac{Net_income}{Average_total_asstes} = \frac{Net_income}{Net_sales} \times \frac{Net_sales}{Average_total_assets}$$

$$ROA = Profit_margin \times Total_assets_turnover$$

As it can be seen from this formula, the ROA can be raised by either increasing the profit margin or the asset turnover.

The latter is in a way industry dependent.

The profit margin may vary greatly within an industry since it is subject to sales, cost controls, and pricing.

The **return on equity (ROE)** measures the rate of return earned on the common stockholders' investment.

In 2006, Ratio Company's return on equity is:

$$\frac{9.600}{(84.600 + 75.000)/2} = 0,1203$$

In 2005 the ROE was 0,17. There has been a significant decrease in the return earned by the owners of the business.

8. Market value ratios

The **market value** ratios relate the firm's stock price to its earnings, book value per share, and dividends. They provide management an indication of investor's assessment of the company's past performance and future prospects (fig. 3.17).

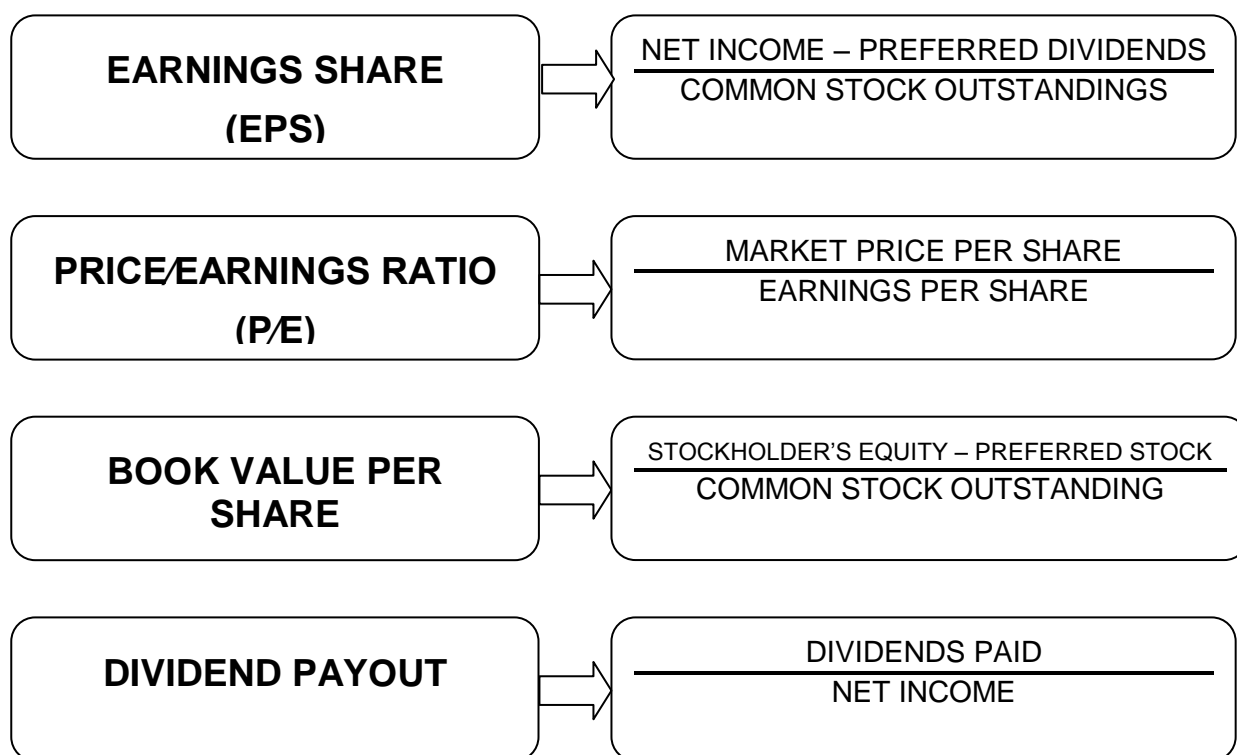


Figure 3.17. Market value ratios

The **Earnings per Share** (EPS) indicates the amount of earnings for each common share held.

It is a useful indicator of the operating performance of the company as well as of the dividends that may be expected.

The EPS for the Ratio Company is:

$$\frac{9.600}{4.500 \text{ shares}} = 2,13$$

In 2005 EPS was 2,67. The decline in earnings per share should be of concern to investors.

The **Price/Earnings Ratio** (P/E) shows how much investors are willing to pay per unit of reported profits.

P/E ratios are higher for firms with high growth prospects and lower for firms for which there is a higher risk of achieving the expected returns.

If we assume that the market price of the Ratio Company share was 20 on Dec. 31, 2006 and 22 on Dec. 31 2005, the P/E ratio in 2006 is:

$$\frac{20}{2,13} = 9,39$$

The ratio in 2005 was 8,24 (22/2,67).

The rise in P/E indicates that the stock market has a favourable opinion of the company.

The **Book value per Share** is net assets available to common stockholders divided by the shares outstanding.

The comparison of book value per share with market price per share provides an indication of how investors regard the firm.

The book value of the Ratio Company in 2006 equals:

$$\frac{84.600 - 0}{4.500} = 18,80$$

If we assume that the stock has a market price of 20 per share, then the Ratio Company's stock is favourably regarded by investors since its market price exceeds book value.

The **Dividend payout** is equal to the amount paid out in dividends divided by income.

A decline in this ratio signals a decline in the value of dividends and would cause concern on the part of stockholders.

Control questions:

1. Financial statement analysis
2. Funds flow analysis
3. Evaluation of a firm's economic and financial profile
4. Index analysis

5. Vertical analysis
6. Horizontal analysis
7. Financial ratios
8. Liquidity ratios
9. Activity ratios
10. Leverage ratios
11. Profitability ratios
12. Market value ratios

MODUL 4: FINANCE AND FINANCIAL ACTIVITY OF AN ENTERPRISE

Unit 4. Tools of financial analysis and planning

- 4.1. The funds flow analysis
- 4.2. Analysis of the funds flow statements
- 4.3. Cash flow forecasting

4.1. The funds flow analysis

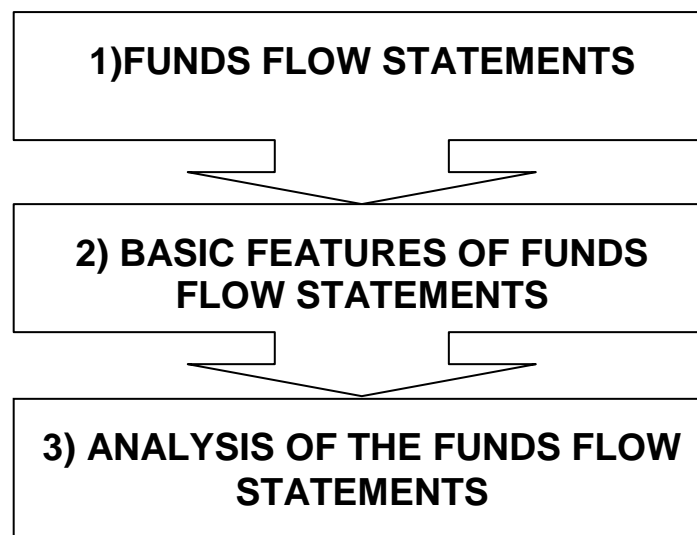


Figure 4.1. The funds flow analysis

1) The **funds flow statement** is a summary of a firm's changes in financial position from one period to another (fig. 4.2).

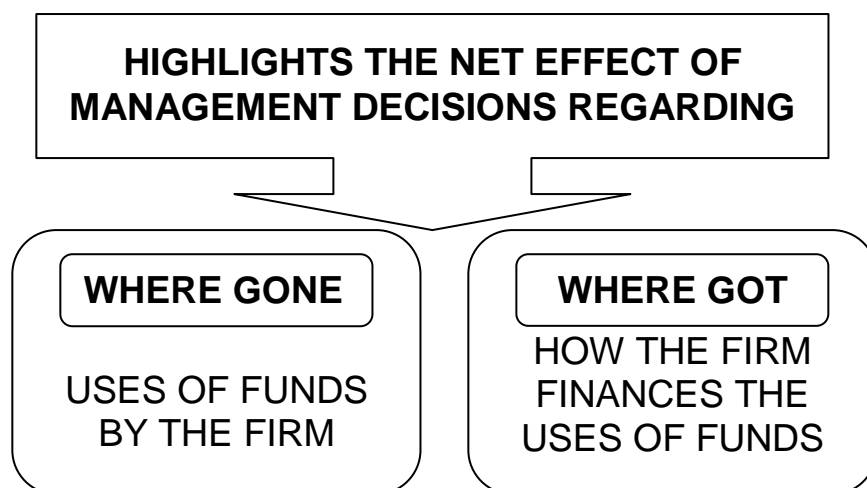


Figure 4.2. **Funds flow statement**

We will first consider the **basic features of the funds flow statement**, and then we will see how this statement can be analyzed in order to assess the company's performance.

Operations of the business enterprise can be viewed either in terms of the movements of real resources into the firm and goods out the firm or, equivalently, in terms of offsetting flows of cash or credit to which the movements of resources and goods give rise.

The **funds flow statement** (often referred to as the **sources and applications of funds**) is a means of portraying the **where-gone** and **where-got** movements of real resources in terms of flow of funds.

It is used by investors and by financial managers to evaluate whether or not a business as lived within or beyond its means.

If the business is living within its means, what is it doing with the funds it is not using in its own business? Is it building up good investments and for what purpose?

If the business is living beyond its means, has this been planned? Is the pressure caused by the increased borrowing more than the business can easily take, or is the pressure exactly what the business needs to keep it up to the mark?

In order to describe the basic features of the funds flow statement, we must define the meaning of the concept of **funds flows** (fig. 4.3).

As we will see, the term funds flow has **alternative definitions** according to the main goal of the analysis.

Finally we will describe the basic steps that must be followed in **preparing the funds flow statement**.

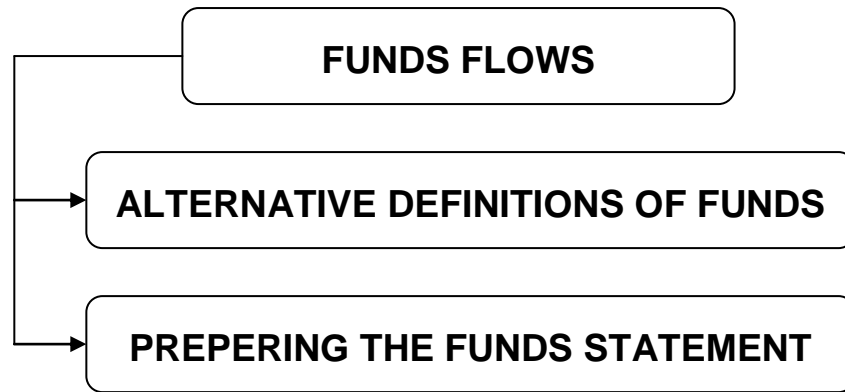


Figure 4.3. **Basic features of funds flow statements**

The balance sheet is a statement of financial position at any moment in time, a snapshot [17].

It lists all of the firm's investments (assets) and claims (liabilities and shareholders' equity).

The flow of funds is the change in a balance sheet item that has occurred between two points in time (fig. 4.4).

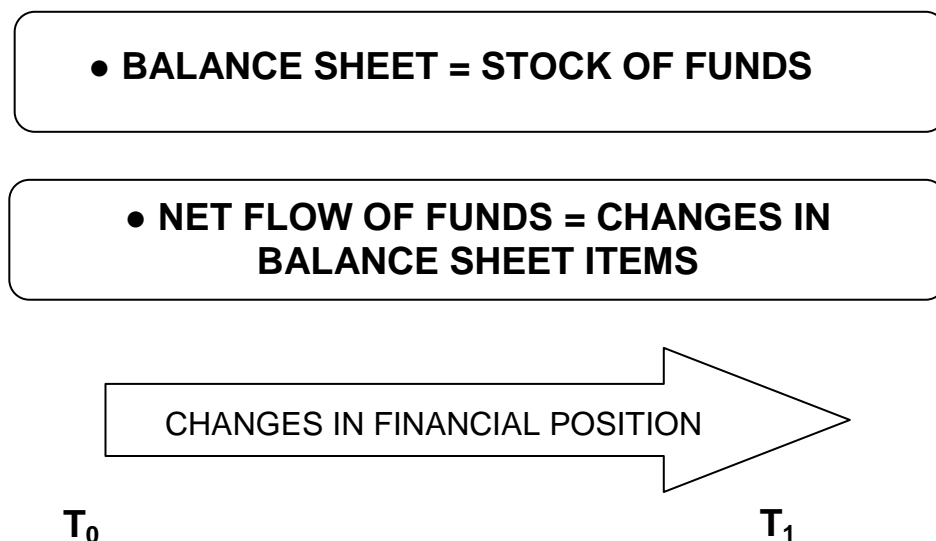


Figure 4.4. **Defining net flow of funds**

2) Basic features of funds flow statements.

Alternative definitions of funds:

- The cash approach
- The investment and claim approach

"Funds" is a very broad term and it comprises different meanings.

The first definition that comes to the mind is to identify "funds" with cash.

The **cash approach** focuses its attention on the transactions that affect the cash accounts.

However, this approach is somewhat limited since not all transactions are carried out on a cash basis.

Transactions that either produce an inflow of cash or postpone an outflow of cash (accounts receivable, for instance) represent sources of funds. Transactions that either require an outflow of cash or postpone an inflow of cash (accounts payable, for instance) represent uses of funds.

The **investments/claims approach** broadens the concept of funds to include all of the firm's investments and claims.

The preparation of the funds flows statement involves a five steps process (fig. 4.5).

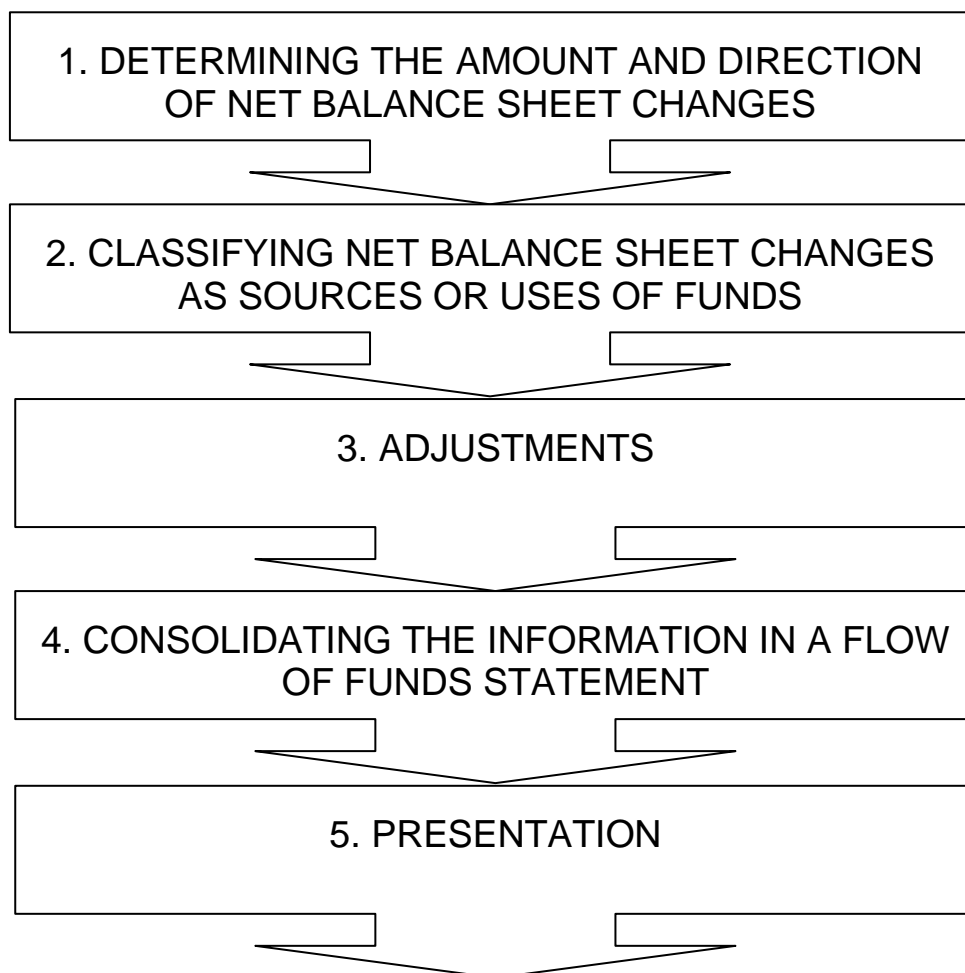


Figure 4.5. **Preparing the funds statements**

Example:

In this process we will consider the case of the "Rams Company" whose balance sheets as at Dec. 31 2006 and 2005 were as follows (table 4.1, 4.2).

Table 4.1

THE RAMS COMPANY
COMPARATIVE BALANCE SHEETS AS AT DEC. 31

	2005	2006
ASSETS		
Current assets		
Cash	35	40
Marketable securities	18	15
Accounts receivable	20	22
Inventory	75	70
Prepaid expenses	4	7
Total current assets	152	154
Noncurrent assets		
Land	125	100
Plant and equipment (net of accumulated depreciation)	220	238
Total noncurrent assets	345	338
Total assets	497	492
LIABILITIES AND STOCK-HOLDERS' EQUITY		
Current liabilities		
Notes payable	14	15
Accounts payable	50	53
Current portion of long-term debt	10	12
Total current liabilities	74	80
Noncurrent liabilities		
Long-term debt	90	108
Total liabilities	164	188
Stockholders' equity		
Common stock	258	240
Retained earnings	75	64
Total stockholders' equity	333	304
Total liabilities and stock-holders equity	497	492

Table 4.2

THE RAMS COMPANY
INCOME STATEMENT FOR THE YEAR ENDED DEC. 31, 2006

Sales	105
Cost of goods sold	62
Gross profit	43
Expenses	
Selling and administrative	15
Depreciation	2
Interest	4
Total expenses	21
Income from operations	22
Gain on the sale of equipment	3
Income before taxes	25
Income taxes	10
Net income	15

Basic features of funds flow statements: the preparation of the funds flows statement involves a five steps process:

1st STEP - DETERMINING THE AMOUNT AND DIRECTION OF NET BALANCE SHEET CHANGES (table 4.3).

Table 4.3

Net balance sheet changes

ASSETS			
Cash and cash equivalents	178	175	+3
Accounts receivable	678	740	-62
Inventories	1329	1235	+94
Etc.			
LIABILITIES			
Bank loans and notes	448	356	+92
Accounts payable	148	136	+12
Etc.			

In the first step one has to compute the change that has occurred in the various accounts between the two points in time, and to note the direction of change:

- an increase in amount = +

- a decrease in amount = -

In our example of the RAMS Company we will have (table 4.4)

Table 4.4

THE RAMS COMPANY
COMPARATIVE BALANCE SHEETS AS AT DEC. 31

Data	2006	2005	Direction and change
ASSETS			
Current assets			
Cash	35	40	- 5
Marketable securities	18	15	+ 3
Accounts receivable	20	22	- 2
Inventory	75	70	+ 5
Prepaid expenses	4	7	- 3
Total current assets	152	154	- 2
Noncurrent assets			
Land	125	100	+ 25
Plant and equipment (net of accumulated depreciation)	220	238	- 18
Total noncurrent assets	345	338	+ 7
Total assets	497	492	+ 5
LIABILITIES AND STOCK-HOLDERS' EQUITY			
Current liabilities			
Notes payable	14	15	- 1
Accounts payable	50	53	- 3
Current portion of long-term debt	10	12	- 2
Total current liabilities	74	80	- 6
Noncurrent liabilities			
Long-term debt	90	108	- 18
Total liabilities	164	188	- 24
Stockholders' equity			
Common stock	258	240	+ 18
Retained earnings	75	64	+ 11
Total stockholders' equity	333	304	+29
Total liabilities and stock-holders equity	497	492	+ 5

2nd STEP - CLASSIFYING NET BALANCE SHEET CHANGES AS SOURCES OR USES OF FUNDS (fig. 4.6).

How do we know if a change is a source or a use? We must look at the direction of change for both assets and liabilities.

Uses of funds: any increase (+) in an asset or any decrease in a liability account (-).

Sources of funds: any decrease (-) in an asset or any increase in a liability account (+).

	ASSETS	LIABILITIES
USES	+	-
SOURCES	-	+

Figure 4.6. **Classifying net balance sheet changes as sources or uses of funds**

We can now further refine our example for the RAMS Company by listing sources and uses of funds (table 4.5).

3rd STEP – ADJUSTMENTS:

- Profits and dividends
- Depreciation.

There are common refinements which financial analysts make in the preparation of the flow of funds. The first is concerned with dividends, and the second with depreciation.

Profits and dividends. One of the most significant funds flows is the amount of net profit (loss) provided by operations. The funds flow statement,

however, only reflects the net change in the earned surplus account, of which net profit (loss) is only one component.

Table 4.5

THE RAMS COMPANY
COMPARATIVE BALANCE SHEETS AS AT DEC. 31

Data	2006	2005	Direction & Change	Source	Use
ASSETS					
Current assets					
Cash	35	40	-	5	5
Marketable securities	18	15	+	3	3
Accounts receivable	20	22	-	2	2
Inventory	75	70	+	5	5
Prepaid expenses	4	7	-	3	3
Total current assets	152	154			
Noncurrent assets					
Land	125	100	+	25	25
Plant and equipment (net of accumulated depreciation)	220	238	-	18	18
Total noncurrent assets	345	338			
Total assets	497	492			
LIABILITIES AND STOCK-HOLDERS' EQUITY					
Current liabilities					
Notes payable	14	15	-	1	1
Accounts payable	50	53	-	3	3
Current portion of long-term debt	10	12	-	2	2
Total current liabilities	74	80			
Noncurrent liabilities					
Long-term debt	90	108	-	18	18
Total liabilities	164	188			
Stockholders' equity					
Common stock	258	240	+	18	18
Retained earnings	75	64	+	11	11
Total stockholders' equity	333	304			
Total liabilities and stockholders equity	497	492	+	5	5
				57	57

Among the factors partially or wholly offsetting profits we most commonly find dividends. Thus the refinement concerning dividends is aimed at providing a separate recognition of profit from operations on the one hand and of dividends paid on the other.

The result is that the net change in earned profits and dividends paid we will be substituted by listing net profit as a source and dividends as a use.

Depreciation. Depreciation is a bookkeeping entry that allocates the cost of assets against income, but does not involve any movement of capital. What we want to know are the funds provided by operations, a figure that is usually not expressed in the income statement. In order to determine this figure we must add back depreciation to net profit [13].

When depreciation is added back in the funds statement as a source, we can remove changes in net fixed assets and to replace it with the gross change in fixed assets:

$$\text{Gross additions to fixed assets} = \text{Increase in net fixed assets} + \text{Depreciation}$$

4th STEP - CONSOLIDATING THE INFORMATION IN A FLOW OF FUNDS STATEMENT

We are now almost ready to consolidate the information in the RAMS Company.

In order to do so, we need take into account some additional information:

- 1) the company sold equipment with a book value of 22 for 25;
- 2) long-term debt of 8 was converted into common stock;
- 3) dividend of 4 was declared and paid.

We also know from the income statement that depreciation in 2006 amounted to 2 (table 4.6).

Funds provided by operations is the first item under the heading Sources of funds.

The net income amount of 15 is taken from the income statement.

Depreciation expense (2) must be added back the net income since the expense does not require the application of funds. It affects only the plant and equipment account in the form of accumulated depreciation.

Table 4.6

RAMS COMPANY
FUNDS FLOW STATEMENT FOR THE YEAR ENDED DEC. 31, 2006

SOURCES OF FUNDS		
Funds provided by operations		
Net income		15
Add: Nonworking capital expenses Depreciation		2
Less: Nonworking capital revenue		
Gain on sale of equipment	-3	
Funds provided by operations		14
Sale of equipment		25
Issuance of common stock		10
Conversion of long-term debt to common stock		8
TOTAL SOURCES OF FUNDS		57
USES OF FUNDS		
Purchase of plant and equipment		6
Declaration of dividends		4
Purchase of land		25
Reclassification of long-term debt to current debt		10
Conversion of long-term debt to common stock		8
Total uses of funds		53
Increase in net working capital		4

The gain on the sale of equipment (3) is subtracted from net income because it represents revenue that does not increase net working capital. However, the proceeds from the sale of equipment are listed as a separate source later on in the statement.

The **net working capital provided by operations** in our example is 14 (15 + 2 - 3)

The proceeds received from the sale of equipment (25) is listed next. Part of the amount is the 3 gain that was deducted earlier from net income.

As indicated in the balance sheet, common stock increased by 18. However, 8 of the increase were due to the conversion of long-term debt to common stock. Therefore, the RAMS Company sold only 10 of additional shares, which is listed next.

The conversion of 8 of long-term debt to equity does not affect net working capital. This is, however, a material, noncurrent transaction that must be disclosed in the statement of changes in financial position. Therefore the 8 conversion is listed under sources of funds. This conversion will be recognized again as a use of net working capital in order to produce a net effect of zero upon net working capital.

The **total of sources** of net working capital is 57.

The uses of funds begin with the purchase of plant and equipment in the amount of 6. This amount is determined by finding in the balance sheet that the plant and equipment account has a net decrease of 18. Of that decrease 2 is attributable to accumulated depreciation.

The sale of equipment having a book value of 22 further decreases the plant and equipment account, making the decrease thus far 24. Since the net decrease in the account is 18, there must have been an additional purchase of plant and equipment in the amount of 6.

The declaration of cash dividends (4) is a use of funds since it involves an increase in the current liability account Cash Dividends Payable.

As indicated in the balance sheet, land increased by 25, which represents an additional purchase of property.

The balance sheet also shows that long-term debt decreases by 18. Since only 8 was converted into equity, the remaining 10 was reclassified as current. This reclassification represents a decrease in net working capital since current liabilities are increased.

The conversion of 8 of long-term debt to equity also must be recognized as an application in order to balance the 8 source mentioned earlier.

The total for uses of net working capital is 53. The difference between the sources and the uses gives an increase in net working capital of 4.

5th STEP – PRESENTATION (fig. 4.7).

The funds flows statement may be put together in any one of number of ways so as to highlight the information which is most relevant to the particular circumstances of the company.

In a company where working capital is the principal factor, the funds flow statement will summarize the changes in current assets and current liabilities into one change in **net working capital**.

This is one of the most popular approaches, and we have illustrated it in our example.

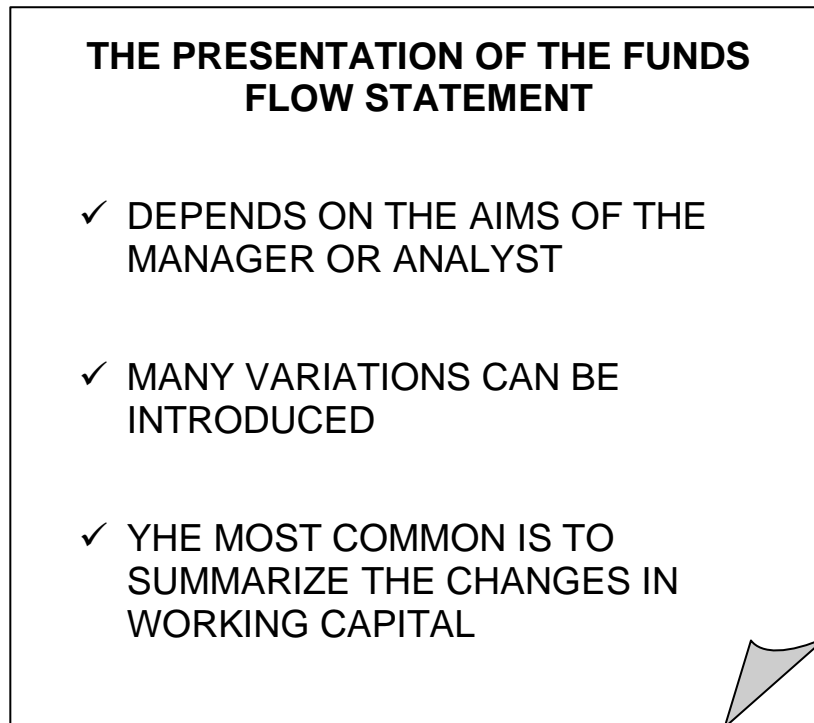


Figure 4.7. **Presentation**

This method, however, obscures many of the individual movements in the current accounts, and provides the focus on the more basic capital movements of the firm.

Where cash or liquid assets are most important, the funds statement can be seen in the form of addition and subtractions to cash and cash equivalents.

Where the major financial problem has been the provision of funds for a large new capital project, it is possible to prepare the statement to show the various sources of funds and their application to the project.

4.2. Analysis of the funds flow statements

The funds flows analysis is helpful in evaluating how the firm's money movements have contributed in achieving the company's goals.

Can be used to answer the following questions:

- How much of the firm's required capital was generated internally?
- Where did the firm obtain its funds?
- Is the business expanding faster than it can generate funds?
- What use was made of net income?
- Are inventory and accounts receivable levels under control?

- Is the firm's dividend policy in balance with its operating policy?
- How was the expansion in plant and equipment financed?

A funds flow statement is an efficient and relatively simple method of analysis about important matters such as the assessment of the firm's growth, the calculation of the resulting financial needs, and the determination of the best way to finance those needs.

Most importantly, it enables the financial manager to assess to what extent the firm's money movements have contributed in achieving the **company's goals**.

An analysis of the firm's financing will reveal whether the company's expansion has been financed by **internally generated resources** or by **external resources**.

As we will see in unit 9, this is a relevant problem in an environment of high inflation, where external financing is at times difficult to get, and most of the times very expensive.

An analysis of **where did the firm obtain its funds** can be instrumental in designing a balanced structure of the company's financing.

The funds flow statement will also enable the financial manager to evaluate whether or not a business has lived within or beyond its means.

If the business is **expanding faster than it can generate funds**, has this been planned? Is the pressure caused by the increased borrowing more than the business can easily take, or is the pressure exactly what the business needs to keep it up the mark?

If the business is living within its means, **what use was made of net income**? Is it building up good investments and for what purpose?

The analysis might for instance reveal an increase of **inventories** out of proportion with the growth of other assets or with sales. This could be attributable to inefficiencies in inventory management.

Likewise, the analysis could reveal that **accounts receivable** have increased out of proportion to increases in current assets and sales. This could signal the need to re-evaluate the credit policies implemented by the firm.

The funds flow statement could also highlight that the company's **dividend policy** is draining an excessive amount of resources that could be put to a better use to finance corporate expansion or to reduce an excessive level of financial indebtedness [14].

When the company is involved with a large **new expansion in plant and equipment**, the funds flow statement will enable to focus the attention on the financial consequences of such project on the overall financial balance of the firm.

4.3. Cash flow forecasting

The **statement of cash flow** reports the firm's cash inflows and outflows (fig. 4.8).

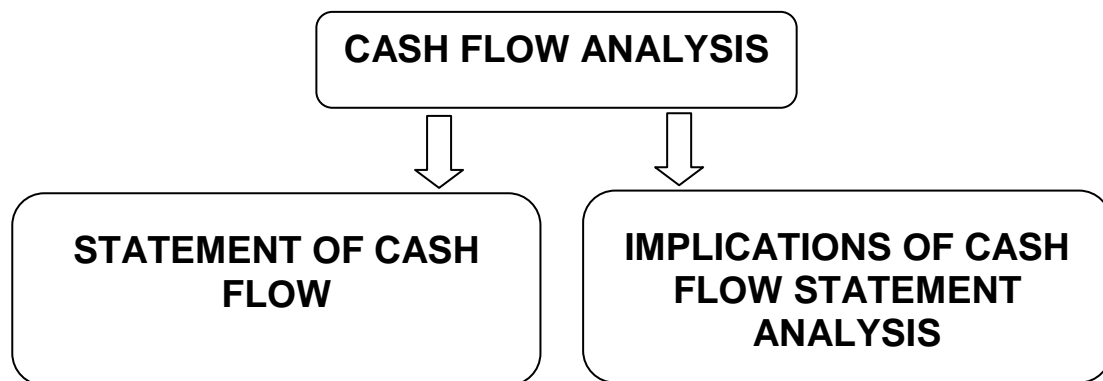


Figure 4.8. **Cash flow analysis**

The statement of cash flow helps to **analyze** a firm's ability to generate cash for dividends and investments, as well as the firm's needs for external financing (fig. 4.9).

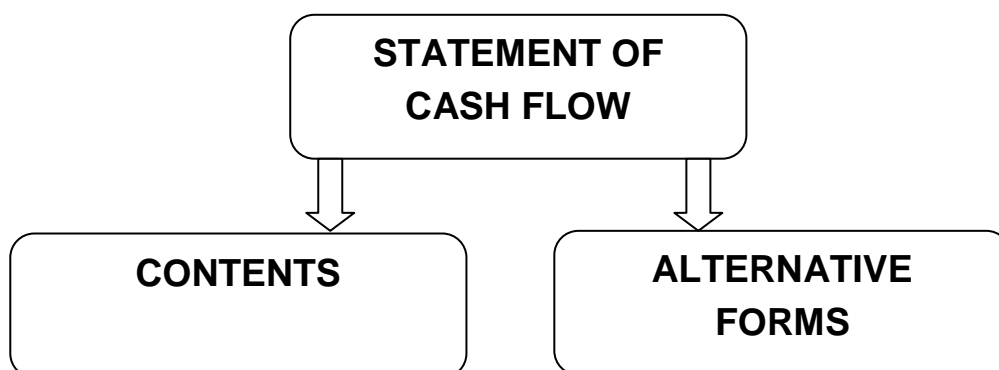


Figure 4.9. **Statement of cash flow**

We will first describe the content of the cash flow statement. We will then turn to a description of the alternative forms of presentation of the statement.

Contents:

- Operating activities
- Investing activities
- Financing activities

The statement of cash flow highlights changes in Cash and Cash equivalents by listing the company's activities that increased or decreased cash.

The inflows and outflows are classified in three categories:

1) Operating activities

Cash inflows from:

- sales of goods or services
- returns on loans (interest income) and equity securities (dividend income)

Cash outflows to:

- suppliers for inventory
- employees for services
- lenders (interest)
- government for taxes
- other suppliers for other operating expenses

2) Investing activities

Cash inflows from:

- sales of fixed assets
- sale of debt or equity securities of other entities

Cash outflows to:

- acquire fixed assets
- purchase debt or equity securities of other entities

3) Financing activities

Cash inflows from:

- borrowing
- sale of firm's own securities

Cash outflows to:

- repay amounts borrowed (principal)
- repurchase a firm's own securities
- shareholders as dividends

Alternative forms:

- Direct method

➤ Indirect method

The statement of cash flow can be presented either through the direct or the indirect method.

The only difference between the two methods of presentation concerns the reporting of **operating activities**, while the investing and financing sections are identical.

Under the **direct method**, operating cash flows are reported directly by major classes of operating cash receipts (from customers) and payments (to suppliers and employees).

Under the **indirect method** a separate reconciliation of net income to net cash flow from operating activities must be provided.

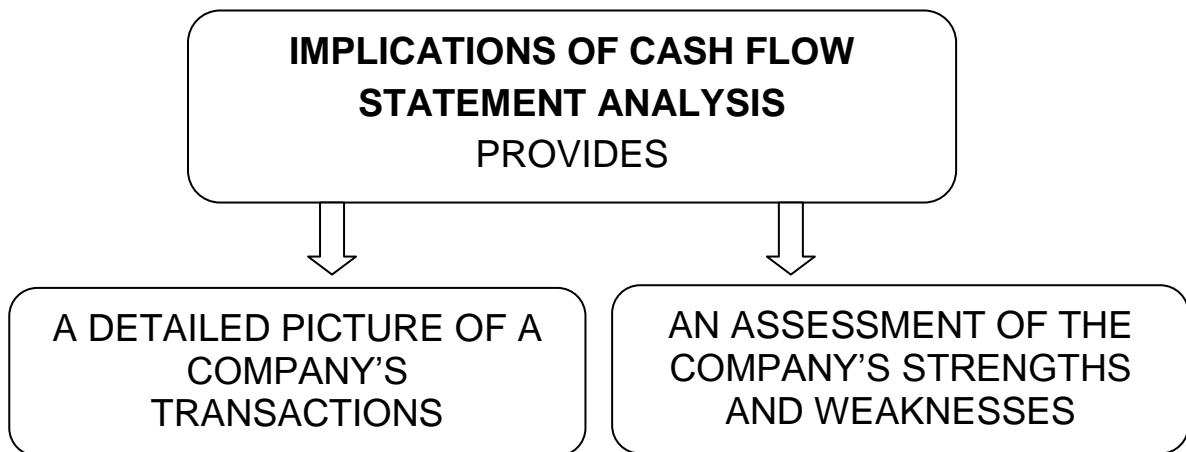


Figure 4.10. **Implications of cash flow statement analysis**

The major benefit of the statement of cash flows is that it provides a reasonably detailed picture of a company's operating, investing, and financing transactions involving cash.

This enables the user in assessing the company's current and potential future strengths and weaknesses. Strong generation of operating cash can be considered positive. Excessive reliance on external financing sources may be a danger signal.

The shortcoming of the statement is that important current period non-cash transactions that may impact cash flow in future periods (capital leasing, for instance) are omitted from the statement, while they appear of the funds flow statement.

Control questions:

1. The funds flow analysis
2. Funds flow statement
3. The basic features of the funds flow statement
4. Defining net flow of funds
5. Preparing the funds statements
6. Analysis of the funds flow statements
7. Cash flow analysis
8. Statement of cash flow
9. Implications of cash flow statement analysis
10. The inflows and outflows classification

Unit 5. Cost analysis

- 5.1. Financial planning and control techniques
- 5.2. Cost analysis
- 5.3. Manufacturing costs
- 5.4. The cost-volume-profit relationship

5.1. Financial planning and control techniques

As we noticed in Unit 1, in a world characterized by scarce resources, fierce competition and by a continuously evolving scenario, the issue of the correct allocation of resources becomes even more relevant than under a stable scenario.

This involves a greater concern about the **planning** and the **control** over the use of resources by the firm (fig. 5.1).

Financial planning is the tool that is used to assess the financial impact of the forecasted scenario on the company's performance (fig. 5.2).

The emphasis in financial planning is on **analysis and evaluation** rather than on strict optimization. Its goal is to enable top management to judge which plan is best for the company indicating the expected consequences of alternative courses of action [1].

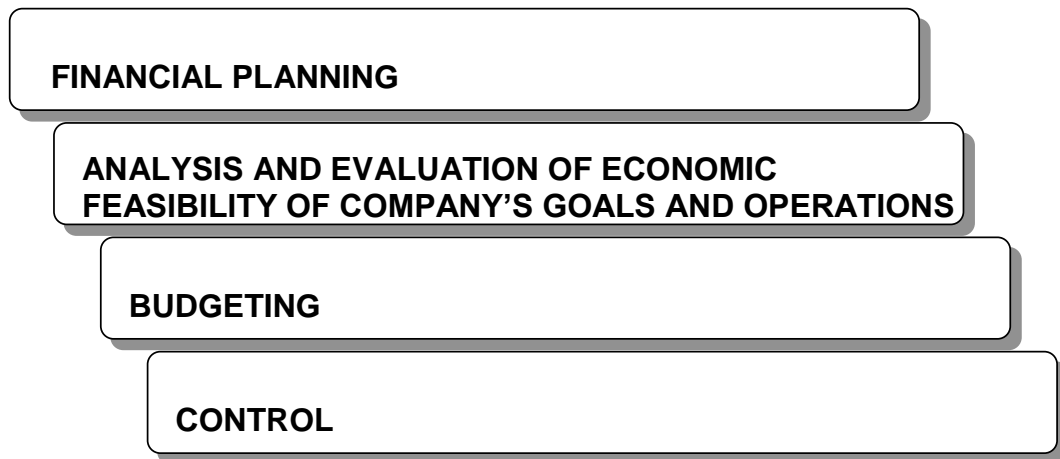


Figure 5.1. **Financial planning and control techniques**

To this purpose in this unit we will see how from the economic point of view, one of the major issues lies in the **analysis of costs**.

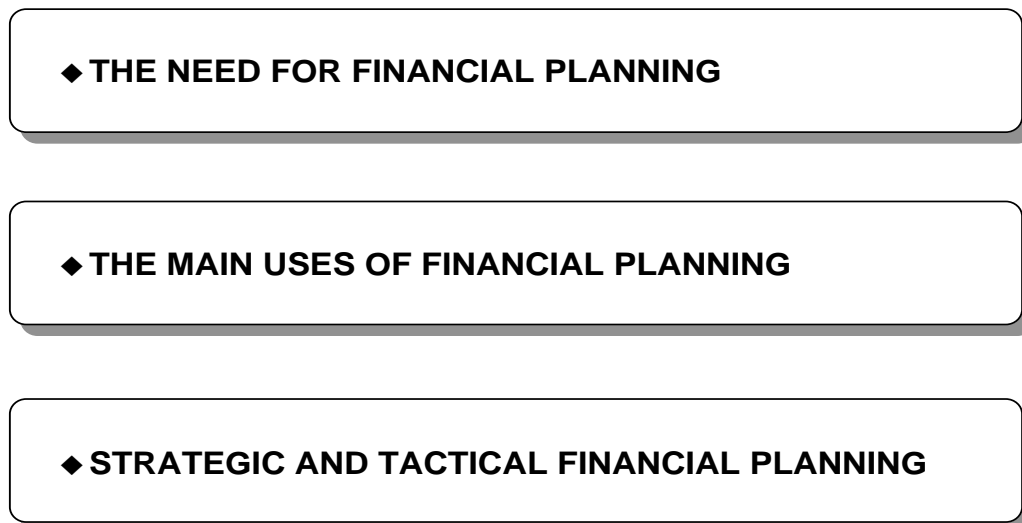


Figure 5.2. **Financial planning**

In the next unit we will see how the **budget** represents one of the major tools of financial **planning** and **control** for both large companies and small and medium enterprises.

Planning can be defined as the process aimed at assessing the impact of future states of the economy (economic scenarios) on the performance of the firm.

It has been said that "a company that does not plan for its future may not have one". The reaction to events may not create problems when the firm's environment is favourable.

In a world characterized by scarce resources, fierce competition and by a continuously evolving scenario, a firm that lacks effective contingency plans might find itself unable to cope with it.

Financial planning is the tool that is used to assess the financial impact of the forecasted scenario on the company's financial performance in order to make sure that adequate resources are available and that these resources are used in the most efficient way in order to achieve its goals.

Financial planning leads to the development of financial plans, a set of actions designed to respond to future requirements over the planning horizon.

Thus, the main purpose of financial analysis is to enable top management to judge which plan is best for the company indicating the expected consequences of alternative courses of action, helping in evaluating anticipated returns and risks and in determining a reasonable set of strategic and operating decisions.

The main questions considered to this purpose are:

- what are the overall goals or objectives of the firm?
- what trends will affect the market? How is the company going to be affected by the economy, the industry, and the competition?
- what are the best ways to invest in our research, design, production, distribution, marketing and administrative activities?
- what fundamental financial structure is desirable?

Strategic and tactical financial planning

Financial planning typically consists of two phases, the strategic and the tactical planning.

Strategic financial planning is involved in the preparation of the long-term financial plan which reflects the company's strategic choices. The time horizon is between 3 and 5 years.

Tactical financial planning is concerned with the short-term financial plan, the budget, which reflects the company's operating plan for the coming year.

The emphasis in financial planning is on analysis rather than on strict optimization.

Its goal is to enable top management to judge which plan is best for the company indicating the expected consequences of alternative courses of action, helping in evaluating anticipated returns and risks and in determining a reasonable set of strategic and operating decisions (fig. 5.3).

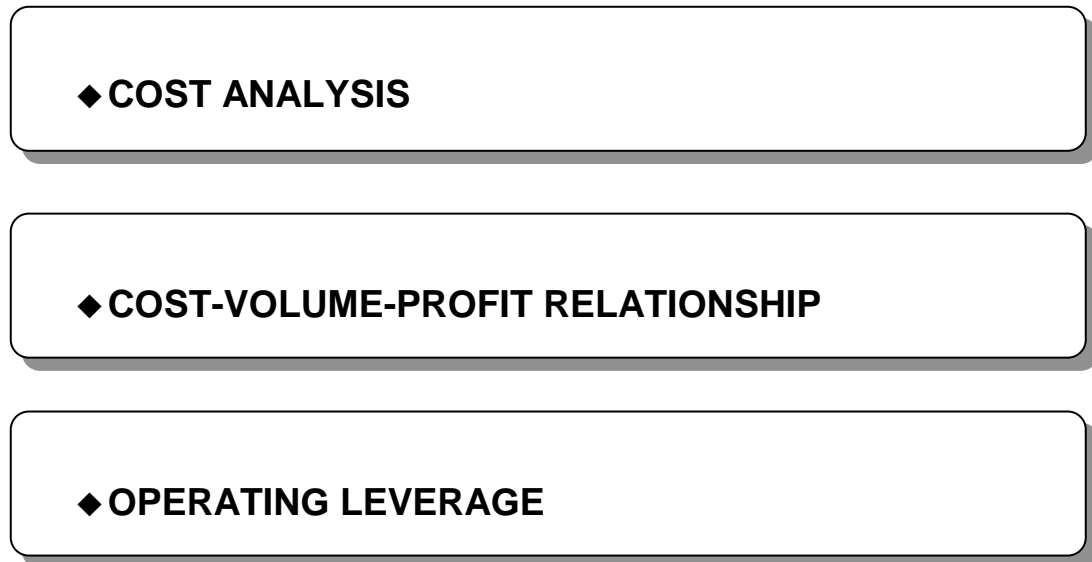


Figure 5.3. **Analysis and evaluation of economic feasibility of company's goals and operations**

From the economic point of view, one of the major issues lies in the **cost analysis**.

The classification of costs enables the development of the **cost-volume-profit relationship**, (CVP) that can be used to assess and decide about many relevant "operating" issues.

Knowledge about costs is also important in exploring the **operating leverage**, that quantifies the sensitivity of operating income to changes in sales volumes.

5.2. Cost analysis

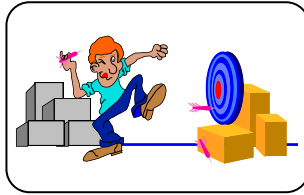
Cost analysis provides management with information about product costs and other "cost objects" that can be used for decision-making and control purposes (fig. 5.4).

In order to deploy their potential, costs must be properly classified. Classifying costs is not an easy task. We will, however describe the main approaches followed to this purposes.

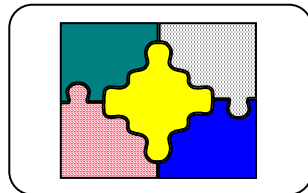
Cost analysis provides management with information about product costs and other "cost objects" [4].

This information is a powerful tool in the management of the firm. It allows a company:

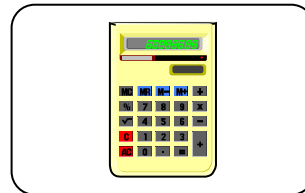
- to make rational decisions on the basis of economically sound criteria;
- to control performance;
- to evaluate certain areas of the firm's wealth.



**THE PURPOSES OF
COST ANALYSIS**



**TYPES
OF COSTS**



**DETERMINING
COST TYPES**

Figure 5.4. **Cost analysis**

Cost is defined by accountants as a resource sacrificed to achieve a specific objective.

Management, on its decision making and control process, needs data pertaining to a variety of purposes.

Thus there are many different ways in which a cost can be measured, each one consistent with the purpose pursued.

The aim of this section is to provide a brief outline of the cost types that are most commonly used (fig. 5.5).

Managers, to guide their decisions want data pertaining to a variety of purposes. They want to know the cost object, that is an activity or item for which a separate measurement of cost is desired.

The cost object can be identified with a (fig. 5.6):

- product or a service (manufacturing an electric oven, renting some office space);
- project (building a house or a ship, designing a missile);

- department (legal department, shipping department, research and development department);
- program (drug control program, training program).

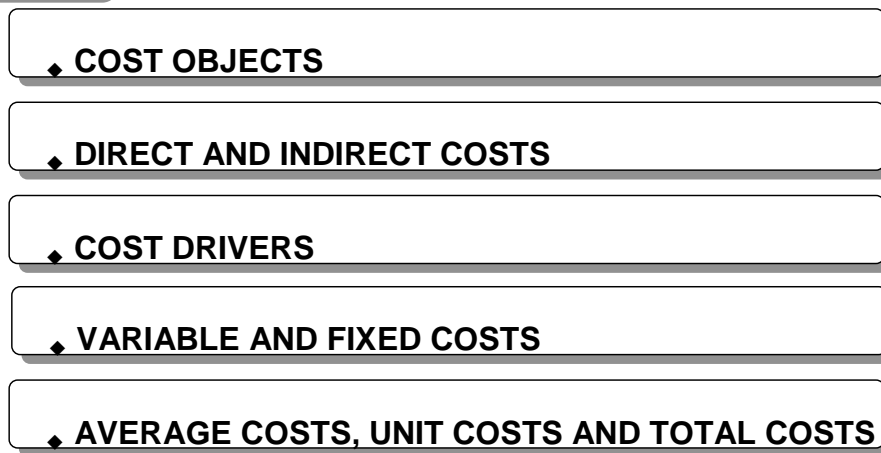
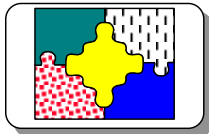
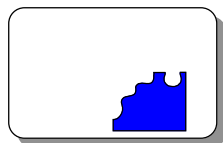


Figure 5.5. **Types of costs**



COST OBJECTS AND DECISION MAKING

**COST OBJECTS ARE CHOSEN
NOT FOR THEIR OWN SAKE BUT
TO HELP DECISION MAKING FOR
PROBLEMS**

Figure 5.6. **Cost objects and decision making**

Cost objects are chosen not for their own sake but to help decision making for problems such as:

- which products should we continue to make? Discontinue?
- should we manufacture a product component or should we acquire it from another company?
- what process should we change?
- should we buy the proposed equipment?
- should we change our manufacturing methods?
- should we promote a particular manager?
- should we expand a particular department?

A major question concerning costs is whether they have a direct or an indirect relationship to a particular cost object [6].

Such direct or indirect identification must be "**economically feasible**" (fig. 5.7).

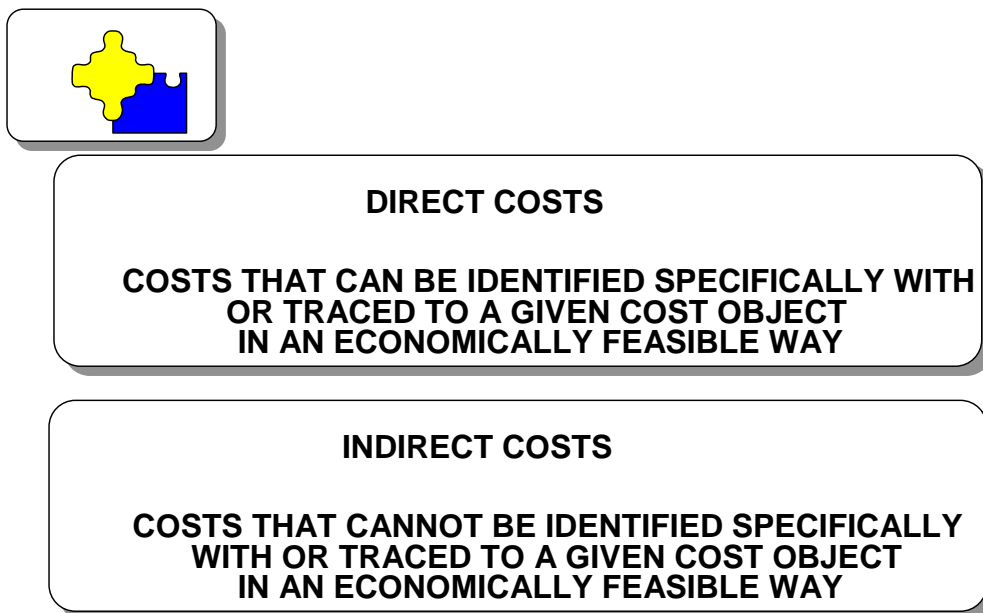


Figure 5.7. **Direct and indirect costs**

Under certain circumstances cost accounting may be too expensive in relation to expected benefits. This happens when the cost of tracing relatively inexpensive items may exceed the benefits of having the resulting information.

For example, it may be economically feasible to trace specifically the exact cost of the cathode tube for a specific lot of TV sets, but it may be

economically infeasible to trace specifically the exact cost of nuts and bolts that are also used in the same factory to produce video tape recorders.

A particular cost may be both direct and indirect. How can we classify it in either one of the two categories? The answer depends on the particular cost object.

Consider a supervisor's salary in a maintenance department of a telephone company. If the cost object is the department, the supervisor's salary is a direct cost. In contrast, if the cost object is a service (the "product" of the company) such as a telephone call, the supervisor's salary is an indirect cost.

Cost drivers are important in understanding the distinction and the behaviour of fixed and variable costs.

A cost driver is a factor whose change causes a change in the total cost of a related cost object.

There are many possible cost drivers. For example, in a factory setting the total cost of materials used may be driven not only by the production volume but also by the quality of the materials, the skill of the workers, the number of parts in a finished product.

The cost drivers can be measured in:

- production volume in units of product;
- hours worked;
- payroll checks processed;
- sales roubles;
- guests accommodated;
- number of purchase orders.

One of the most relevant of classifications of costs is presented in the fig. 5.8.

As we will see shortly it is used in the Cost-Volume-Profit relationship.

In order to describe the pattern of total costs in relation to cost drivers we will consider the case of a television manufacturer.

1. If the company buys one cathodal tube for each of its TV set at 100 monetary units, then the total cost of cathodal tubes should be 100 times the number of TV sets produced.

This is an example of **variable cost**, a cost that is unchanged per unit of cost driver, but changes in total in direct proportion to changes in the cost driver.

$$Y = B \cdot X, \quad (5.1)$$

where: B – cost per unit produced;

X – volume of production expressed in number of units produced.

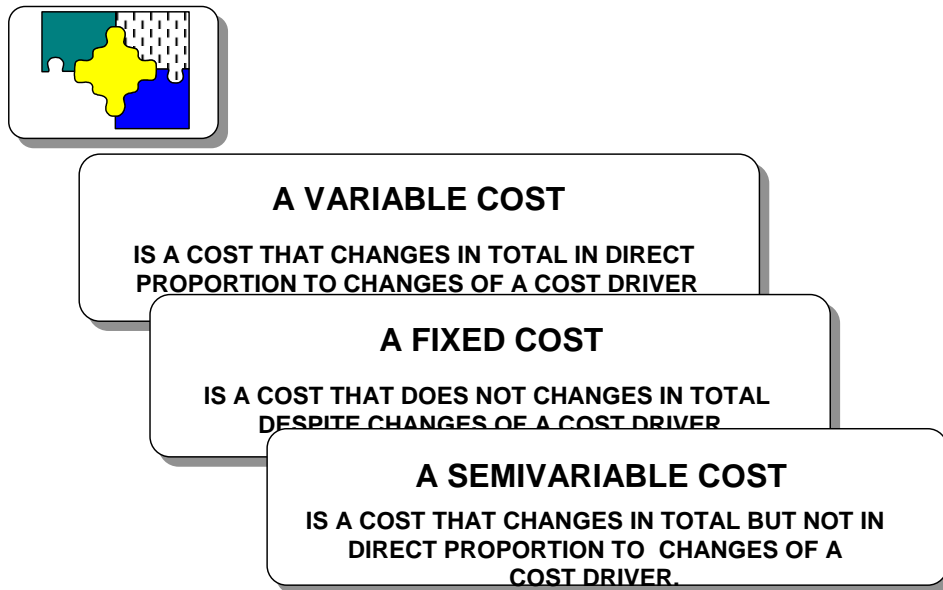


Figure 5.8. **Costs classification**

Examples of variable cost are most materials and parts, many types of assembly labour, sales commissions, and some factory supplies. Variable cost behaviour can be plotted in a graph.

2. The company may incur 200 million UAH in a given year for factory's property taxes, executive salaries, rent, and insurance.

This is an example of **fixed costs** that are unchanged in total over a wide range of cost driver during a given time.

$$Y = A, \quad (5.2)$$

where Y – total cost relative to all production units considered;

A – total fixed cost.

It should be noted that while these costs are fixed for a given level of production, they vary according to the production volume. They increase when production volume decreases and decrease when production volume increases.

Examples of fixed costs are executive salaries, interest expenses, depreciation, long-term leases, and insurance expenses. While no costs are

truly fixed for all levels, many costs may be considered to be fixed for an appropriate planning time.

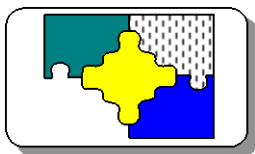
3. The company pays for the electricity used in the production.

This is a **semivariable cost**. A portion of the cost is fixed, while another varies in relation to the amount of electricity used according to the different levels of production.

Another example of semivariable costs is the expense for a milk delivery truck, that is fixed up to some levels of sales. If sales rise above that level, another truck must be purchased.

We can show plot variable, fixed and semivariable costs (fig. 5.9).

Line A shows the relationship between fixed costs and units produced. Q represents the volume corresponding to the available production capacity. As it can be seen, fixed costs are unchanged. However, the per unit costs vary according to the production volume. They increase when production volume decreases and decrease when production volume increases.



PLOTTING VARIABLE, FIXED AND SEMIVARIABLE COSTS

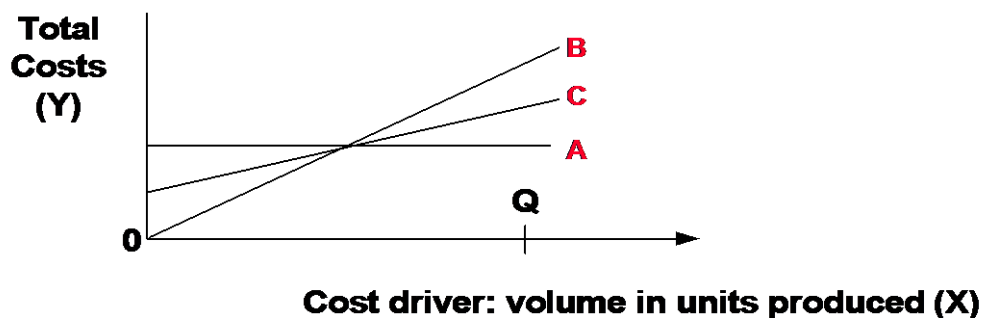


Figure 5.9. **Plotting variable, fixed and semivariable costs**

Line B of the Exhibit shows the relationship between a variable cost and units produced.

The variable cost is unchanged per unit of cost driver, but changes in total in direct proportion to changes in the cost driver.

Line C shows one of the many possible relationships between a semivariable cost and units produced.

Average costs are computed by dividing the total cost by some denominator (fig. 5.10).

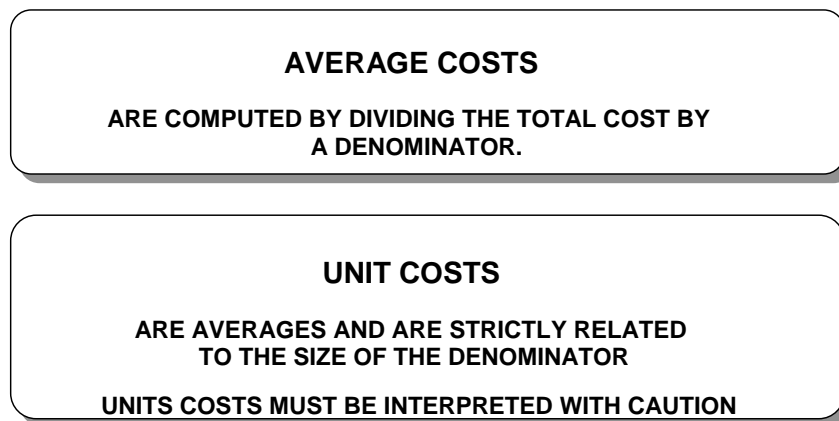
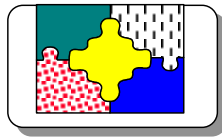


Figure 5.10. **Average costs, unit costs and total costs**

Often the denominator is a measure of volume that is most closely related to the total cost incurred. Examples of denominators include units of production, hours of service, tons handled in a shipping department, number of invoices processed in a billing department.

The average cost of making a finished product is frequently computed by dividing the total manufacturing costs (that we will cover shortly) by the number of the units produced.

Unit costs are averages, and must be interpreted with caution when they are used for decision purposes [17].

An illustration.

Suppose that management considers launching a new product whose total costs are predicted to be 100.000.

This information is important, but before a decision can be reached, along with total costs management must predict the number of units the company expects to sell.

Without knowledge of both data, it is not possible to decide intelligently on the sale price.

Using these two data, it will be possible to compute the average cost by dividing the total costs by the expected number of unit sold. Supposing that sales of 1.000 units are expected, the average cost will be 100.

We should note that for decision purposes the fixed cost per unit must be distinguished from the variable cost per unit.

Changes in volume will affect total variable costs but not total fixed costs.

In our example, the 100 unit cost of the product could be used by management to predict total costs.

Such estimate would be correct if, and only if, 1,000 units of the product were sold since total fixed costs would be 100,000 regardless of the number of the units sold.

If only 100 units will be sold, the actual unit cost would increase to 1,000.

5.3. Manufacturing costs

There are three major categories of a manufacturing product and costs (fig. 5.11).

Direct materials costs refer to the acquisition of all materials that are identified as part of the cost object and that may be traced to the cost object in an economic feasible way.

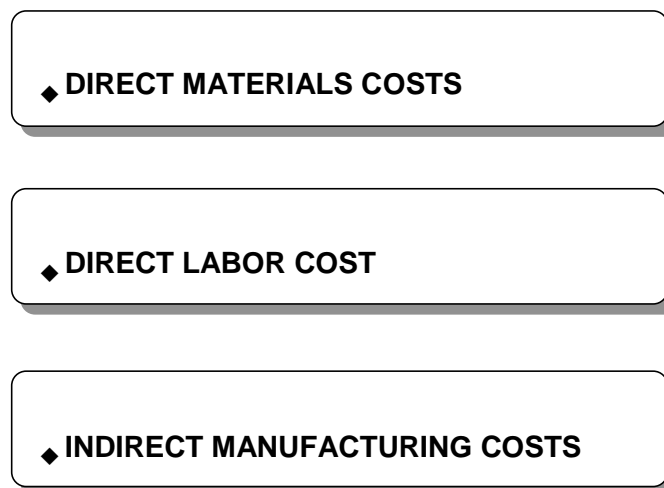


Figure 5.11. **Manufacturing costs**

Acquisition costs of direct materials include sales tax, delivery charges and custom duties. They usually do not include some minor items such as glue, because the cost of tracing insignificant items does not justify the additional benefits of having a more accurate product cost.

Direct labour costs cover the compensation of all labour that can be identified specifically or traced to the cost object in an economic feasible way.

Labour costs that are impossible or impractical to trace to a specific product are called indirect labour cost and are classified as part of the indirect manufacturing costs.

Indirect manufacturing costs are made up by all manufacturing costs that cannot be identified specifically with or traced to the cost object in an economically feasible way.

Examples of this type of costs are power, supplies, indirect labour, factory rent, insurance, property taxes, and depreciation.

Rules of financial accounting have a major influence for manufacturing costs (fig. 5.12).

Inventoriable costs are the manufacturing costs of a product that are initially regarded as a measure of assets.

Such costs become expenses as cost of goods sold only when the units in inventory are sold.

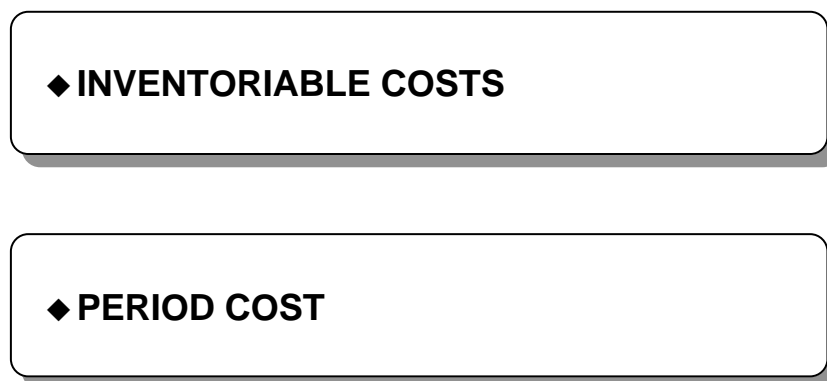


Figure 5.12. **Costs as assets and expenses**

Period costs are regarded as immediate expenses, i.e. are always expensed in the same period in which they are incurred. Research, marketing and administrative costs are examples of period costs.

It is not easy to sort out which costs are fixed and which are variable or semivariable. There are three general ways to approximate these distinctions, however (fig. 5.13).

Departmental-Based Classification. Departments of a firm or division may themselves be classified as incurring fixed or variable costs. The research and development, accounting, and legal departments, for example, are generally considered to be "fixed" because the expenses they incur are less sensitive to volume changes, at least over the short run. Expenses for

manufacturing and to some extent marketing tend more to vary with sales. Hence, classifying each department in this way will give some idea of the variable-fixed expense mix.

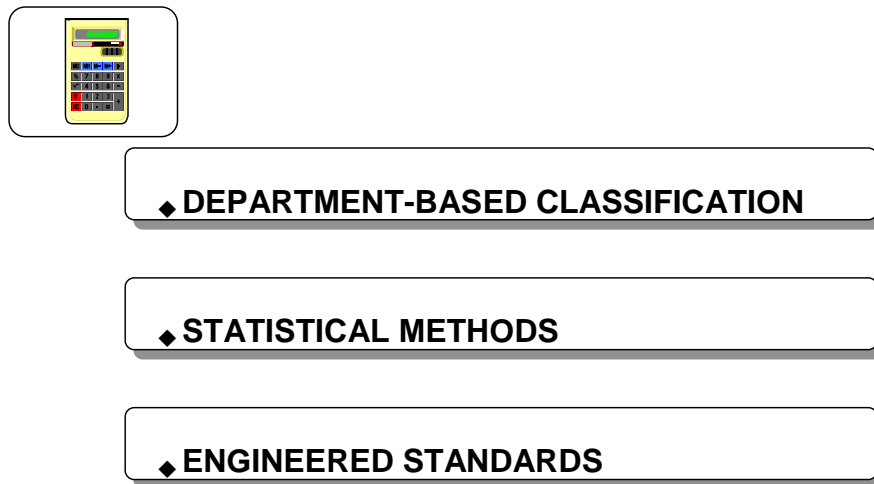


Figure 5.13. **Determining cost types**

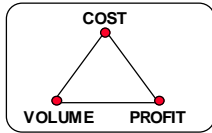
Statistical methods. By regressing total costs against sales volume using past data, one can approximate fixed costs as the intercept term and the variable cost per monetary unit as the slope of the regression line. This method is generally reliable only when the currently employed technology and operating policies are similar to those employed in the past. Care must also be taken in assuming that the same Cost-Volume-Profit relationships hold over volume levels outside the ranges observed in the past.

Engineered Standards. Production engineering departments often develop standard unit costs for manufactured products and overhead costs for various levels of activity. These costs from the firm's cost accounting systems may be used for classifying manufacturing costs.

5.4. The cost-volume-profit relationship

The cost-volume-profit relationship (CVP) is an important management tool, since it provides an interesting overview of the planning process (fig. 5.14).

It is based on the analysis of the behaviour of fixed and variable costs that we have just described, and enables to determine the **breakeven point**, that is that point of volume where total revenues and total costs are equal.



COST-VOLUME-PROFIT RELATIONSHIP

- ◆ DETERMINATION OF THE BREAKEVEN POINT
- ◆ COST-VOLUME-PROFIT ANALYSIS AS A DECISION MODEL

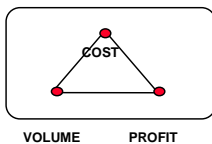
Figure 5.14. The cost-volume-profit relationship

Most importantly, however, the CVP analysis is a **decision model**, a tool that helps answer such questions as how will costs and revenues if be affected if we sell 1.000 additional units of a given product? If we rise our prices? If we increase our occupancy levels by 3 % in our hotel?

These questions have a common theme. What will happen to financial results if a specified level of volume fluctuates?

The utilization of the Cost-Volume-Profit relationship allows us to determine the breakeven point [6].

The breakeven point is that point of volume where total revenues and total costs are equal. There are three methods for calculating the required result: the Equation method, the Contribution-margin method and the Graph method (fig. 5.15).



METHODS TO COMPUTE BREAKEVEN AND TARGET OPERATING INCOME THROUGH:

- ◆ EQUATION METHOD
- ◆ CONTRIBUTION-MARGIN METHOD
- ◆ GRAPH METHOD

Figure 5.15. Methods for calculating the breakeven point

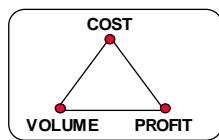
In illustrating the three methods we will refer to the following income statement (table 5.1).

Table 5.1

Data for illustrating

	Total	Per unit
Sales, 25 units x 200	5.000	200
Variable costs 25 units x 120	3.000	120
Contribution margin	2.000	80
Fixed costs	2.000	-
Operating income	0	0

Equation method is presented in fig. 5.16.



DETERMINATION OF THE BREAK-EVEN POINT

EQUATION METHOD

$$\begin{array}{|c|} \hline \text{Unit} \\ \hline \text{sales} \\ \hline \text{price} \\ \hline \end{array}
 \times
 \begin{array}{|c|} \hline \text{Number} \\ \hline \text{of} \\ \hline \text{Units} \\ \hline \end{array}
 -
 \begin{array}{|c|} \hline \text{Unit} \\ \hline \text{variable} \\ \hline \text{price} \\ \hline \end{array}
 \times
 \begin{array}{|c|} \hline \text{Number} \\ \hline \text{of} \\ \hline \text{Units} \\ \hline \end{array}
 -
 \begin{array}{|c|} \hline \text{Fixed} \\ \hline \text{Costs} \\ \hline \end{array}
 =
 \begin{array}{|c|} \hline \text{Operating} \\ \hline \text{Income} \\ \hline \end{array}$$

Figure 5.16. Equation method

If we apply the formula to our example, and if we define N the number of units to be sold do break even, we get the following results:

$$200 \cdot N - 120 \cdot N - 2.000 = 0;$$

$$80 \cdot N = 2.000;$$

$$N = \frac{2.000}{80} = 25 \text{ units.}$$

Thus the number of units to be sold in order to break even will be 25.

We define the contribution margin as the excess of sales over all variable costs. In contrast, gross margin (gross profit) is the excess of sales over the cost of goods sold.

Both the contribution margin and the gross margin can be expressed as totals, as an amount per unit, or as a percentage of sales.

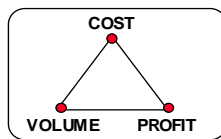
The **contribution margin method** is a restatement of the equation method (fig. 5.17).

The choice between the two methods is a matter of personal preference.

In the case of our example we will have:

$$N = \frac{2.000}{80} = 25 \text{ units.}$$

Thus N , the number of units to be sold in order to break even, is equal to 25.



DETERMINATION OF THE BREAKEVEN POINT

CONTRIBUTION-MARGIN METHOD

$$\text{BREAKEVEN POINT} = \frac{\text{FIXED COSTS}}{\text{UNIT CONTRIBUTION MARGIN}}$$

Figure 5.17. **Contribution-margin method**

The third method provides for plotting three lines describing the trend of cost and sales. We use for this purpose the fig. 5.18 that describes the behaviour of fixed costs and variable costs.

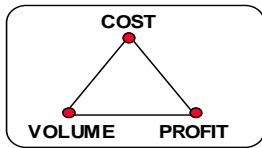
The message of the figure 5.18 is that as volume increases, fixed costs remain the same, regardless of volume. As volume increases, so do both total variable costs and sales?

The graph is built in the following manner.

1. To plot **fixed costs**, we measure 2.000 on the vertical axis (point A) and extend a line horizontally.

2. To plot **variable costs**, we select a convenient sales volume that in our case will be 30 units. We can compute the total variable costs for that

volume: $30 \times 120 = 3.600$. We add 3.600 to 2.000 (or 5.600) in order to plot point B at the 30-unit volume level. Using point A and B, we can draw the total costs function, the sum of variable and fixed costs.



DETERMINATION OF THE BREAKEVEN POINT GRAPH METHOD

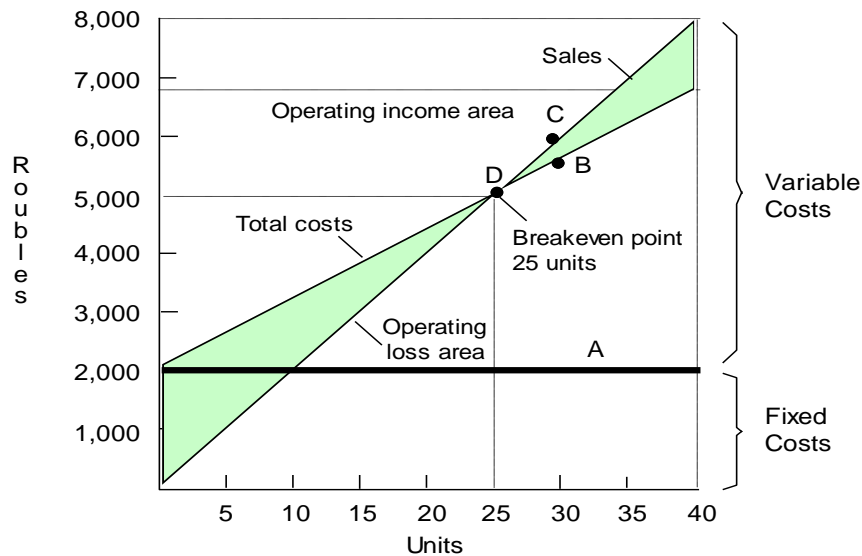


Figure 5.18. **Graph method**

3. We follow the same procedure of point 2 for sales. Point C expresses total sales at the volume of 30 units ($30 \times 200 = 6.000$). We can draw the total sales lined from Point 0 through point C.

The breakeven point is where total sales line and total cost line intersect or point D. The graph shows the profit or loss outlook for a wide range of volume. The shaded area to the left of D is the operating loss area, were a decreasing volume is matched by an increasing loss. The shaded area to the right of D is the Operating gain area, were a growing volume is matched by a growing income [4].

So far we have used the CVP relationship as an instrument for setting the breakeven point.

However, breakeven analysis considers a static setting, whereas managers are concerned with a dynamic one.

Thus the true potential of CPV analysis is achieved when it is used as an instrument designed to evaluate in advance the impact on profits of the main economic variables.

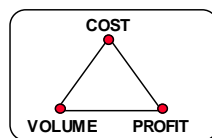
The CVP relationship is then an example of decision models, since it provides an enlightening overview of the planning process.

Naturally, the reliability of the CVP analysis results can be affected by the limitations of the assumptions about the behaviour of revenues, costs and volumes.

Managers, in the conduit of their business, need methods for deciding among different courses of action, often called decision models.

The CVP relationship can be used as a planning tool to simulate the impact on income of different and relevant decision variables

In short, the CVP analysis is a decision model that can be used to simulate the effects of variables such as changes in the cost structure, in prices, in the sales mix on the company's income (fig. 5.19).



THE COST-VOLUME-PROFIT ANALYSIS AS A DECISION MODEL

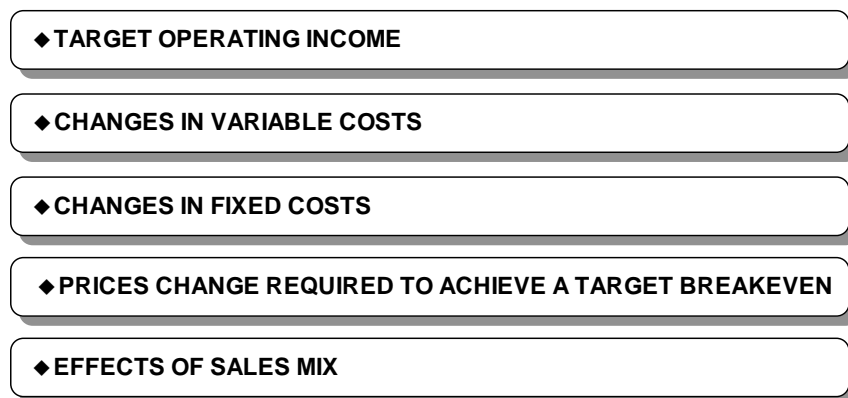
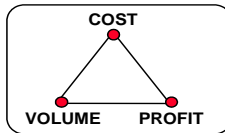


Figure 5.19. **The CVP analysis is a decision model**

The management's concern is not only knowing how many units must be sold, given a certain structure of fixed and variable costs, for the company to break even. Rather, management is much more concerned in knowing how many units must be sold to yield a target operating income (fig 5.20).



THE COST-VOLUME-PROFIT ANALYSIS AS A DECISION MODEL

TARGET OPERATING INCOME

◆ EQUATION METHOD

$$N_u = \text{Sales} - \text{Variable Costs} - \text{Fixed Costs} = \text{Targeting Operating Income}$$

◆ CONTRIBUTION MARGIN METHOD

$$N = \frac{\text{Fixed Costs} + \text{Target operating income}}{\text{Unit contribution margin}}$$

◆ GRAPHIC METHOD

Figure 5.20. The CVP and target operation income analysis

The solution to this problem can be found using the three methods that we have described for the breakeven point. To this purpose, we assume that N is the target operating income of 1.200. All other data are those that are set out in the preceding example (from table 5.1).

1. Equation method.

Using the equation method we will get the following result:

$$200 \cdot N - 120 \cdot N - 2.000 = 1.200;$$

$$80 \cdot N - 2.000 = 1.200;$$

$$80 \cdot N = 1.200 + 2.000;$$

$$N = \frac{3.200}{80} = 40 \text{ units.}$$

Thus, in order to achieve the target operating income, the company must sell 40 units.

2. Contribution margin method.

The same result is achieved with the contribution margin method:

$$N = \frac{\text{Fixed costs} + \text{Target operating income}}{\text{Unit contribution margin}}. \quad (5.3)$$

$$N = \frac{2.000 + 1.200}{80} = 40 \text{ units.}$$

3. Graph method.

The graph shown before already indicates that an operating income of 1.200 will be achieved at the 40 unit volume.

Management approaches the control of variable costs with varying degrees of attention.

When business is booming, the overwhelming attention of management is devoted to the generation of volume at all costs. When business is slowing down, management tends to scrutinize costs.

In this process, management should be aware of the fact that a change in unit costs will alter the unit contribution margin and the contribution cost (table 5.2).

Table 5.2

Calculating of the breakeven point after changes in unit costs

Indicators	Variable costs		
	basic solution	increase to 150	decrease to 75
1. Sales price per unit, UAH	200	200	200
2. Variable cost per unit, UAH	120	150	75
3. Contribution margin per unit ((1)-(2)), UAH	80	50	125
Fixed costs, UAH	2.000	2.000	2.000
Breakeven point, units	$N = \frac{2.000}{80} = 25$	$N = \frac{2.000}{50} = 40$	$N = \frac{2.000}{125} = 16$

Assuming that no change will occur in the volume of units produced, (25) the impact of the change in the variable cost per unit on the operating income will be:

$$\text{Operating income} = (\text{unit contribution margin} \cdot \text{units produced}) - \text{fixed costs} \quad (5.4)$$

For basic solution operating income will be:

$$\text{Operating income} = (80 \cdot 25) - 2.000 = 0 \text{ UAH.}$$

For variant with increasing the variable costs to 150 UAH per unit operating income will be:

$$\text{Operating income} = (50 \cdot 25) - 2.000 = -750 \text{ UAH.}$$

For variant with decreasing the variable costs to 75 UAH per unit operating income will be:

$$\text{Operating income} = (125 \cdot 25) - 2.000 = 1.125 \text{ UAH.}$$

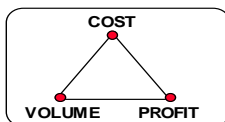
In planning corporate operations management should develop a sensitivity of the effects of different scenarios on the company's performance. This will contribute to the enrichment of understanding of different interrelationships of all factors affecting profits, especially cost behaviour patterns.

In analysing the impact of volume changes, management should be aware that decreases in volume are often accompanied by increase in marketing costs, lower selling prices, lower labour turnover, increase in labour productivity and decreases in raw material prices.

Management should also be aware of the limitations of the CVP analysis that assumes direct proportional fluctuations of variable costs with volume. This assumption implies adequate and uniform control over costs. In practice, such control is only sometimes attainable.

Fixed costs are not fixed forever, but change year after year.

Management may decide to increase them in order to obtain more profitable combinations of production and distribution (fig. 5.21).



THE COST-VOLUME-PROFIT ANALYSIS AS A DECISION MODEL

CHANGES IN FIXED COSTS

MANAGEMENT MAY DECIDE:

◆ TO INCREASE FIXED COSTS IN ORDER TO OBTAIN MORE PROFITABLE COMBINATIONS OF PRODUCTION AND DISTRIBUTION

◆ TO REDUCE FIXED COSTS IN ORDER TO OBTAIN A MORE FAVORABLE COMBINATION OF PRODUCTION INPUTS OR WHEN IT FORESEES A RADICAL REDUCTION IN VOLUME

Figure 5.21. Making decision with changes in fixed costs

This decision in turn may affect revenues, and variable costs. A decision to reach the market directly rather than through wholesalers will

result in higher unit sale prices and higher marketing costs. To offset the increase in fixed costs a firm may invest in automation, which also increases fixed costs but reduces unit variable costs. In some cases management may decide to reduce fixed costs to obtain a more favourable combination of production inputs or when it foresees a radical reduction in volume.

CVP analysis contributes to define the effect on the targeted net income and the unit contribution margin as a guide towards a wise decision (table 5.3).

Table 5.3

Calculating of the breakeven point after changes in fixed costs

Indicators	Fixed costs		
	basic solution	increase by 20%	decrease by 20%
1. Sales price per unit, UAH	200	200	200
2. Variable cost per unit, UAH	120	120	120
3. Contribution margin per unit ((1)-(2)), UAH	80	80	80
Fixed costs, UAH	2.000	2.400	1.600
Breakeven point, units	$N = \frac{2.000}{80} = 25$	$N = \frac{2.400}{80} = 30$	$N = \frac{1.600}{80} = 16$

Assuming that no change will occur in the volume of units produced, (25) the impact of the change in the fixed costs on the operating income will be:

For basic solution operating income will be:

$$\text{Operating income} = (80 \cdot 25) - 2.000 = 0 \text{ UAH.}$$

For variant with increasing the fixed costs by 20 % operating income will be:

$$\text{Operating income} = (80 \cdot 25) - 2.400 = -400 \text{ UAH.}$$

For variant with decreasing the fixed costs by 20 % operating income will be:

$$\text{Operating income} = (80 \cdot 25) - 1.600 = 400 \text{ UAH.}$$

The benefits and the limitations of the effects changes in fixed costs and profitability are those described for variable costs.

An example of how the CVP analysis could be used in simulating the effects of possible management decision, suppose that as a result of an economic slump the management is envisaging a reduction of the number of units that are going to be sold.

Using the example illustrated before, let us assume that the management forecasts a drop in sales from 25 units to 20.

Naturally such a change is going to alter the breakeven point as well as the operating income that have been previously defined.

One answer to this problem is to set a new unit sale price that is consistent with the targeted breakeven.

The use of CVP analysis allows us to define the new unit price that will be required to re-establish the previous equilibrium condition.

The contribution margin method indicates that:

$$N = \frac{\text{Fixed costs}}{\text{Unit contribution margin}}. \quad (5.5)$$

This relationship can express in the following manner:

$$N = \frac{A}{p - B}, \quad (5.6)$$

where: N – targeted breakeven point;

A – total fixed costs;

B – unit variable cost;

p – unit price consistent with the targeted breakeven point:

$$p = \frac{A + (B \cdot N)}{N}. \quad (5.7)$$

Using our example we will have the following result:

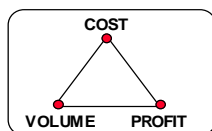
$$p = \frac{2.000 + (20 \cdot 120)}{20} = \frac{2.000 + 2.400}{20} = \frac{4.400}{20} = 220 \text{ UAH}.$$

Thus, on the basis of these assumptions, the company should increase its prices by 10 %.

Naturally other assumptions could be made, leading to different sales prices.

It goes without saying that the feasibility of the different price assumption must be carefully evaluated by the marketing department.

In our description of CVP analysis we have ignored so far the problem of **sales mix** that is the relative combination of products that constitute sales (fig. 5.22).



THE COST-VOLUME-PROFIT ANALYSIS AS A DECISION MODEL

EFFECTS OF SALES MIX

THE SALES MIX IS THE RELATIVE COMBINATION OF PRODUCTS THAT CONSTITUTE SALES.

IF THE MIX CHANGES, THE EFFECTS OF SUCH CHANGES ON PROFITS WILL NOT BE NEUTRAL.

THE BREAKEVEN IS NOT AN UNIQUE NUMBER. MUCH WILL DEPEND ON THE SHIFT FROM THE ORIGINAL PROPORTION OF LOW-MARGIN AND HIGH-MARGIN PRODUCTS.

Figure 5.22. **Effects of sales mix**

It the mix changes, overall sales targets may still be achieved, but the effects of such changes on profits will not be neutral, since it will depend on the shift from the original proportion of low-margin and high-margin products.

To illustrate, we will consider the case of a company that produces two products, ALFA, a basic low-priced hair drier, and BETA superior quality hair drier.

The company has the following budget (table 5.4).

Table 5.4

Company budget

Indicators	ALFA	BETA	Total
Sales in units	120.000	40.000	160.000
Sales @ 5 and 10	600.000	400.000	1.000.000
Variable costs @ 4 and 3	480.000	120.000	600.000
Contribution margin @1 and 7	120.000	280.000	400.000
Fixed costs			300.000
Operating income			100.000

What would be the breakeven point? The usual answer assumes that the budgeting mix will not change, that is three units of ALFA sold for each unit of BETA.

Let B – number of units of BETA to breakeven;

$3B$ – number of units of ALFA to breakeven – P .

In order to determine the equation method in order to determine the breakeven point:

$$\text{Sales} - \text{Variable costs} - \text{Fixed costs} = \text{Zero operating income.} \quad (5.8)$$

$$5 \cdot (3B) + 10 \cdot (B) - 4 \cdot (3B) - 3 \cdot (B) - 300.000 = 0;$$

$$25 \cdot (B) - 15 \cdot (B) - 300.000 = 0;$$

$$10 \cdot (B) = 300.000;$$

$$B = 30.000;$$

$$3B = 90.000 = P.$$

The breakeven point is therefore 120.000 units consisting of 30.000 BETA hair driers and 90.000 ALFA hair driers. This is the only breakeven point for a sales mix of three ALFA hair driers and one BETA hair drier.

But the breakeven point is not a unique number. It obviously depends on the sale mix that could be different for the one considered in the budget.

Obviously, for any given sales volume, the higher the proportion of units having relatively high contribution margin, the higher the operating income.

Suppose that the actual sales are exactly equal to the budget target for total sales (160.000) but that the sale mix was 100.000 ALFA and 60.000 BETA. Operating income would then be 220.000, a result that is 120.000 higher than the 100.000 budgeted operating incomes (table 5.5).

Table 5.5

Operating incomes budgets

Indicators	ALFA	BETA	Total
Sales in units	100.000	60.000	160.000
Sales @ 5 and 10	500.000	600.000	1.100.000
Variable costs @ 4 and 3	400.000	180.000	580.000
Contribution margin @1 and 7	100.000	420.000	520.000
Fixed costs			300.000
Operating income			220.000

Managers naturally want to maximize the sales of all their products.

This approach needs to be reconciled with the effects of changes in mix and the resulting impact on profitability, paying special attention to the

contribution margin. The analysis of a change in mix often clarifies why actual and budgeted sales and profits differ.

The need of such analysis is often reinforced by the problem of limited resources. If additional production capacity is not available, what products should be produced?

After all, the CVP relationships may show that the decision is not necessarily to make the product having the higher contribution margin.

Suppose that our company can make 100 ALFA hair driers per week of capacity instead of 100 BETA hair driers.

Then BETA can generate a contribution margin of $1.000 \times 1 = 1.000$ per week, whereas ALFA could generate only $100 \times 7 = 700$ per week.

Volume is only one of the factors that affect cost behaviour. Other relevant factors are unit price of inputs, efficiency, changes in the production technology, wars, strikes, legislation, etc. CVP analysis is based on assumptions about the behaviour of revenues, costs, and volume. A change in the expected behaviour will alter the breakeven point. This means that profits will be affected by changes in factors besides volume. The following assumptions will as a result affect the precision and reliability of a given CVP analysis:

1. The behaviour of total revenues and costs is linear.
2. Selling prices are constant.
3. All costs can be divided into fixed and variable costs
4. Total fixed costs remain constant.
5. Total variable costs are directly proportional to volume.
6. Prices of the factors of production inputs are constant.
7. Efficiency and productivity are constant.
8. The analysis either covers a single product or assumes that a given sales mix will be maintained as total volume changes.
9. Volume is the only cost driver.
10. The production volume equals sales volume, or changes in beginning and ending inventories levels are zero.

Business is dynamic, not static. Thus the user of CVP analysis must constantly challenge the assumptions in light of changes in business condition.

The real net benefit of preparing CVP charts is in the enrichment of understanding of interrelationships of all factors affecting profits, especially cost behaviour patterns over ranges of volume.

Operating leverage is present anytime has fixed operating costs.

As noted before, within a relevant range (quantity/time), fixed operating costs do not change, while variable operating costs vary directly with the level of output.

One interesting potential effect attributable to the presence of fixed operating costs is that a change in the volume of sales results in a more than proportional change in the operating profit.

The principle, however, operates in the opposite direction as well. More than proportional decreases in profit result from declines in operating volume.

Fixed costs therefore can operate like a lever used to magnify a force into a larger force, since they cause a percentage change in sales volume to produce a magnified percentage change in operating profits (losses).

To illustrate this effect, we consider three different firms possessing various amounts of operating leverage.

Their income statement is shown in table 5.6.

Table 5.6

Income statement

Indicators	One	Two	Three
Sales	10.000	11.000	19.500
Operating costs			
Fixed	7.000	2.000	14.000
Variable	2.000	7.000	3.000
Operating profit	1.000	2.000	2.500

We are now going to assume that sales and variable costs increase by 50 %, while fixed costs do not change.

Table 5.7 shows the effects of operating leverage that is changes in sales result in more than proportional changes in operating profits.

Table 5.7 also demonstrates that it would be an error to assume that the firm with the largest absolute or relative amount of fixed cost automatically shows the most dramatic effects of operating leverage.

In order to provide an answer to this problem we have to deal with the **degree of operating leverage** (DOL) (fig. 5.23).

Table 5.7

Effects of operating leverage

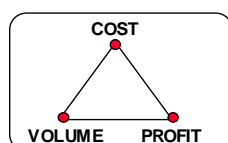
Indicators	One	Two	Three
After a 50% increase in sales and variables costs			
Sales	15.000	16.500	29.250
Operating costs			
Fixed	7.000	2.000	14.000
Variable	3.000	10.500	4.500
Operating profit	5.000	4.000	10.750
Percent increase in operating profit	400 %	100 %	330 %

The degree of operating leverage (DOL) is the percentage change in a firm's operating profit resulting from a 1 percent change in output [1].

The DOL thus provides a quantitative measure of the sensitivity of a firm's profit to a change in the firm's sales:

$$DOL \text{ at } Q \text{ units} = \frac{\text{Percentage change in operating profit}}{\text{Percentage change in output (or sales)}} \quad (5.9)$$

The sensitivity as measured by DOL will be different at each level of output (or sales). It is therefore always necessary to indicate the level of output (or sales) at which DOL is measured.



ANALYSIS AND EVALUATION OF ECONOMIC FEASIBILITY OF COMPANY'S GOALS AND OPERATIONS

OPERATING LEVERAGE

DOL: THE PERCENTAGE CHANGE IN A FIRM'S OPERATING PROFIT RESULTING FROM A 1 PERCENT CHANGE IN OUTPUT

IT PROVIDES A QUANTITATIVE MEASURE OF THE SENSITIVITY OF A FIRM'S PROFIT TO A CHANGE IN THE FIRM'S SALES

THE SENSITIVITY AS MEASURED BY DOL WILL BE DIFFERENT AT EACH LEVEL OF OUTPUT OR SALES

Figure 5.23. Operating leverage

DOL can be measured using the following equations:

$$DOL \text{ at } Q \text{ units} = \frac{Q}{Q - Q_{BE}}, \quad (5.10)$$

$$DOL \text{ at } S \text{ UAH of sales} = \frac{EBIT + FC}{EBIT}, \quad (5.11)$$

where Q – quantity (units) produced and sold;

Q_{BE} – breakeven point;

$EBIT$ – earnings before interest and taxes – operating income;

FC – fixed cost.

The first equation is especially appropriate for a **single product** or a **single-product firm**. The two pieces of information required are both stated in terms of units.

The second equation can be used in the case of a **multi-product firm**. This too requires two pieces of information, both of which are stated in value terms.

To illustrate, let's consider a company that has the following relevant information in UAH:

selling price per unit – 50 UAH;

variable cost per unit – 25 UAH;

fixed cost – 100.000 UAH.

The breakeven point (Q_{BE}) for the company is:

$$Q_{BE} = \frac{\text{Fixed costs}}{\text{Contribution margin}}. \quad (5.12)$$

$$Q_{BE} = \frac{100.000}{(50 - 25)} = 4.000 \text{ units}.$$

Using the equation (5.10) we can determine the degree of operating leverage at 5.000 units of output and sales for our company.

$$DOL \text{ at } 5.000 \text{ units} = \frac{5.000}{5.000 - 4.000} = 5.$$

For 6.000 units of output and sales we have:

$$DOL \text{ at } 6.000 \text{ units} = \frac{6.000}{6.000 - 4.000} = 3.$$

This example provides a demonstration of the fact that the effects of operating leverage diminish as the level of sales rises. In our case it decreases from 5 to 3.

As a consequence, the further the level of output is from the breakeven point, the lower the degree of operating leverage. How close a firm operates to its breakeven point determines how sensitive its operations will be to a change in output or sales.

Control questions:

1. What is the breakeven point?
2. What are the methods of computing breakeven point?
3. What is the CVP analysis?
4. Give list of types of costs.
5. Characteristics of variable costs.
6. Characteristics of fixed costs.
7. What is the operating leverage?
8. Essence of degree of operating leverage
9. What are the manufacturing costs?
10. Which financial planning methods and techniques do you know?

Unit 6. Planning and control techniques

- 6.1. Financial planning
- 6.2. The budget
- 6.3. Budgetary process

6.1. Financial planning

Planning can be defined as the process aimed at assessing the impact of future states of the economy (economic scenarios) on the performance of the firm.

In a world characterized by scarce resources, fierce competition and by a continuously evolving scenario, the company must make sure that its resources are used in the most efficient way in order to achieve its goals.

Financial planning is the tool that is used to assess the financial impact of the forecasted scenario on the company's performance. It leads to the development of financial plans, a set of actions designed to respond to future requirements over the planning horizon. Thus, the main purpose of financial analysis is to enable top management to judge which plan is best for the company indicating the expected consequences of alternative courses of action, helping in evaluating anticipated returns and risks and in determining a reasonable set of strategic and operating decisions.

The main questions considered to this purpose are:

- What are the overall goals or objectives of the firm?
- What trends will affect the market? How is the company going to be affected by the economy, the industry, and the competition?
- What are the best ways to invest in our research, design, production, distribution marketing and administrative activities?
- What fundamental financial structure is desirable?

It has been said that "a company that does not plan for its future may not have one". The reaction to events may not create problems when the firm's environment is favourable. In a volatile scenario, a firm that lacks effective contingency plans might find itself unable to cope with it.

Financial planning typically consists of two phases, the strategic and the tactical planning.

Strategic planning is involved in the preparation of the long-term financial plan which reflects the company's strategic choices. The time horizon is between 3 and 5 years.

Tactical planning is concerned with the short-term financial plan, the budget, which reflects the company's operating plan for the coming year.

6.2. The budget

The budget is the most important tool of financial planning and control for both large companies and small and medium enterprises. For small organizations, personal observations are usually the main instrument of control, together with the use of historical records for internal purposes. As the company grows, however, budget becomes the required improvement of its accounting system (fig. 6.1).

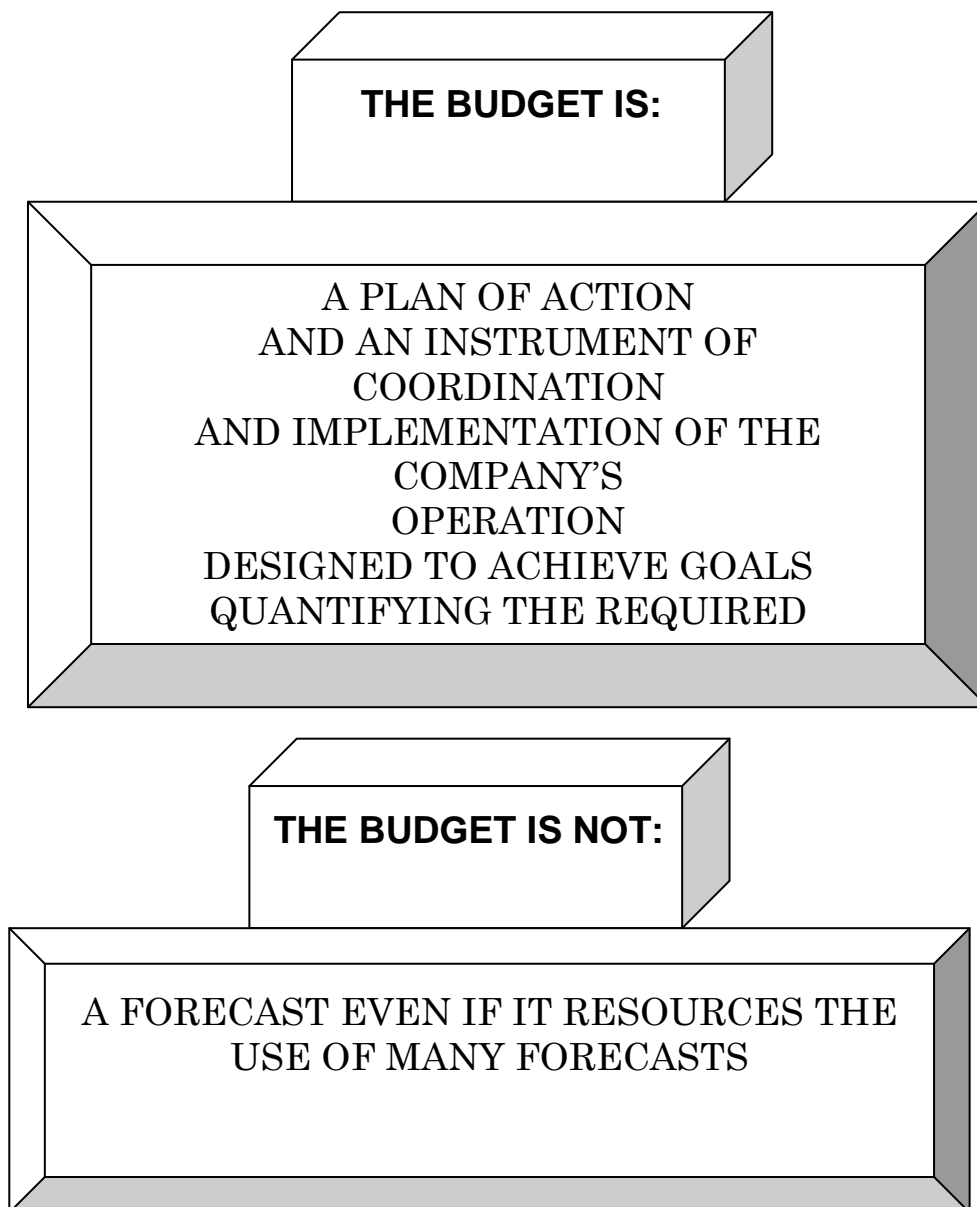


Figure 6.1. The budget: definition

The budget builds on historical cost and expands to include consideration of the future. A budgeting system turns managers' perspective to the future. The budget is a quantitative expression of a plan of action of the company [7].

It projects the financial impact of alternative operating strategies resulting from a careful look at the organization's future under alternative financial policies (capital structure, dividend policy, etc.) and under differing assumptions as to the company's future operating environment.

Budgets, however, serve a variety of additional functions: coordinating activities, motivating, controlling, and evaluating performance.

Budgeting, like any form of financial planning, involves more than forecasting. The world is too complex and there is no financial model capable of encompassing the enormous amount of factors that affect firm valuation.

The real value of budgeting is that it highlights the expected consequences of alternative courses of action. In the end, top management must judge which plan is best for the firm. Evaluating anticipated returns and risks top management will thus be able to determine a reasonable set of strategic and tactical actions for the company.

The budget's main features:

- Global;
- Broken down by responsibility centres;
- Covering infra annual periods;
- Translated in monetary units.

The Master budget summarizes the objectives of the entire organization, as it comprises:

- all functional areas;
- all levels of the organization;
- all products and services;
- all aspect in which performance can be quantified.

The breakdown by responsibility centres means that budgets must guide the behaviour both of the top management that manages the company as a whole, and of the different units of the firm, that could tend to pursue goals that could be inconsistent with the overall firm's targets.

When properly designed, the budget can motivate different units in the firm toward the same goal. It also avoids incompatibilities between various units of the firm. The budget of each department must be consistent with the budgets of the other departments. Thus budgeting forces are the different unit of the company to avoid improper utilization of resources.

The annual budget is broken down by months in the first quarter and by quarters for the remainder of the year. This is quite important since an effective action plan must be able to guide the behaviour in the period considered. Seasonal factors may determine a sales drop in a certain period, difficulties in getting raw materials and components, or production slow-downs, while the opposite could happen in different periods.

Finally, the budget process goes beyond a quantitative expression of future performance (figure 6.2). The plan of action is expressed in homogeneous terms using the monetary unit. This allows:

- a consolidation of subunits programs, since the monetary unit is the only homogeneous unit of measurement applicable to all subunits;
- an economic approach to operations, that is an attitude to understand the economic consequences of their performance.

When managed intelligently, budgets [17]:

- a) Compel planning;
- b) Provide performance criteria;
- c) Promote communication and coordination.

STRATEGY AND PLANS

A budget is the outcome of a more or less structured planning process, and as such it deals with issues of strategy and of tactics.

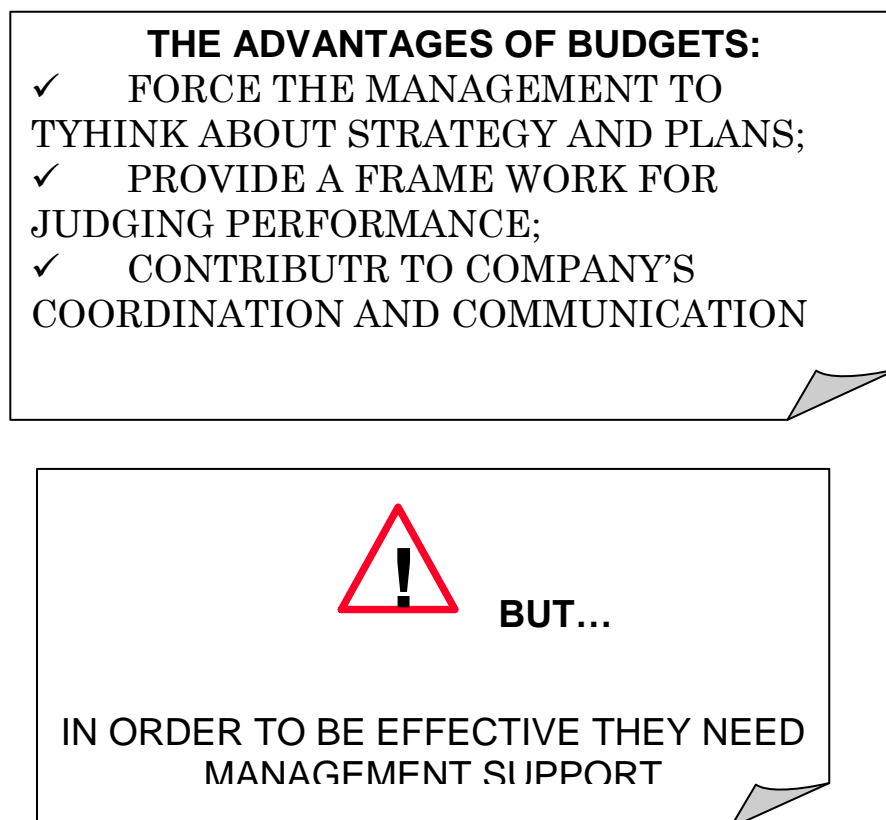


Figure 6.2. The advantages of budgets

Strategy deals with the definition of strategic goals consistent with the forecasted economic scenario. The time horizon is usually between 3 and 5 years.

Tactics is concerned with the short-term, and are the general means for attaining strategic goals. The time horizon is 1 year.

One the greatest contribution of budgeting is that it forces managers to think about future financial consequences of decision alternatives.

Framework for judging performance

Budgets are used as a yardstick against which actual performance is measured, since budgeted performance is generally considered a better criterion than is past performance. As an example, suppose that sales for a given period this year are higher than in corresponding period last year. This result might not be completely satisfactory if the sales rise has not kept pace with forecasted market growth rate.

In addition, the use of historical data to assess performance is biased by the fact that past actions might hide inefficiencies. These may be detected through a good budgeting system that forces managers to analyse their business in the planning process.

Coordination and communication

As budgets flow from lower to higher levels within the organization, incompatibilities between the various units can be resolved.

Coordination implies, for instance, that the purchase department integrates its plans with production requirements, and that the production unit uses the sales budget as a basis to plan its planned output.

This process requires an intelligent system of communication between the different activity units of the firm and thereby fosters conflict resolution and efforts to achieve common goals.

The need of management support

Budgets need a firm support from top management in order to be effective.

This is particularly important when different units of the firm support views that are conflicting among themselves and/or incompatible with the goals of the company as a whole. At times such conflicts are strong, and can only be resolved if Top Management has a clear understanding of the budget and of all aspects of the control system and provides its strong support to it.

Types of budget are:

1. Capital budgets
2. Operating budgets:

- budgeted income statement
 - cost of goods sold budget
 - selling expenses budget
3. Financial budgets:
- budgeted balance sheet
 - cash budget
 - budgeted flow of funds.

Capital budgets

These budgets express planned expenditures for capital investment projects to be carried out in the future. The capital budget is more strategic and highlights the need for long-term funds raising activities. The main role of the capital budget is to plan and coordinate.

Operating budgets

These budgets focus their attention on the acquisition and use of scarce resources. They express information about revenues, production costs, and general selling and administration expenses. Operating budgets focus on the tactical plans, and have a horizon of a year, a quarter, or a month. They are frequently used in motivating and evaluating management, sales, and production personnel. Operating budgets are also used to coordinate various subunits in the firm.

The budgeted income statement is fundamental to evaluate the profitability of future performance. The results that require primary attention are:

- gross contribution margin (revenues minus variable costs);
- operating margin (revenues minus operating costs);
- earnings before taxes (revenues minus all costs other than taxes).

Financial budgets

These budgets are important to evaluate the financial feasibility of the firm's action plan.

The budgeted balance sheet is derived from the budgeted income statement, and is useful in controlling trends in key financial ratios.

The cash flow budget focuses directly on cash generated or needed on a monthly, weekly, or daily basis. They are crucial in planning credit line usage or in procuring the required cash from banks, and in setting credit and purchasing policies.

The budgeted flow of funds is useful in assessing key changes in balance sheet accounts over time.

6.3. Budgetary process

Budgetary process consists of:

- ✓ planning the performance of the organization as a whole and as its subunits. The entire management agrees as to what is expected
 - ✓ producing a frame of reference, a set of specific expectations against which actual results can be compared
 - ✓ investigating variances from plans. Corrective action follows investigation
 - ✓ planning again, considering feedback and changed conditions
- feedback

A well-managed budget usually develops according to the following process:

1. The company defines the goals for the company as a whole, as well as for its subunits. Such goals are embodied in the budget;
2. The budget provides a frame of reference, a set of specific expectations against which actual results can be compared;
3. The company detects variances of actual performance from planned results. The investigation leads to the adoption of corrective actions;
4. Investigations as well changed conditions in the scenario can lead to the revision of the original plans.

The fig. 6.3 shows a simplified and schematic presentation of the budget preparation process.

Considering the exhibit we can reach a first conclusion. The budget is an articulated process that requires a great deal of information of different nature that can be expressed in physical units (hours, kilograms, number of units produced or purchased, etc) or in monetary units (prices, costs, revenues, cash inflows and outflows, etc).

The natural starting point of the budgetary process is a clear definition of the general goals that the company wants to achieve in the coming year. Naturally, these goals must be consistent with in the long-term financial plan.

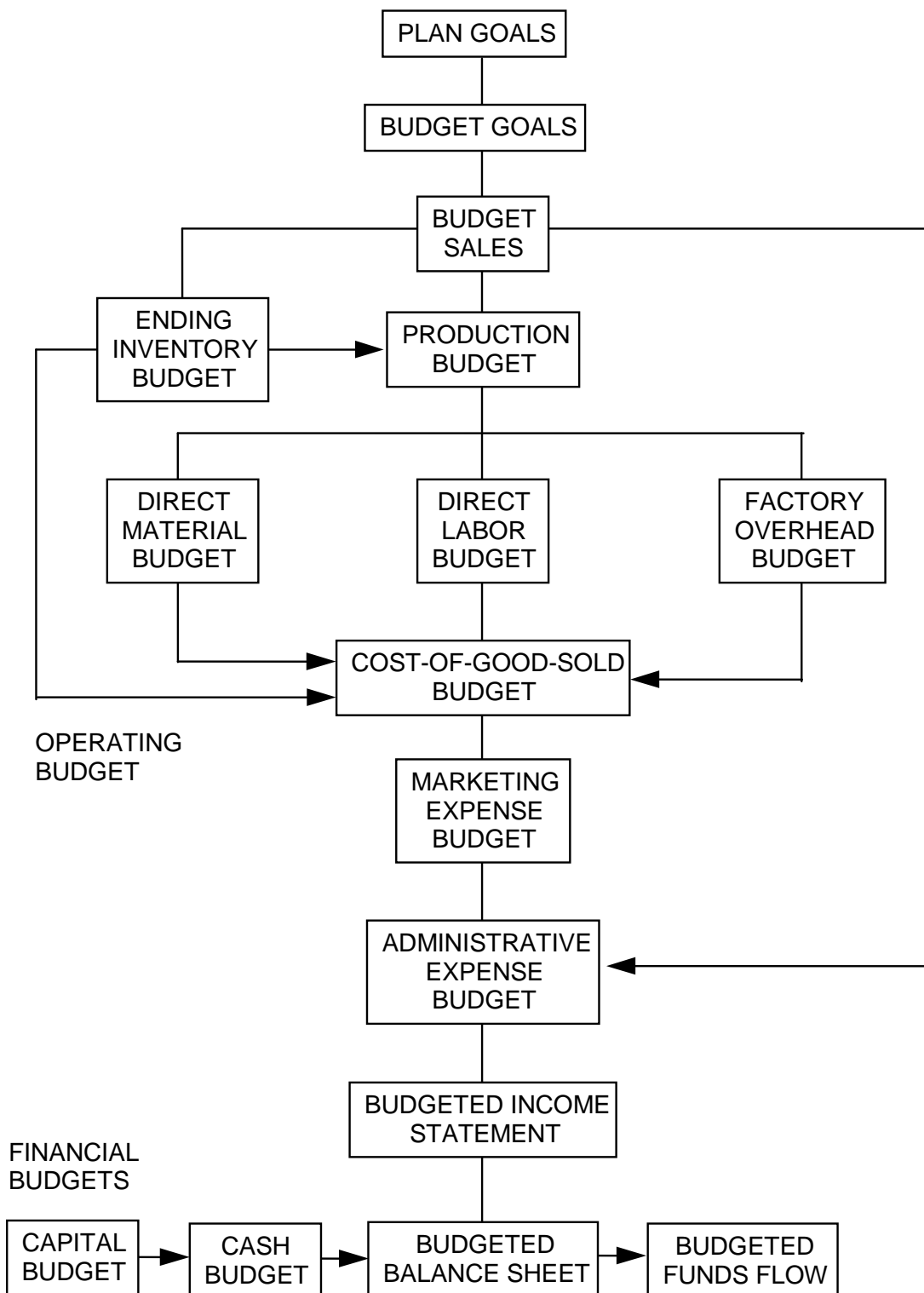


Figure 6.3. Operating budget cycle

These general goals are important since they influence the supporting and the sectorial budgets. The sales budget, for instance is clearly influenced by the general profitability targets and by other financial equilibrium conditions.

The most important general goals regard the expected profitability, as measured by the ROI, ROS, Asset turnover ratio, and ROE ratios.

Equally important are target financial ratios dealing with liquidity, leverage and activity.

The main steps in preparing the budget are:

1. Prepare a sales forecast
2. Determine the production volume and estimate manufacturing costs
3. Estimate selling and administrative expenses
4. Determine cash flow and other financial effects
5. Formulate projected financial statements

THE SALES BUDGET

The sales volume influences almost all other items of the annual budget (table 6.1).

Table 6.1

The sales budget: factors to be considered

Factors	Explanation
Volume	Quantities to be sold considering the production capacity
Price	A complex problem since it is affected by: <ul style="list-style-type: none"> ➤ Multiple variables (Costs, Market reaction, Regulations, etc.); ➤ Interdependent variables ➤ Uncertainty about future
Mix	The choice must be made considering opportunity factors (gross contribution margin)

The sales budget is one of the most crucial aspects of the budgeting process, since estimated sales volume influences almost all other items appearing throughout the annual budget.

Defining sales volume

The sales budget is often based on a sales forecast that falls under the responsibility of the marketing department. Such forecast takes into consideration factors such the past sales performance, general economic and industry conditions, competition, seasonal variations, quality of sales force, market research studies, etc.).

In most companies it takes up to four months to complete the forecast since it is frequently revised. It becomes the sales budget only when it is accepted by the marketing department.

This length of time is justified by the fact that the definition of the "volume" component of the sales budget is one of the most crucial aspects of the budgeting process, since estimated sales volume influences almost all other items appearing throughout the annual budget.

In this process, the company must be aware of the dangers resulting from a forecast that is either too optimistic or too conservative.

In the first case the forecast will lead to:

- unjustified investment of resources in fixed assets
- redundant purchases of materials and other production factors
- build-up in inventories
- decrease in liquidity.

On the opposite side the forecast will result in:

- loss of market share
- rush in the production process, with consequent lowering of the quality and of the delivery standards.

Setting the sales price

This is another crucial factor that the company must face as a result of the large number of variables that must be taken into consideration such as:

- productions costs
- reaction to the sales price by customers and competitors
- rules established by regulatory agencies
- relations with other company's products
- etc.

The strong interrelationship among such variables should also be taken into consideration. The sales price must be related to the production cost, which in turns depends on the quantity sold. This quantity in turn is dependent upon the sales price.

The figure 6.4 provides a schematic presentation of the pricing decision.

Defining the sales mix

All companies must cope with problem of limited resources that can be used for competitive projects.

The company will have then to concentrate on the product(s) that optimize the return, sacrificing the others.

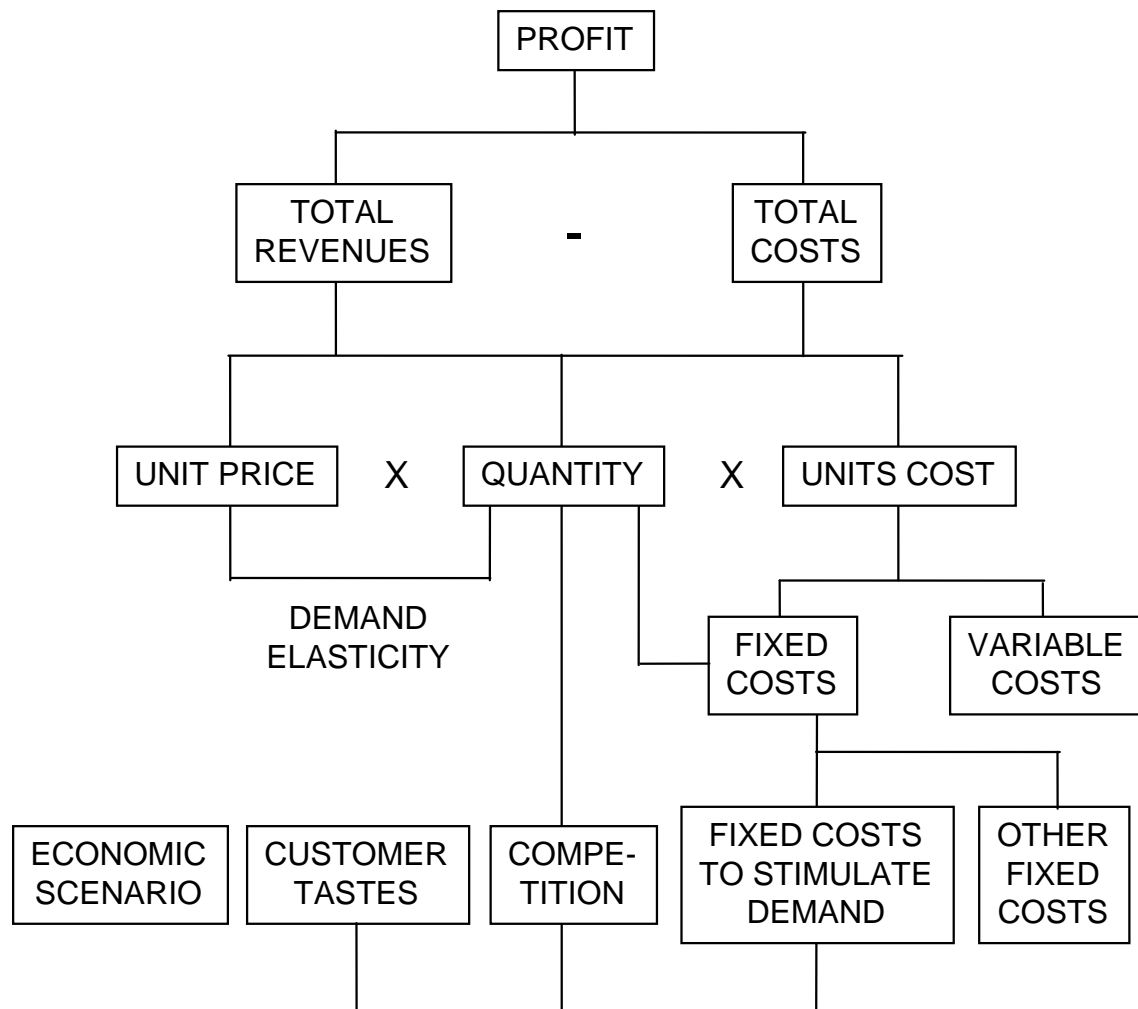


Figure 6.4. Sales budget

The most commonly used tool to this purpose is the analysis of the gross contribution margin, an issue that we have covered in the preceding section.

PRODUCTION BUDGET

After sales are budgeted, the production budget can be determined. The program of the quantity to be manufactured must be closely related to the inventory policy, which represents the natural liaison between sales and production programs [11].

Thus the production program must be designed in order to feed the marketing process and to avoid unnecessary investment of resources that could affect the financial balance of the company.

The production budget is generally broken down in infra annual periods. This feature is quite important when company's sales are not even throughout the year but have seasonal features

The process of preparing the production example is described below through an example.

The production budget and its supporting schedules

The starting point of the production budget is the number of units expected to be sold.

The number of units expected to be manufactured to meet the budgeted sales and inventory is set forth by subtracting the estimated inventory at the beginning of the period from the units to be sold plus desired ending inventory.

The direct materials budget

When the level of production has been computed, a direct materials budget is constructed to show how much material will be required and how much of it must be purchased to meet production requirements. The purchase will depend on both expected usage of materials and inventory levels. The amount can be determined using the following formula:

$$\left[\begin{array}{l} \text{amount of materials} \\ \text{to be purchased in} \\ \text{units} \end{array} \right] = \left[\begin{array}{l} \text{materials needed} \\ \text{for production} \\ \text{in units} \end{array} \right] + \left[\begin{array}{l} \text{desired ending} \\ \text{material inventory} \\ \text{in units} \end{array} \right] - \left[\begin{array}{l} \text{beginning material} \\ \text{inventory in units} \end{array} \right]$$

The direct labour budget

The production budget also provides the starting point for the preparation of the direct labour cost budget. The direct labour hours required to meet production requirements multiplied by the estimated hourly rate yields the total direct labour cost.

The factory overhead budget

It covers all manufacturing costs other than direct materials and direct labour. Using the contribution approach to budgeting requires the development of a predetermined overhead rate for the variable portion of the factory overhead.

The ending inventory budget

As we mentioned before, inventory plays an important role in structuring the production budget, since the inventory policy represents the natural liaison between sales and production programs.

Production program must be designed in order to feed the marketing process. Proper care should be devoted to the need to avoid unnecessary

investment of resources that could affect the financial balance of the company

In addition, the inventory budget provides the information required for preparing budgeted financial statements.

First it is useful for computing the cost of good sold on the budgeted income statement. Second it quantifies in money terms the ending materials and finished goods inventory that appear on the budgeted balance sheet.

SELLING AND ADMINISTRATIVE EXPENSE BUDGET

The selling and administrative expense budget shows the operating expenses involved in selling the products and in managing the business

Unlike in the case of engineered costs, where the forecast can be related to some objective measure such as the production volume, these costs are discretionary and their forecast is to a large extent quantifiable on the basis of personal and subjective judgement.

Forecasting these expenses is generally carried out on the basis of an incremental approach, i.e. a given percentage increase is applied to past performance. Naturally this approach might hide past inefficiencies.

An attempt to overcome these problems is the Zero Based Budgeting (ZBB). ZBB is budgeting from the ground up, as though the budget were being prepared for the first time. Every proposed expenditure comes under review. This requires managers to take following steps:

1. Determine objectives, operations, and costs of all activities;
2. Explore alternative means of conducting each activity;
3. Establish measures of workload and performance;
4. Rank all activities in order of their importance to the organization;
5. Evaluate alternative budget amounts for various effort for each activity.

FORMULATING PROJECTED FINANCIAL STATEMENTS

The budgetary process produces a set of projected financial statements that report in monetary units the financial consequences of the plan of action that the company wants to pursue in the coming year.

The cash budget

The cash budget is prepared in order to forecast the proper management of the firm's future financial needs. It is also a tool for cash planning and control. By providing a detailed forecast of cash receipts and

disbursements for the period taken into consideration, it helps to avoid the problem of either having idle cash on hand or suffering a cash shortage.

The cash budget generally consists of four major sections:

1. The cash collections from customers;
2. The cash disbursements listed by purpose;
3. The cash surplus/deficit section;
4. The financing section, which provides a detailed account of the borrowings and repayments expected during the period.

The budgeted income statement

It summarizes the various component projections of revenues and expenses for the budgeting period. It is an operative tool per internal purposes, and as a consequence its structure will seldom coincide with the actual income statement published for external purposes.

In particular, the budgeted income statement should highlight, in addition to net income, the contribution margin, the operating income, and income before taxes.

For control purposes the budget can be divided into quarters or months, depending on the need.

The budget balance sheet

The budgeted balance sheet provides the projected financial situation at the end of the budget period. It highlights some useful information. Some of the reasons why this statement is prepared are:

1. To disclose any potentially unfavourable financial condition;
2. To highlight future resources and obligations;
3. To help management calculate a variety of financial ratios;
4. To serve as a final check on the accuracy of all other budgets.

It is developed by adjusting the balance sheet for the year just ended for all the activities that are expected to take place during the budget period.

Financial control systems

The budget enables the implementation of managerial control, a systematic effort by business management to compare performance to predetermined standards in order to evaluate whether performance is in line with these standards and to take any remedial action required to ensure that company's resources are used in the most effective and efficient way in achieving corporate objectives.

The budget presents the map toward the company targets. But how does the company reach these targets? To attain its goals, a company must coordinate all its employees. Coordinating the company's efforts means assigning responsibility to managers who are accountable for every action in planning and controlling human and physical resources.

Control is a system that compares the budgeted plans with performance as measured by historical records of each responsibility centre.

There are four types of financial control system, each associated with a responsibility centre. The management of a responsibility centre is charged with carrying out the financial plans associated for that centre and is held accountable for performance in relation to the budget.

The four types of responsibility centre are:

Cost centres, responsible for only the costs incurred by the unit.

Revenues centres, responsible only for the revenues generated by the unit.

Profit centres, responsible for both revenues and costs.

Investment centres, responsible for revenues, costs, and the capital investment base.

Cost centres

There are two types of cost centre: engineered cost centres and discretionary cost centres.

The engineered cost (or standard cost) is generally associated with a manufacturing or production facility. This is the "acceptable" cost that should be incurred. The manager of an engineered costs centre is responsible then for maintaining costs at or below the standard cost per unit.

The discretionary cost centre produces output for which there is no readily measurable and predetermined monetary value. An example of a discretionary cost centre is a training staff. The output, training, is likely to be beneficial to the firm, but its value and quantity cannot be easily measured in monetary terms. The discretionary cost centre manager is generally held responsible for holding to a budget, while efficiency is left to other more qualitative judgments.

The disadvantage of cost centres is their emphasis on cost minimization which is not the main goal of the firm. Revenues generated by the firm are obviously important, too.

Revenues centres

Marketing units are typically the only revenue centres in most firms. Control is implemented through budgeted sales levels, with incentives for meeting or exceeding budget.

Revenues centres pose some problems when managers have discretion over pricing and/or credit terms. Revenues can often be increased by lowering prices or by liberalizing credit terms. Steps need to be taken to ensure that profitability is maintained by restricting pricing and credit control of the centre.

Profit centres

We have a profit centre when both costs and revenues of the unit can be measured in quantitative terms.

In creating an effective profit centre, the management of the centre is given authority to make decisions regarding operating policies, supply sources, prices, credit terms, and so on. The effects of these decisions must clearly be identifiable and controllable, or a profit centre has little meaning.

Measuring the profitability of a profit centre is sometimes a difficult task because of three problems:

1. Revenues may be jointly generated by two or more profit centres within the firm. The allocation must be made on some reasonable basis.
2. Several profit centres may use joint services from another unit within the firm. Again, the costs have to be fairly allocated.
3. The centre may buy from another unit within the firm at an artificially high or low transfer price.

In order to solve these problems the recommended solutions are:

Contribution margin. Only variable costs are considered. This approach is based on the assumption that the profit centre may have little control over fixed expenses or allocated corporate expenses.

Direct divisional profit. This measure also contains such costs as fixed expenses and direct charges from other divisions, even though these may be considered uncontrollable.

Income before taxes. This is equal to direct profit minus allocated corporate costs. The latter are allocated because it is held that the profit centre benefits, even if indirectly, from expenses incurred from sources such as general corporate administration, image advertising, and annual report

preparation. A profit centre, it is argued, has not made a profit until all expenses have been covered.

Net income. This measure includes all the expenses above and also subtracts out taxes. This combination serves to keep managers aware of the tax consequences of their decisions.

Investment centres

Investment centres are responsible for revenues, costs, and the assets generating the revenues and costs. Profit by themselves, are not an adequate basis for control unless the assets employed are taken into the picture. The profits of two divisions may be identical, but one may employ more assets to generate the profits than the other.

Investment centres imply that management has responsibility for increasing and/or decreasing the investment base. The manager's aim is to generate adequate profits from existing assets and to expand the assets base in an adequate return is likely.

There are two basic methods for measuring the performance of an investment centre: return on investment and residual income.

1. Return on investment (ROI):

$$ROI = \frac{\textit{net _ income}}{\textit{invested _ capital}}$$

The advantages of ROI over other performance measures are:

1. It incorporates essentially all ingredients of profitability, including the asset base;
2. It can be used to compare the performance of investment centres in the firm with outside firms;
3. It encourages management to think in terms of a broader measure of profitability

The formula for calculation ROI is simple, but many difficulties may arise both in measuring net income and invested capital.

1. Some assets may not be under management control. Cash, for instance, may be managed under highly centralized control. Most firms use total assets, even though some may be uncontrollable.

2. The options in measuring assets are **book value** at the time of purchase, **net book value** (after subtracting depreciation), and **replacement value**. Net book value tends to overstate the performance of division with

older equipment and may discourage beneficial upgrading of assets. Replacement cost may be difficult to determine and could be somewhat arbitrary. Hence the preferred method for many firms is to use the undepreciated book value.

3. Allocation of jointly held assets. Accounts receivable and cash may be maintained at corporate headquarters. An allocation to investment centres is generally made on some basis, for example allocating accounts receivable in proportion to sales.

4. Inventory valuation. While LIFO methods may be desirable for tax purposes, LIFO tends to understate inventory value during inflation. Hence most firms use FIFO for computing ROI.

Shortcomings of ROI

Besides the difficulties mentioned above, ROI suffers from several deficiencies. First, accounting measures of return are not cash flows and may not capture the true economic picture of the investment centre. Second, ROI may encourage a short-term decision horizon that would be bad for the firm in the long run. Third, the pressure to maintain the current ROI may lead to the rejection of projects that could be beneficial. Finally, the focus on keeping ROI high may lead to projects of high risk.

2. Residual income (RI)

Residual income is defined as the residual amount after subtracting a capital charge for the assets employed from net income:

$$RI = \text{revenues} - \text{operating expenses} - I \times \text{asset base}$$

where I = interest rate measuring the cost of providing capital to the investment centre.

The advantage of RI over ROI is that it encourages the investment centre to undertake investments provided that the return is greater than the firm's required return I . Another advantage is that the interest rate can be different for various classes of assets. For risky assets, a higher rate can be applied.

Shortcomings of RI

Besides the problems related to accounting issues also encountered in ROI, RI suffers from other deficiencies. RI is a measure in money terms, and

not a return. This makes it difficult to compare different units, especially when their size is different.

So, while RI may be superior for investment decisions, it still has drawbacks that must be considered before it is used to evaluate management performance.

Implementing control

The budgetary control is a systematic effort by business management to compare performance to predetermined standards in order to evaluate whether performance is in line with these standards and to take any remedial action required to ensure that company's resources are used in the most effective and efficient way in achieving corporate objectives.

This is done by focusing on variances that highlight significant deviations of actual performance from budgeted amounts.

There is no single format applicable to all users. An example of the format for reporting operations could be the following.

Table 6.1

An example of the format for reporting operations

Data	Budget		Actual results		Variance Favourable (Unfavourable)		Variance: Percent of Budgeted Amount	
	This Month	Year to Date	This Month	Year to Date	This Month	Year to Date	This Month	Year to Date
Sales	180	700	189	715	9	15	5.0%	2.1%

The complete performance report would likely include line-by-line presentations of other data. A report for a restaurant, for instance will show the number of customers served and the average sales per customer. In the hotel industry, managers will report the percentage of rooms occupied and the average daily rent rate per room.

Budgetary control provides systematic help for management, particularly if managers interpret the feedback with care.

The real benefit of the budgetary control is to detect the reasons why performance is out of line with budget standards and to provide remedies for these problems.

Example:
THE ALPHA COMPANY

The Alfa Company is a medium-sized company that is involved in the production of a single product,

We are going to follow the company through the different stages of its budgetary cycle. All data in money terms are in thousand rubbles.

THE SALES BUDGET

As a result of the approved sales forecast, the company's sales in units for the year 2006 are expected to be 3,200. The company has set the unit sales price at 80,000 rubbles (table 1). On the basis of this information we can build up the sales budget (table 2).

Table 1

ALFA Company - 2006 Sales budget

Data	Quarter				TOTAL
	1	2	3	4	
Expected sales in units	800	700	900	800	3,200
Unit sales (price rubbles)	80	80	80	80	80
Total sales (rubbles)	64,000	56,000	72,000	64,000	256,000

In order to build up the schedule of expected cash collections, we now assume that 70 percent of each quarter sales is collected in the quarter of sale, that 28% is collected in the following quarter, and that 2% is uncollectible.

Table 2

ALFA Company - 2006 Expected cash collections

Data	Quarter				TOTAL
	1	2	3	4	
Accounts receivable as of Dec.31, 2005	9,500				9,500
1st quarter sales	44,800	17,920			62,720
2d quarter sales		39,200	15,680		54,880
3d quarter sales			50,400	20,160	70,560
4th quarter sales				44,800	44,800
Total cash collections	54,300	57,120	66,080	64,960	242,460

THE PRODUCTION BUDGET

The starting point of the production budget is the number of units expected to be sold (see table 2).

N.B. The number of units expected to be manufactured to meet the budgeted sales and inventory is calculated by subtracting the estimated inventory at the beginning of the period from the sum of units to be sold plus desired ending inventory.

Assume that the ending inventory in each quarter is 10 % of next quarter's sales and that ending inventory for the fourth quarter is 100 units.

Table 3

ALFA Company - 2006 Production budget

Data	Quarter				TOTAL
	1	2	3	4	
Planned sales	800	700	900	800	3,200
Desired ending inventory	70	90	80	100	100
Total needs	870	790	980	900	3,300
less beginning inventory	80	70	90	80	80
Units to be produced	790	720	890	820	3,220

THE DIRECT MATERIALS BUDGET

Having computed the level of production, we must prepare the direct materials budget in order to know how much material will be required and how much of it must be purchased to meet production requirements. The purchase will depend on both expected usage of materials and inventory levels.

Table 4

ALFA Company - 2006 Direct materials budget

Data	Quarter				TOTAL
	1	2	3	4	
Units to be produced	790	720	890	820	3,220
material needs per unit (kg)	x3	x3	x3	x3	x3
Total needs	2,370	2,160	2,670	2,460	9,660
Desired ending inventory of materials	216	267	246	250	250
Total production needs	2,586	2,427	2,916	2,710	9,910
Less: beginning inventory	237	216	267	246	237
Material to be purchased	2,349	2,211	2,649	2,464	9,673
Purchase cost	x2	x2	x2	x2	x2
Purchase cost	4,698	4,422	5,298	4,928	19,346

We assume that the ending inventory in each quarter is 10 % of next quarter's production needs and that ending materials inventory for the fourth quarter is 250 units. In order to quantify the number of units to be produced and the cost in monetary units, we assume that 3 kg. of materials are needed per unit of product at a cost of 2,000 rubbles per kg.

Table 5

ALFA Company - Schedule of expected cash disbursements

Data	Quarter				TOTAL
	1	2	3	4	
Accounts payable at the beginning of year	2,200				2,200
1st qtr purchases	2,349	2,349			4,698
2d qtr purchases		2,211	2,211		4,422
3d qtr purchases			2,649	2,649	5,298
4th qtr purchases				2,464	2,464
Total disbursements	4,549	4,560	4,860	5,113	19,082

DIRECT LABOR BUDGET

The production budget also provides the starting point for the preparation of the direct labour cost budget. The direct labour hours required to meet production requirements multiplied by the estimated hourly rate yields the total direct labour cost.

We assume that 5 hours of labour are required per unit of product, and that the hourly rate is 5,000 rubbles.

Table 6

ALFA Company - 1994 Direct labour budget

Data	Quarter				TOTAL
	1	2	3	4	
Units to be produced direct	790	720	890	820	3,220
labour hours per unit	x5	x5	x5	x5	x5
Total needs (hours)	3,950	3,600	4,450	4,100	16,100
Direct labour cost per hour	x5	x5	x5	x5	x5
Total direct labour cost	19,750	18,000	22,250	20,500	80,500

FACTORY OVERHEAD BUDGET

We assume that total factory overhead is budgeted at 6,000,000 rubbles per quarter plus 2,000 rubbles per hour of direct labour. All overhead costs involving cash outlays are paid in the quarter in which they are incurred. We should also bear in mind that depreciation does not entail a cash outlay

and therefore must be deducted from the total factory overhead we assume that depreciation expenses are 3,250,000 per quarter.

Table 7

ALFA Company - 2006 Factory overhead budget

Data	Quarter				TOTAL
	1	2	3	4	
Budgeted direct labour hours	3,950	3,600	4,450	4,100	16,100
Variable overhead rate (rubles)	x2	x2	x2	x2	x2
Variable overhead budgeted	7,900	7,200	8,900	8,200	32,200
Fixed overhead budgeted	6,000	6,000	6,000	6,000	24,000
Total budgeted overhead	13,900	13,200	14,900	14,200	56,200
Less: depreciation	3,250	3,250	3,250	3,250	13,000
Cash disbursements for overhead	10,650	9,950	11,650	10,950	43,200

ENDING INVENTORY BUDGET

For the ending inventory budget, the variable cost for finished goods must be computed.

Table 8

Variable cost for finished goods

Data	Unit cost (rubles)	Units	Total (rubles)
Direct materials	2	3 kg	6
Direct labour	5	5 hours	25
Variable overhead	2	5 hours	10
Total variable manufacturing cost			41

Table 9

ALFA Company - 1994 Ending inventory

Data	Unit	Units cost (rubles)	Total (rubles)
Direct materials	250 kg	2	500
Finished goods	100 units	41	4,100

SELLING AND ADMINISTRATIVE EXPENSE BUDGET

The variable selling and administrative expenses amount to 4,000 rubles per unit of sale, including commissions, shipping, and supplies.

Table 10

ALFA Company - 2006 Factory overhead budget

Data	Quarter				TOTAL
	1	2	3	4	
Budgeted sales in units	800	700	900	800	3,200
Variable overhead rate (rubblles)	x 4	x 4	x 4	x 4	x 4
Budgeted variable expense	3,200	2,800	3,600	3,200	12,800
Fixed selling and administrative expenses					
Advertising	1,100	1,100	1,100	1,100	4,400
Insurance	2,800				2,800
Office salaries	8,500	8,500	8,500	8,500	34,000
Rent	350	350	350	350	1,400
Taxes			1,200		1,200
Total budgeted selling and administrative expenses	15,950	12,750	14,750	13,150	56,600

THE CASH BUDGET

Using the data developed in the preceding sections, we can prepare the cash budget.

We assume the following:

1. The company wants to keep 5,000,000 minimum cash balance at the end of each quarter.
2. All borrowings and repayments must be in multiples of 500,000 rubbles at an interest rate of 10% per annum. Interest is computed and paid as the principal is repaid. Borrowing takes place at the beginning and repayments at the end of each quarter.
3. The beginning cash balance of the first quarter is 10,000,000 rubbles.
4. A sum of 24,300,000 rubbles must be paid in the second quarter for the purchase of machinery.
5. Income tax of 4,000,000 rubbles is paid in the first quarter.

Table 11

ALFA Company - Cash budget for the year ended Dec. 31 2006

	From Schedule	Quarter				TOTAL
		1	2	3	4	
Cash balance, beginning		10,000	9,401	5,461	9,106	10,000
Add receipts						
Collections from customers	1	54,300	57,120	66,080	64,960	242,460

Total cash available		64,300	66,521	71,541	74,066	252,460
Less disbursements						
Direct materials	3	4,549	4,560	4,860	5,113	19,082
Direct labor	4	19,750	18,000	22,250	20,500	80,500
Factory overhead	5	10,650	9,950	11,650	10,950	43,200
Selling and admin.	7	15,950	12,750	14,750	13,150	56,600
Machinery purchase	Given		24,300			24,300
Income tax	Given	4,000				4,000
Total disbursements		54,899	69,560	53,510	49,713	227,682
Cash surplus (deficit)		9,401	(3,039)	18,031	24,353	24,778
Financing						
Borrowings			8,500			8,500
Repayment				(8,500)		(8,500)
Interest				(425)		(425)
Total financing			8,500	(8,925)		(425)
Cash balance, ending		9,401	5,461	9,106	24,353	24,353

THE BUDGETED INCOME STATEMENT

It summarizes the various component projections of revenues and expenses for the budgeting period. For control purposes the budget can be divided into quarts or months, depending on the need.

Table 12

ALFA Company
Budgeted income statement (in thousand rubbles)
for the year ended Dec. 31 12006

	From Schedule		
Sales	1		250,900
Less: Variable expenses			
Variable cost of goods sold (3,200 @41)	6	131,200	
Variable selling and administrative	7	12,800	144,000
Contribution margin	7		106,900
Less: Fixed expenses			
Factory overhead	5	24,000	
Selling and administrative	7	43,800	67,800
Net operating income			39,100
Less: interest expense	8		425
Net income before taxes			38,675
Less: income taxes (20%)			7,735
			30,940

THE BUDGETED BALANCE SHEET

The budgeted balance sheet is developed starting from the balance sheet for the year just ended

Table 13

ALFA Company
Balance sheet (in thousand rubbles) for the year ended Dec. 31
2005

ASSETS		LIABILITIES AND STOCKHOLDER'S EQUITY	
Current assets		Current liabilities	
Cash	10,000	Accounts payable	2,200
Accounts receivable	9,500	Income tax payable	4,000
Materials inventory	474		6,200
Finished goods inventory	3,280		
TOTAL	23,254	Stockholders' equity	
		Common stock	70,000
Fixed assets		Retained earnings	37,054
Land	50,000	TOTAL	107,054
Building and equipment	100,000		
Accumulated depreciation	(60,000)		
TOTAL	90,000		
Total assets	113,254	Total liabilities and stockholders' equity	113,254

This balance sheet must be adjusted using all the activities that are expected to take place during the budget period as they are shown in the preceding schedules.

Table 14

ALFA Company
Balance sheet (in thousand rubbles) for the year ended Dec. 31
2006

ASSETS			LIABILITIES AND STOCKHOLDER'S EQUITY		
Current assets			Current liabilities		
Cash	24,353	1	Accounts payable	2,464	7
Accounts receivable	17,920	2	Income tax payable	7,735	8
Materials inventory	500	3	Total	10,199	
Finished goods inventory	4,100	3			
Total	46,373		Stockholders' equity		
			Common stock	70,000	9
Fixed assets			Retained earnings	67,994	10
Land	50,000	4		137,994	

Building and equipment	124,300	5		
Accumulated depreciation	(73,000)	6		
Total	148,193			
Total assets	148,193		Total liabilities and stockholders' equity	148,193

1. From schedule 8 (cash budget)
2. From schedule 1 (sales budget)
Accounts receivable = Beginning balance + sales - receipts
3. From schedule 6 (ending inventory budget)
4. From 1993 balance sheet
5. From 1993 balance sheet + schedule 8
6. From 1993 balance sheet plus 13.000 from schedule 5
7. Accounts payable = beginning balance + purchase cost (schedule 3) - disbursements for materials (schedule 3) - disbursements for materials (schedule 3)
8. From schedule 9 (budgeted income statement)
9. Unchanged
10. Beginning balance + net income (from schedule 9)

Control questions:

1. Financial planning
2. The budget: definition
3. The budget's main features
4. Strategy and plans
5. The advantages of budgets
6. Types of budget
7. Budgetary process
8. Operating budget cycle
9. Sales budget
10. The direct materials budget
11. The cash budget
12. The budget balance sheet
13. Financial control systems

Unit 7. The investment evaluation process

- 7.1. The capital budgeting process
- 7.2. Project evaluation and selection
- 7.3. Leasing and investments

7.1. The capital budgeting process

When a business makes a capital investment, it incurs a current cash outlay in the expectation of future benefits that usually extend over one year in the future.

Capital budgeting is the process of identifying, analyzing and selecting investment projects in the perspective of the shareholders' wealth maximization (fig. 7.1).

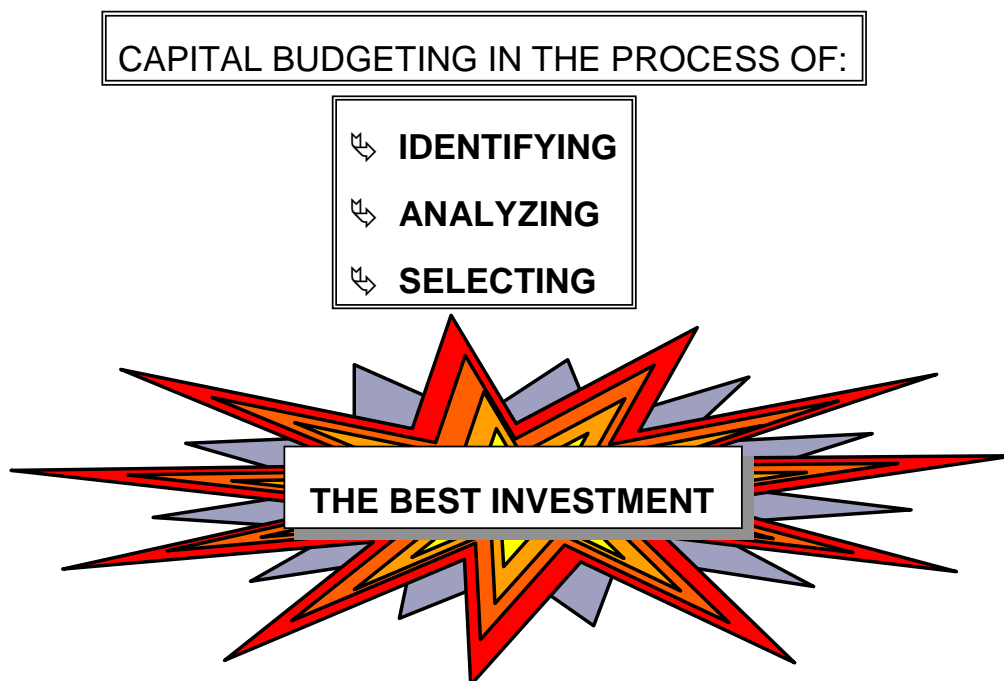


Figure 7.1. **Budgeting**

The capital budgeting process consist 4 steps (fig. 7.2).

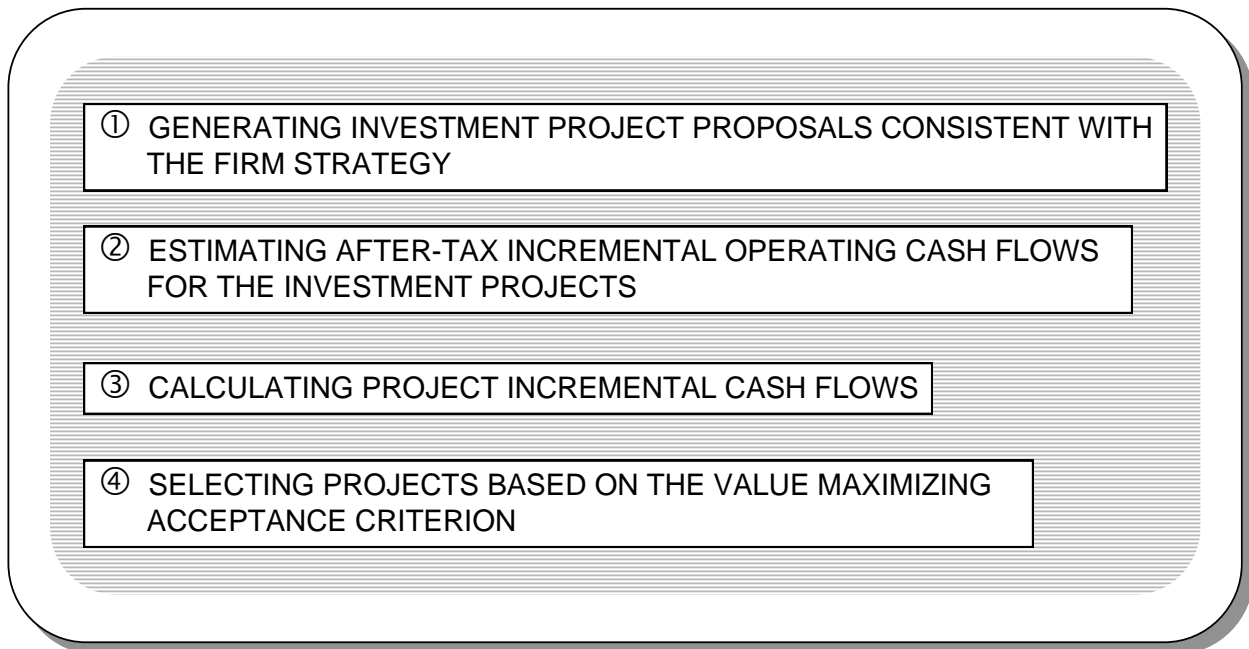


Figure 7.2. **The capital budgeting process**

Consider all steps separately [1]:

1. Generating investment proposals (fig. 7.3).

Types of investment

When a business makes a capital investment, it incurs a current cash outlay in the expectation of future benefits that usually extend over one year in the future.

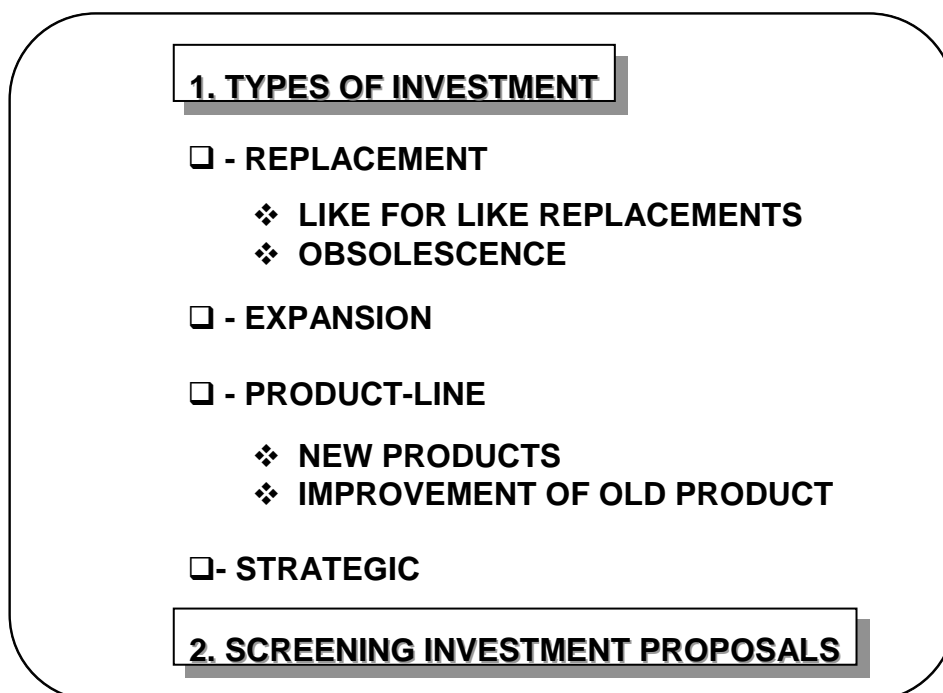


Figure 7.3. **Generating investment proposals**

There are many reasons that promote investments. They can be classified under four main categories.

Replacement investments substituted for current investment will either reduce cost or increase capacity or quality.

Expansion investments are directed toward increasing capacity rather than changing the operating process.

Some investments combine elements of replacement and expansion.

With respect to **product-line investments**, expenditures may be for purposes of developing new items or improving those already being produced.

Proposals for **strategic investment** are likely to involve basic policy such as a shift to new product lines or new geographic location.

Screening investment proposals

Given the relevance of risk, and the problem of limited resources, efficient administrative procedures are needed for channelling investment projects.

The first requirement is that all requests should be consistent with corporate strategy in order to avoid needless analysis of projects incompatible with this strategy.

In addition to this "filter", most companies screen proposals at multiple levels of authority. The greater the capital outlay, the greater the number of screens usually required.

2. Estimating operating cash flows (fig 7.4).

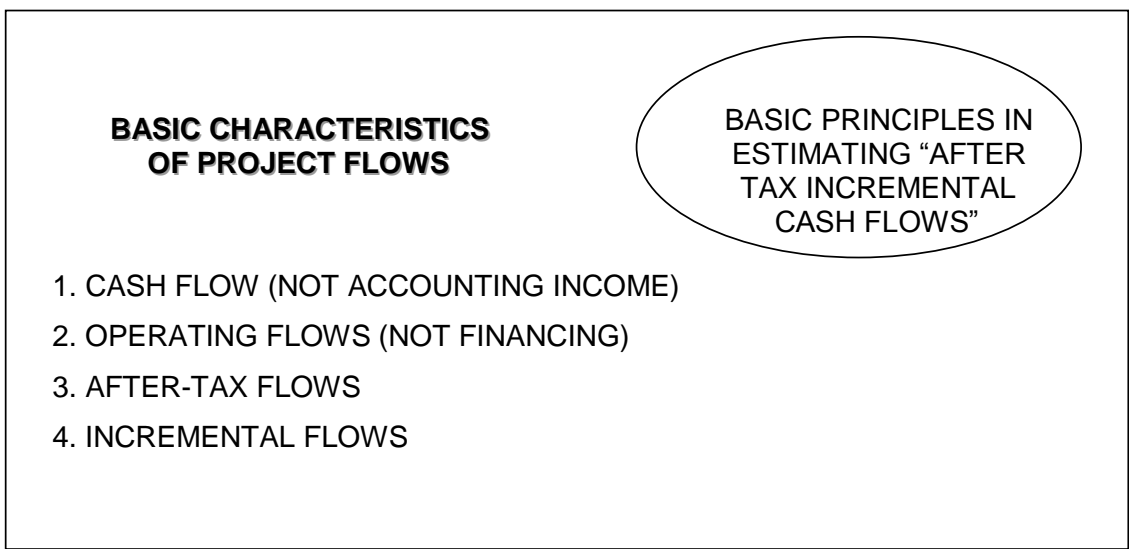


Figure 7.4. **Basic characteristics of project flows**

One of the most important tasks in capital budgeting is estimating future cash flows. In this process one should bear in mind that such flows have certain characteristics. First of all the firm must be concerned with **cash flows** and not with accounting flows. This is in line with the primary goal of the firm, which is to maximize of net present value of its present owners. Only cash can be reinvested in the firm or paid to their shareholders in the form of dividends. Thus the main focus must be in cash invested now in the hope of receiving a greater cash return in the future.

For each investment proposal information must be provided on **operating**, as opposed to financing cash flows. Thus profitability measures are obtained that is independent of the method of financing. The decision maker may include all debt flows (principal and interest) to obtain stockholder equity profitability measures. However, these measures must be used with care, since they are not comparable to measures that exclude financing flows. It is a major error to include some of these effects of debt but not all, or to include all the debt effects but not to recognize that the resulting measures pertain to the stockholders' equity, not to the entire firm.

Cash flows should be determined on an **after-tax basis**. The initial investment outlay, as well as the appropriate discount rate, will be expressed in after-tax terms. Therefore, all forecasted flows need to be stated on an equivalent after-tax basis. The information must be presented on an **incremental basis**, in order to analyze the situation with and without the project. The importance of this approach becomes clear in the case of a firm that is considering a new product that will be competing with existing products. Considering total expected sales of the product is not correct, since we must take into consideration the reduction in sales of existing products resulting from the introduction of the new product.

Estimating operating cash flows based on some principles (fig. 7.5).

When considering an investment proposal, **sunk costs** must be ignored. These are past outlays that cannot be recovered and therefore do not affect present actions or future decisions.

On the other hand, we should consider that certain relevant costs do not necessarily involve an actual outlay. This is the case of plant space that has been allocated to a project, which could be used for something else. In this case the **opportunity cost**, i.e. what is lost by not pursuing another investment opportunity, must be included in the project evaluation.

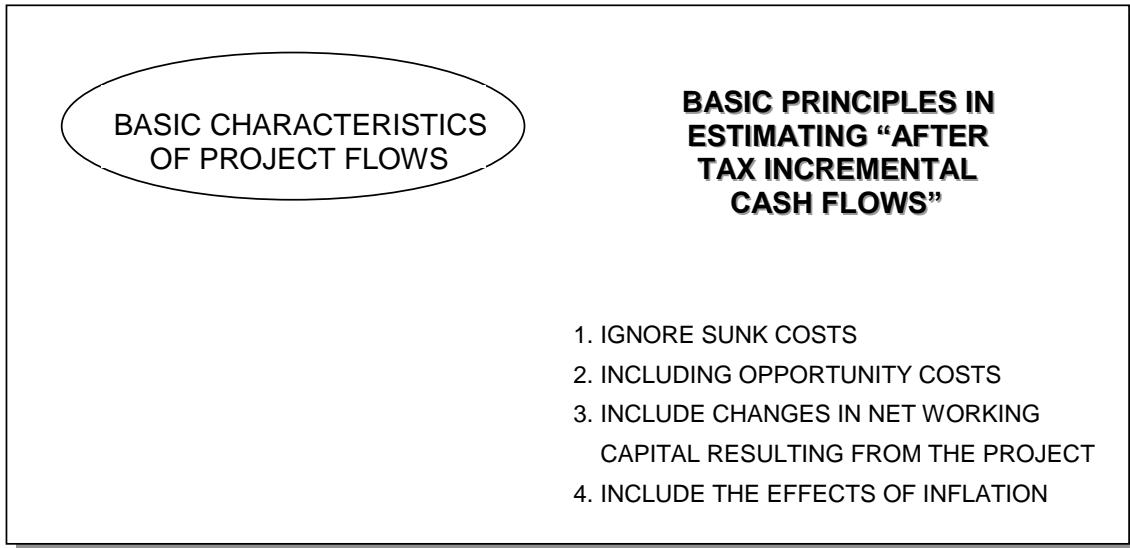


Figure 7.5. **Basic principles to be followed in estimating of cash flows**

For the same reason, the net **working capital** resulting from a capital investment must be treated as a part of the capital investment and not as a separate working capital decision.

Finally, when estimating cash flows, **anticipated inflation** must be taken into consideration.

3. Calculating incremental cash flows (fig. 7.6).

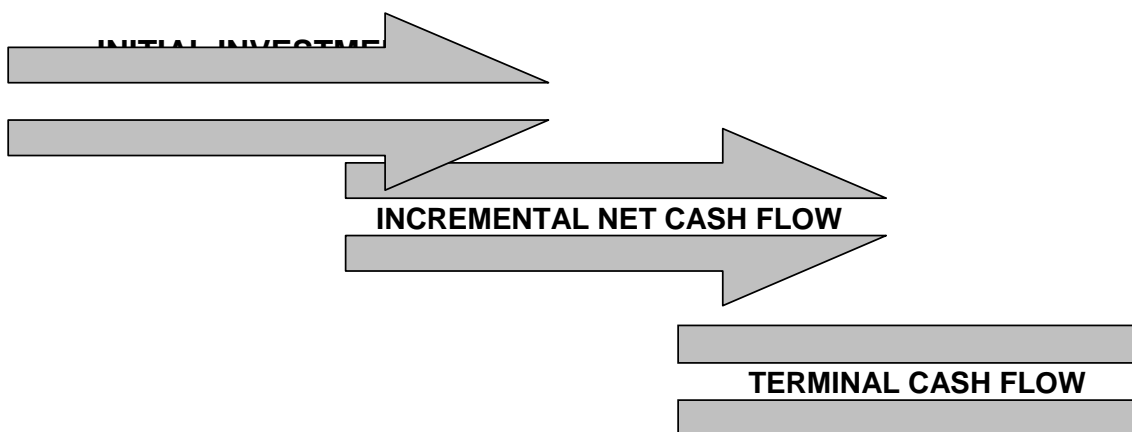


Figure 7.6. **Initial investment**

The initial investment is the initial cash outlay necessary to purchase the asset and to put it in operating order. It is determined as follows (table 7.1).

Table 7.1

Initial Investment Outflow

	Cost of asset(s)
+	Installation cost
+ (-)	Increased (decreased) level of net working capital
-	Proceeds from sale of old asset
+ (-)	Taxes (tax savings) on sale of old asset

The relevant cash inflows over a project's expected life involve the incremental after-tax cash flows resulting from increased revenues and/or savings in cash operating costs [4].

Cash flows are not the same as accounting income. The differences between accounting income and cash flows are such noncash charges as depreciation and amortization (table 7.2).

Table 7.2

The differences between accounting income and cash flows

	Net increase (decrease) in operating revenue less (plus) any net increase (decrease) in operating expenses, excluding depreciation
- (+)	Net increase (decrease) in tax depreciation charges
=	Net change in income before taxes
- (+)	Net increase (decrease) in taxes
=	Net change in income after taxes
+ (-)	Net increase (decrease) in tax depreciation charges
=	Incremental net cash flow for the period

It can be noticed that the incremental tax depreciation related to project acceptance is first deducted in order to determine net change in income before taxes, and then added back in determining the incremental net cash flow for the period.

This is due to the fact that tax depreciation is a non cash charge against operating that lowers taxable income. So we need to consider it when we determine the incremental effect that project acceptance has on the firm's taxes. However, we need to any increase in tax depreciation to the net change in income after taxes figure in order not to understate the project's effect on cash flow.

Terminal cash flow

In this step the project incremental cash flow in its final year of existence is determined (table 7.3).

Table 7.3

Calculating of terminal year incremental net cash flow

	Net increase (decrease) in operating revenue less (plus) any net increase (decrease) in operating expenses, excluding depreciation
- (+)	Net increase (decrease) in tax depreciation charges
=	Net change in income before taxes
- (+)	Net increase (decrease) in taxes
=	Net change in income after taxes
+ (-)	Net increase (decrease) in tax depreciation charges
=	Incremental cash flow for the terminal year before project wind-up considerations
+	Final salvage value of new asset(s)
- (+)	Taxes (tax savings) due to the sale or disposal of new asset(s)
+ (-)	Decreased (increased) level of net working capital
=	Terminal year incremental net cash flow

In this phase special attention must be devoted to some cash flows that are often connected only with project termination such as:

1. Salvage value of assets sold or disposed.
2. Taxes (tax savings) related to asset sales or disposal.
3. Changes in net working capital.

Example “Calculating incremental cash flows”:

The Gamma Company is considering the introduction of a new production facility that will require an outlay of 180.000 for the purchase of equipment.

The equipment has a useful life of 4 years and a 3-year property class for tax purposes. Thus under the MACRS (Modified Accelerated Cost Recovery System) the depreciation percentages are as follows: 33.33 % in year 1, 44.45 % in year 2, 14.81 % in year 3 and 7.41 % in year 4. Shipping and installation expenditures (that are capitalized) amount to 20.000, and has a final salvage value of 30.000. The equipment is to be installed in a warehouse near to the plant that has no alternative economic use. No additional net working capital is required. It is expected that the new facility will generate additional net revenues cash inflows, before depreciation and taxes as follows:

Net cash inflows 70.000 73.990 104.010 60.000

Assuming that the marginal tax rate equals 34 %, we must:

Step 1: Estimate of the project Initial Cash Outflow (ICO) (table 7.4).

Table 7.4

Calculating ICO

	Cost of new equipment	180.000
+	Installation and shipping costs	20.000
+ (-)	Changes in net working capital	0
-	Proceeds from sale of old asset	0
+ (-)	Taxes (tax savings) on sale of old asset	0
ICO		200.000

Step 2: Calculate the incremental future cash flows (table 7.5).

Table 7.5

Calculating the incremental future cash flows

End of year		1	2	3	4
	Net change in operating revenue excluding depreciation	70.000	73.990	104.010	60.000
-	Net increase in tax depreciation charges	(66.660)	(88.900)	(29.620)	(14.820)
=	Net change in income before taxes	3.340	(14.910)	74.390	45.180
- (+)	Net increase (decrease) in taxes 34%	(1.136)	5.070	(25.292)	(15.362)
=	Net change in income after taxes	2.204	(9.840)	49.098	29.818
+	Net increase in tax depreciation charges	66.660	88.900	29.620	14.820
=	Incremental net cash flow for the years 1 to 3	68.864	79.060	78.718	44.638
+	Final salvage value of equipment				30.000
-	Taxes due to sale or disposal of equipment				(10.200)
-	Terminal year incremental net cash flow				64.438

The projected incremental net cash flows from the project are in the table 7.6.

Table 7.6

The projected incremental net cash flows

End of year	0	1	2	3	4
Net cash flows	(200.000)	68.864	79.060	78.718	64.438

So the net cash flows changed from (200.000) in 0-year to 64.438 in 4th year.

7.2. Project evaluation and selection

Once the project's relevant cash flows have been determined, the attractiveness of the various investment proposals must be evaluated, in order to either accept them or to reject them.

Several methods are used for this purpose. They can be classified under two categories, the traditional methods and the discounted cash flow (DCF) methods [3]. Thirty years ago the traditional methods were used by most firms. Today the discounted cash flow methods represent the primary method of evaluating investments (fig. 7.7).

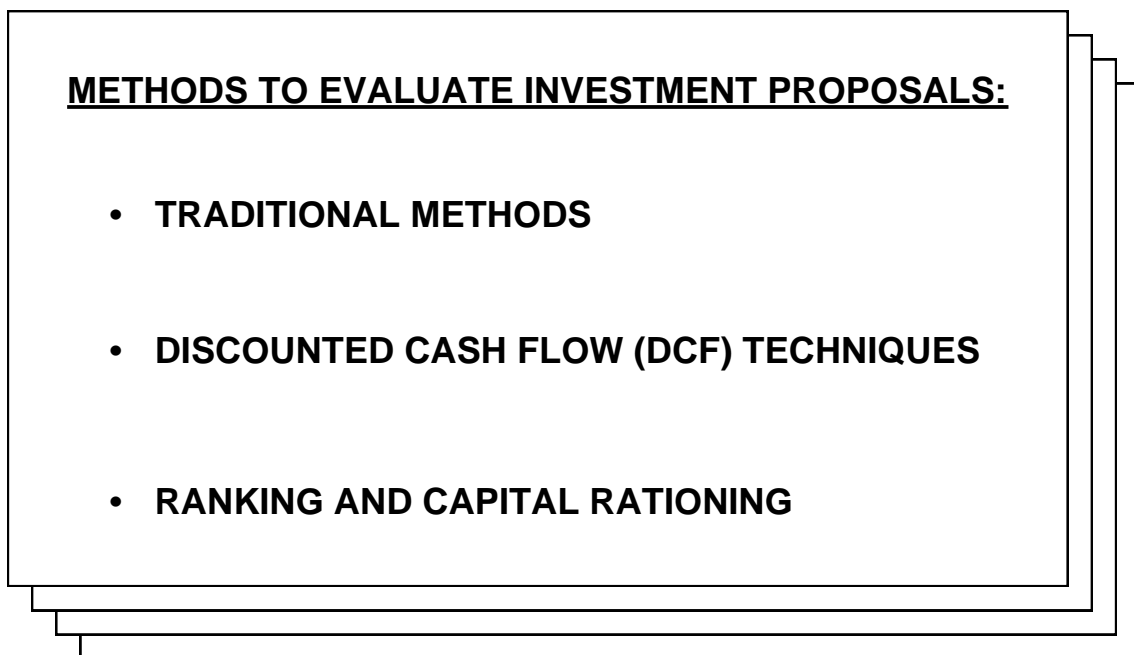


Figure 7.7. **Methods of evaluating investments**

Each of the methods is described below. For simplicity, we assume that the expected cash flows are realized at the end of each year. We also assume that the acceptance of any investment proposal does not change the total business-risk profile of the firm. This assumption allows us to use a single required rate of return in order to accept a project.

The ranking of investment projects becomes necessary when some form of capital rationing is taking place within the company. This means that there are more roubles needed for investment than there are investable funds.

Project evaluation and selection process is presented in the fig. 7.8.

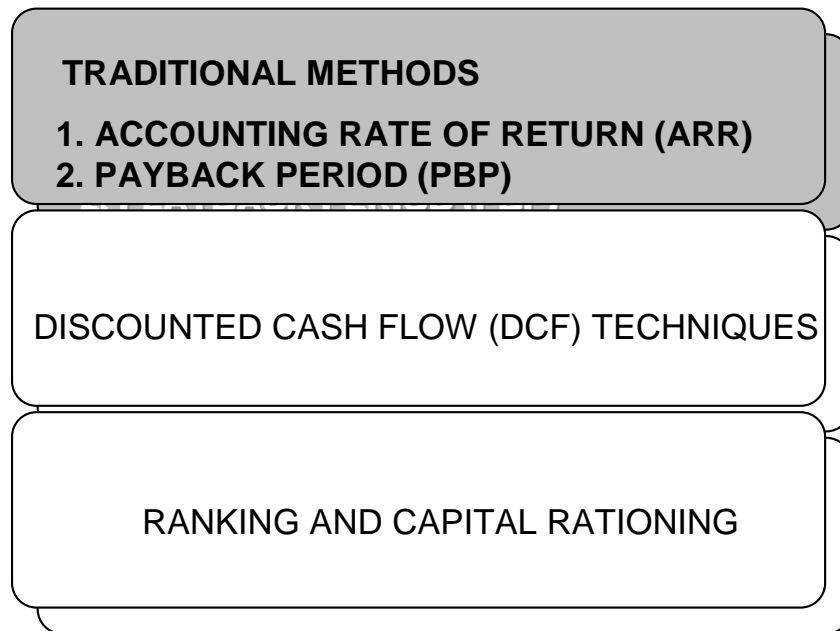


Figure 7.8. **Project evaluation and selection**

The accounting rate of return (ARR) measures profitability from the conventional point of view by relating the required investment (or average investment) to the future annual average net income. Consider the following example (in UAH) (table 7.7).

Table 7.7

Example

Indicator	Meaning
Initial investment	100.000
Estimated life	20 years
Annual cash inflow	15.500
Annual depreciation (straight line)	5.000

$$net\ income = 15.500 - 5.000 = 10.500\ (UAH)$$

$$ARR = \frac{net\ income}{investment} \quad (7.1)$$

$$ARR = \frac{10.500}{100.000} = 10,5\ \%$$

Using average income (usually 50 % of the original investment) to calculate another ARR:

$$ARR = \frac{15.500 - 5.000}{50.000} = 21 \%$$

Decision rule: Choose the project with the higher rate of return.

Advantages: Since the income and the investment measures used are conventional accounting measures, ARR is easily understandable and simple to compute.

Disadvantages: it fails to recognize the time value of money, and it uses accounting data instead of cash flow data. These are the main reasons why this method has rapidly lost ground.

The **payback period** (PBP) measures the length of time required to recover the amount of initial investment. It is computed by dividing the initial investment by the cash flows from the investment project.

When cash inflows are not even, the payback period must be found by trial and error.

Example:

For the Gamma company the PBP can be calculated as follows. Calculating of the cumulative inflows is presented in the table 7.8.

Table 7.8

Calculating of the cumulative inflows

Year	Cash flows	Cumulative inflows
0	(200.000) (b)	
1	68.864	68.864
2 (a)	79.060	147.924 (c)
3	78.718 (d)	226.642
4	64.438	291.080

The PBP can be calculated using the following formula:

$$PBP = \frac{a + (b - c)}{d} \quad (7.2)$$

$$PBP = \frac{2 + (200.000 - 147.924)}{78.718} = 2,66 \text{ years.}$$

Decision rule: Choose the project with the shorter payback period. The rationale behind this choice is that the shorter the payback period, the less risky the project and the greater the liquidity.

Advantages:

- 1) it is simple to compute and easy to understand;
- 2) it handles investment risk effectively.

Disadvantages:

1) it does not recognize the time value of money. It simply adds cash flows without regard to the timing of these flows;

2) it ignores the impact of cash inflows received after the payback period. Consequently, since it cannot be regarded as a measure of profitability, it can be deceptive as a yardstick of profitability.

Next step of project evaluation and selection process is presented in fig. 7.9.

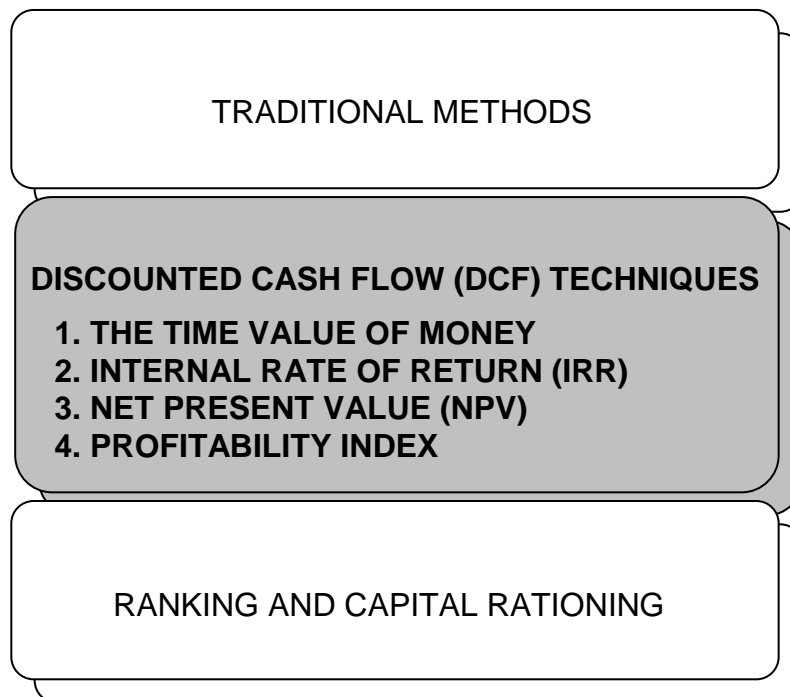


Figure 7.9. **Project evaluation and selection**

Because of the various shortcomings in the traditional methods, it is generally believed that the discounted cash flows methods allow a more objective basis for evaluating and selecting investment projects. This is due to the fact that these methods take into account both the magnitude and the **timing** of expected cash flows in each period of a project life. This is achieved by discounting the investment future flows to their present values.

Time value of money. What would we prefer – 1,000 UAH today or the same amount ten years from now? Naturally we would prefer to receive 1,000 immediately, since we could spend them, or because we could put money at work and earn an interest, the premium savers require to forego immediate

consumption. The rate of interest can be defined as the rate of exchange between current and future UAH, and as such it can be used to calculate the present value of future cash flows. This process allows us to place all cash flows on a current footing so that comparison can be made in terms of today's UAH.

If it is the interest rate at which we lend money, the following formula enables us to calculate the present value of a cash flows that we will either receive or pay in the future:

$$PV_0 = FV_n \cdot (PVIF_{in}), \quad (7.3)$$

where: PV_0 – present value;

FV_n – future value of cash flow at the end of n period;

$PVIF_{in}$ – present value interest factor of 1 UAH at i % interest rate for n periods:

$$I = 1 + (1 + i) \cdot n. \quad (7.4)$$

Assuming, for example, that a firm is to receive 100 million UAH two years from now and the interest rate is 10 %, using the $PVIF$ s factors contained in the present value table 7.9 shown below, we can compute its present value:

$$PV_0 = 100.000.000 \cdot (0,8264) = 8.264.460.$$

Table 7.9

Present value interest factor of 1 UAH at i % interest rate for n periods

$PVIF_{in}$

Period (n)	Interest rate (I)					
	1 %	3 %	5 %	8 %	10 %	15 %
1	.9091	.9709	.9524	.9259	.9091	.8696
2	.9803	.9426	.9070	.8573	.8264	.7561
3	.9706	.9151	.8638	.7938	.7513	.6575
4	.9610	.8885	.8227	.7350	.6830	.5718
5	.9515	.8626	.7835	.6806	.6209	.4972
6	.9420	.8375	.7462	.6302	.5645	.4323
7	.9327	.8131	.7107	.5835	.5132	.3759
8	.9235	.7894	.6768	.5403	.4665	.3269
9	.9413	.7664	.6446	.5002	.4241	.2843
10	.9053	.7441	.6139	.4632	.3855	.2472

The internal rate of return (IRR) of an investment is the discount rate that equates the present value of the future net cash flows from an investment project with the project's initial cash outflow.

When cash inflows are not even, and no computer programs and programmed calculators are available, IRR must be found by trial and error method:

1. Compute NPV using interest rate r_1 .
2. If NPV is positive, pick another rate (r_2) much higher than r_1 . If NPV is negative, (r_2) should be much smaller than r_1 . The IRR, at which NPV = 0 must lie somewhere in between these two rates.
3. Compute NPV using r_2 .
4. Interpolate to get the exact rate.

Initial Cash Outlay is calculated by the formula:

$$ICO = \frac{CF_1}{(1 + IRR)^1} + \frac{CF_2}{(1 + IRR)^2} + \dots + \frac{CF_n}{(1 + IRR)^n}, \quad (7.5)$$

where ICO – Initial Cash Outlay;

CF – Net cash flows in year 1, 2, ..., n ;

IRR – Interest rate that discounts the future net cash flows.

Net present value is calculated by the formula:

$$NPV = \frac{CF_1}{(1 + k)^1} + \frac{CF_2}{(1 + k)^2} + \dots + \frac{CF_n}{(1 + k)^n} - ICO, \quad (7.6)$$

where NPV – Net Present Value;

k – Required Rate of Return.

Alternatively, NPV can be expressed as follows:

$$NPV = CF_1 \cdot (PVIF_{i1}) + CF_2 \cdot (PVIF_{i2}) + \dots + CF_n \cdot (PVIF_{in}) - ICO. \quad (7.7)$$

Profitability index (PI) is calculated by the formula:

$$PI = \frac{NPV}{ICO}. \quad (7.8)$$

Example:

For our company Gamma, the amount of initial investment in thousand UAH is 200.000 UAH and the after tax inflows are expected to be:

year 1: 68.864 UAH;

year 2: 79.060 UAH;

year 3: 78.718 UAH;

year 4: 64.438 UAH.

Assuming that the interest rate is 15 %, the present value of the after-tax inflows (in K UAH) is (table 7.10).

Table 7.10

The present value of the after-tax inflows

Years	Cash inflow	<i>PVIF</i> 15 %	Total PV
1	68.864	0,8696	59.884
2	79.060	0,7561	59.777
3	78.718	0,6575	51.757
4	64.438	0,5718	36.846
Total			208.264

Therefore NPV = 208.264 - 200.000 = + 8.264 UAH.

Since the NPV is positive, we pick as r_2 the rate of 20 % (table 7.11).

Table 7.11

The present value by rate 20 %

Years	Cash inflow	<i>PVIF</i> 20 %	Total PV
1	68.864	0,8333	57.384
2	79.060	0,6944	54.899
3	78.718	0,5787	45.554
4	64.438	0,4823	31.078
Total			188.915

Therefore NPV = 188.915 - 200.000 = -11.085 UAH.

We can now interpolate (table 7.12).

Table 7.12

Interpolate of results

	NPV	
15%	8.264	8.264
IRR	0	
20%		-(-11.085)
Difference	8.264	19.349

Now we can calculate *IRR*:

$$IRR = 15 \% + \frac{8.264}{19.349} \cdot (20 \% - 15 \%) = 17,14 \%$$

Decision rule: Accept the project if IRR exceeds the required rate of return, or hurdle rate. If the rate is the return investors expect the firm to earn on the project, the acceptance of the project should result in an increase in the market price of the stock.

Shortcomings: when we are dealing with mutually exclusive projects the IRR is not always able to provide correct rankings, since the implicit reinvestment rate will differ depending on the cash-flow stream for each project proposal under consideration.

In addition it does not take into account differences in the scale and life of each investment.

Advantages: managers usually prefer a return expressed in percentage terms as opposed to an absolute figure.

In addition, when the required rate of return is only a rough estimate, the IRR allows a more satisfying comparison

The net present value (NPV) of an investment proposal is the present value of the proposal's net cash flows less the proposal's initial cash flow.

Example:

Once again we can refer to the Gamma company cash flows (table 7.13).

Table 7.13

The Gamma company cash flows

Years	Cash flow	<i>PVIF</i> 12 %	Total PV
0	(200.000)	1,0000	(200.000)
1	68.864	0,8929	61.489
2	79.060	0,7972	63.027
3	78.718	0,7118	56.031
4	64.438	0,6355	40.950
			21.497

Decision rule: If NPV is positive, accept the project. Otherwise reject it. The rationale behind the acceptance criterion is similar as that behind the IRR.

Advantages and shortcomings: They are secular to those described for the IRR. First of all the NPV method always provides correct rankings of mutually exclusive investment projects. It also takes into account differences in the projects' scale and life. This is consistent with the value maximization goal of the firm. On the other hand, we have said that managers usually feel more confident with a return measure than with absolute amounts.

The profitability index is the ratio of the total PV of future cash inflows to the initial investment outlay. This index is used as a means of ranking projects in order of attractiveness.

Example

The Gamma Company profitability index will be calculated after NPV which we have in table 7.13.

$$PI = \frac{221.497}{200.000} = 1,11.$$

Decision rule: if the profitability index is greater than 1, then the project is acceptable. This decision is similar to that of NPV, since a PI greater than one implies that a project's present value is greater than the initial cash outflow, and therefore that NPV is greater than zero.

The NPV method is usually preferred over the PI index. In addition to providing information on the acceptance of the project, NPV also quantifies the absolute economic contribution in monetary terms to the shareholders wealth. In contrast, the PI index expresses only the relative profitability of the project.

Third step of project evaluation and selection is the ranking and capital rationing (fig. 7. 10).

The ranking of investment projects becomes necessary when some form of capital rationing is taking place within the company. This means that there are more UAH needed for investment than there are investable funds.

Such constraints are prevalent when as a result of the firm's policy or of the conditions prevailing on the financial markets only those projects that can be financed internally can be accepted.

With a capital rationing constraint, the firm attempts to select the combination of investments that will provide the greatest increase in the value of the firm subject to not exceeding the budget ceiling constraint.

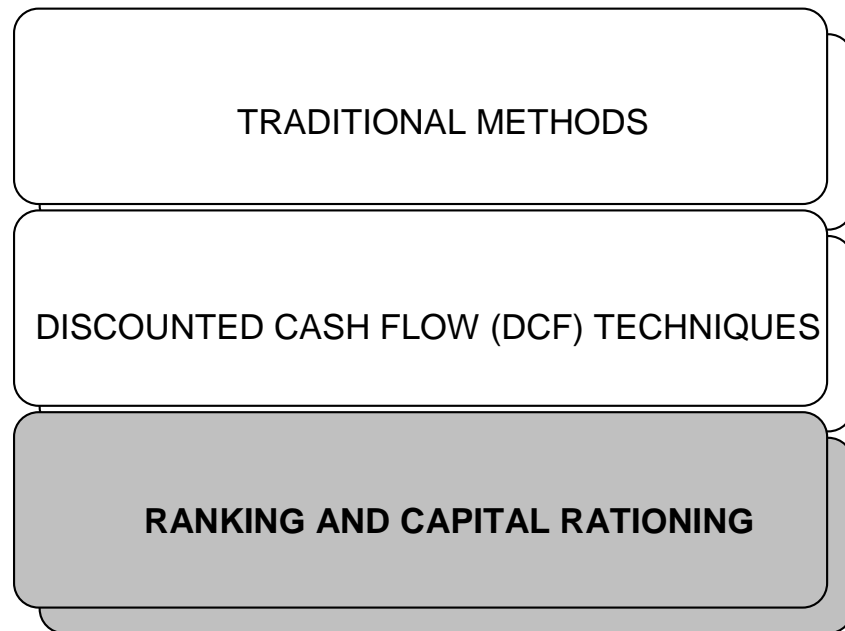


Figure 7.10. **Project evaluation and selection**

The profitability index (PI) is widely used in ranking projects competing for limited funds over multiple periods.

Unfortunately, as we have mentioned above, the PI is subject to a series of limitations. A more general approach to solve capital rationing is the use of mathematical programming, whose object is to select the mix of projects that maximize the NPV subject to budget constraints [2].

If capital is to be rationed only for one period, the problem can be solved selecting the problems that add the greatest incremental value per rouble of investment within the budget ceiling.

Assume that the company has a capital ceiling of 65 million UAH, and is considering the following investment proposals (in thousand UAH) (table 7.14).

Table 7.14

Results of indicators

Project	ICO	IRR	NPV	IRR
A	50.000	15 %	12.000	1,24
B	35.000	19 %	15.000	1,43
C	30.000	28 %	42.000	2,40
D	25.000	26 %	1.000	1,04
E	15.000	20 %	10.000	1,67
F	10.000	37 %	11.000	2,10
G	10.000	25 %	13.000	2,30
H	1.000	18 %	100	1,10

With capital rationing the mix of projects that will yield the greater total net present value will be in table 7.15.

Table 7.15

Mix of projects

Project	PI	NPV	Initial outflow
C	2,40	42.000	30.000
G	2,30	13.000	10.000
F	2,10	11.000	10.000
E	1,67	10.000	15.000
		76.000	65.000

So, initial outflow of projects C, G, F and E is 65 000 UAH.

7.3. Leasing and investments

Leasing provides an alternative to purchasing an asset without incurring any fixed debt obligation. By its terms, the owner of an asset (the lesser) gives another party (the lessee) the right to use the asset for a specified period of time in return for the payment of rent.

There are two basic types of leases available to a company (fig. 7.11):

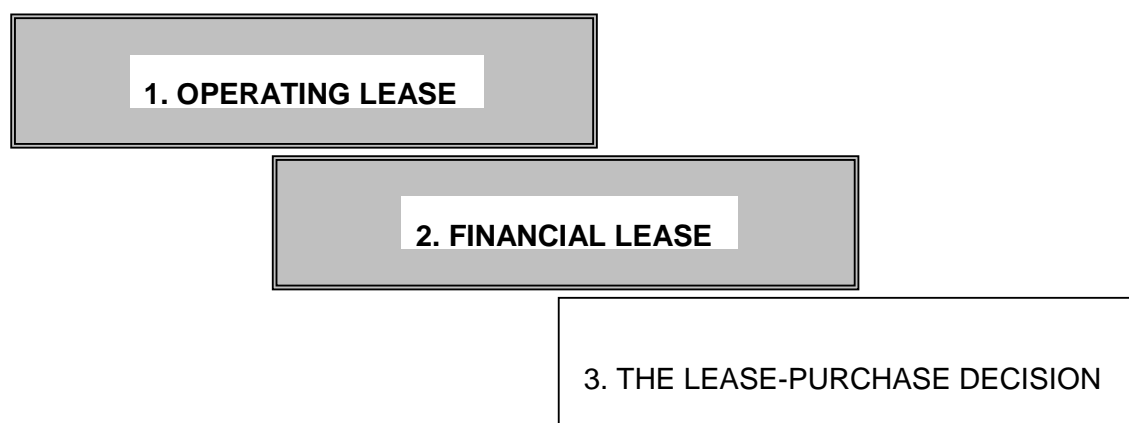


Figure 7.11. Leasing

1. Operating lease. This is a short-term lease. It is often cancellable at the option of the firm (the lessee). Such leases are commonly used for

leasing such items as computers, cash registers, vehicles, office space, and equipment.

2. **Financial lease.** A longer-term contract than the operating lease. It is a noncancellable contractual commitment on the part of the lessee to make a series of payments to the lesser for the use of the assets. The lease-purchase decision frequently has to be made by companies that are considering the acquisition of new assets (fig. 7.12). In a way it has certain similarities with the capital budgeting decisions, since it forces the firm to compare the various leasing and purchasing alternatives.

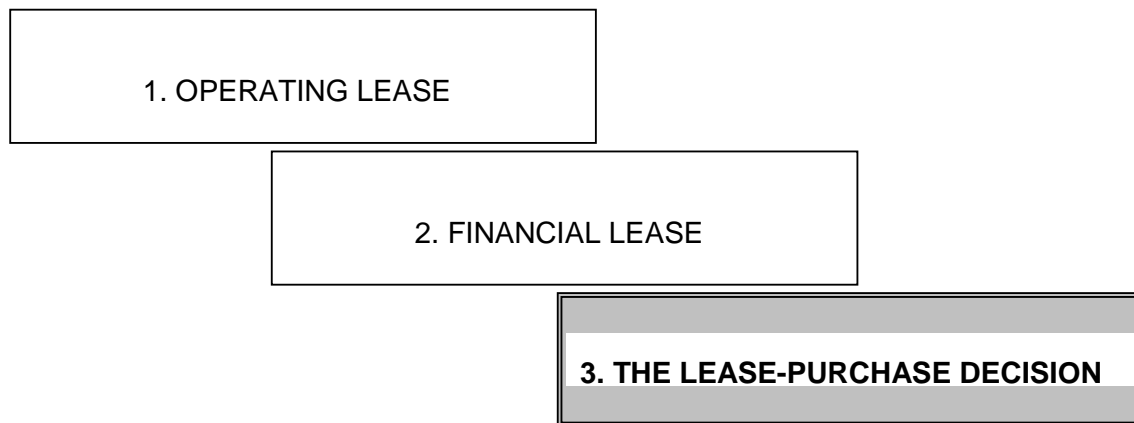


Figure 7.12. **The lease-purchase decision in the leasing**

In order to make a correct comparison, an after-tax, cash outflow, present value is to be determined.

In order to make the comparison the following steps are to be taken.

1. Leasing:

1.1. Determine the annual lease payment. The formula to be used is:

$$A = \frac{\text{amount of lease}}{1 + PVIFA_{i,n-1}}, \quad (7.8)$$

where A – present value amount of lease payment;

$PVIFA$ – present value interest of an ordinary annuity. It should be noticed that we use $n-1$ instead of n since the annual lease payment is usually made in advance.

1. 2. Find the after-tax cash outflows (savings).

1.3. Find the net present value of the after-tax cash outflow.

2. Purchase:

2.1. Determine the annual loan amortization. The formula to be used

is:

$$A = \frac{\text{amount of loan for the purchase}}{1 + PVIFA_{i,n}}. \quad (7.9)$$

2.2. Calculate the interest that must be segregated from the principal in each of the loan payments since only the interest is tax deductible.

2.3. Find the cash outflows by adding interest and depreciation (plus any maintenance cost) and compute the after tax outflow.

2.4. Find the present value of the after-tax cash flow.

Example:

The Gamma company has decided to acquire an asset costing 2.000,000 UAH that has an expected life of 5 years. We assume that at the end of the fifth year the asset will not have any residual value. The asset can be purchased by borrowing or it can be leased. In the case of leasing the lesser requires a 12 % return. As it is usual, lease payments are to be made in advance. The tax rate is 50% and the firm's after-tax cost of borrowing is 8 %.

Leasing. We will compute the PV of cash outflow associated with the leasing alternative following the steps described above. All values are in thousand UAH.

Step 1. Determine the annual lease payment.

$$A = \frac{\text{amount of lease}}{1 + PVIFA_{12\%,4 \text{ years}}} = \frac{200.000}{1 + 3,3073} = 46.432.$$

Step 2 and 3 (table 7.16).

Table 7.16

Calculating PV

Year	Lease Payment	Tax Savings	After-tax Cash Outflow	PV at 8 %	PV of Cash Outflow
0	46.432		46.432	1,0000	46.432
1-4	46.432	23.216	23.216	3,3121 a*	76.894
5		23.216	(23.216)	0,6806 b*	(15.800)
					107.526

* a) Present value interest of an ordinary annuity ($PVIF_{i,n}$);

b) Present value interest factor.

Purchase. The firm is assumed to finance the purchase with a 10 % unsecured term loan. Straight-line depreciation is 40.000 (200.000/5 years).

Step 1: Determine the annual loan payment:

$$A = \frac{\text{amount of lease}}{1 + PVIFA_{10\%, 5 \text{ years}}} = \frac{200.000}{3,7906} = 52.762.$$

Step 2: Calculate the interest by setting up a loan amortization schedule (table 7.17).

Table 7.17

Calculating the interest

Year	1 Loan Payment	2 Beginning of Year Principal	3 Interest (2) (10 %)	4 Principal (1)-(3)	5 End of Year Principal (2)-(4)
1	52.762	200.000	20.000	32.762	167.238
2	52.762	167.238	16.724	36.038	131.200
3	52.762	131.200	13.120	39.642	91.558
4	52.762	91.558	9.156	43.606	47.952
5	52.762	47.952	4.796	47.966	

Step 3 and 4: Determine the cash outflows and present values of those outflows (table 7.18).

Table 7.18

Determining the cash outflows and present values

Year	1 Loan Payment	2 Interest	3 Depre- ciation	4 Total Dedu- ctions (2) + (3)	5 Tax Savings (4)(50 %)	6 Cash Outflow (1)-(5)	7 PV at 8 %	8 PV of Cash Outflow (6)(7)
1	52.762	20.000	40.000	60.000	30.000	22.762	0,9259	21.076
2	52.762	16.724	40.000	56.724	28.362	24.400	0,8573	20.918
3	52.762	13.120	40.000	53.120	26.560	26.202	0,7938	20.800
4	52.762	9.156	40.000	49.156	24.578	28.184	0,7350	20.716
5	52.762	4.796	40.000	44.796	22.398	30.364	0,6806	20.666
								104.176

Conclusion. The sum of the present values of the cash outflows for leasing and purchasing by borrowing shows that purchasing is preferable because the PV of borrowing 104.176 UAH is less than the PV of leasing 107.526 UAH. The incremental savings would be 3.350.000 UAH.

Control questions:

1. What information is contained in the balance sheet, income statement, and statement of cash flows?

2. Why does accounting income differ from cash flow?
3. How should the cash flows properly attributable to a proposed new project can be calculated?
4. What are the net present value profitability index and payback period?
5. What are the different between leasing and investments?
6. What are the principles of calculating interest?
7. What are the essence of lease-purchase decision in the leasing?
8. What are the basic characteristics of project flows?
9. List the indicators for evaluation investment projects?
10. What is the internal rate of return?

Unit 8. Working capital management

- 8.1. Working capital concepts
- 8.2. Working capital management basic decisions
- 8.3. Cash management
- 8.4. Management of accounts receivable
- 8.5. Inventory management

8.1. Working capital concepts

Working capital concept is presented in fig. 8.1.

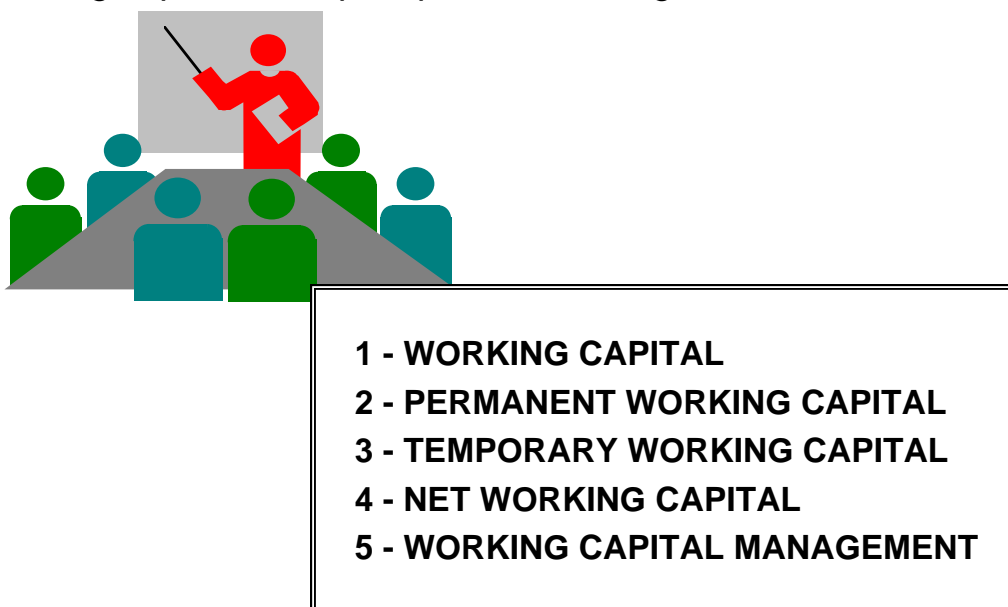


Figure 8.1. **Working capital concepts**

Working capital (or gross working capital) is the amount of funds invested in current assets such as Cash, Marketable Securities, Accounts Receivable and Inventory [1].

Working capital can be classified by time as **Permanent working capital**, i.e. the amount of current assets required to meet the firm's long-term minimum needs, and as **temporary working capital**, i.e. the amount of current assets that varies with seasonal needs.

Net working capital is equal to current assets minus current liabilities (such as accounts payable, taxes payable, accrued expenses payable). It provides a measure of the extent to which the company is protected from liquidity problems.

Working capital management is the administration of the firm's current assets and the financing needs to support current assets.

Working capital management is one of the most relevant responsibilities of the financial manager, perhaps even greater than those regarding the acquisition of fixed assets.

Once fixed assets have been acquired, they become factors generating the income which flows into working capital. The current assets of a typical manufacturing firm account for over one half of its total assets. Given their relevance, the funds invested in current assets must be managed and controlled in order to insure the proper use of the company's resources in the process of achieving the company's goals.

It is seldom appreciated by non-financial managers that adequate cash flow and working capital can be at risk in periods of expansion as well as recession. Uncontrolled actions to increase sales will tend to result in high levels of inventories and account receivable, as well as excessive credit given to customers. In turn, working capital will be depleted and rises are likely to occur in operating costs and in interest charges. In the end the welfare of the business will be jeopardized by lack of funds.

Thus a failure to devote adequate and continuous attention to the financial consequences of working capital often results in losing the profit opportunities embodied in attractive investment projects.

The elements of working capital management that make it so important to justify the continued and close attention of the financial controller are four (fig. 8.2).

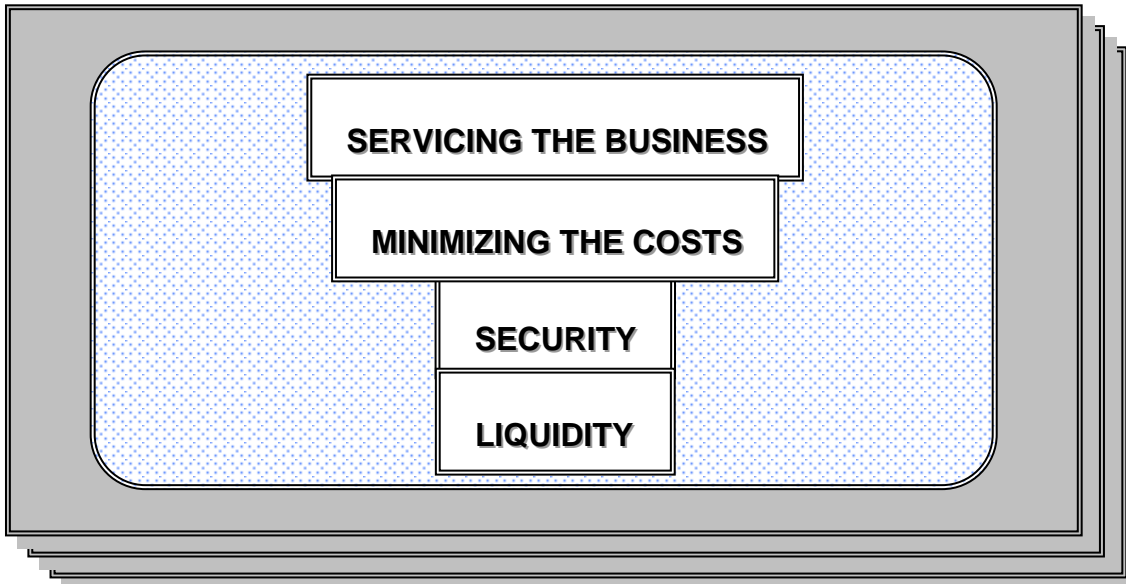


Figure 8.2. **The four ingredients of working capital**

These elements are not mutually exclusive but interact to create the core of the control problem, which is simply to find the optimum level of working capital conducive to and supportive of the successful business.

First ingredients of working capital is the servicing the business (fig. 8.3).

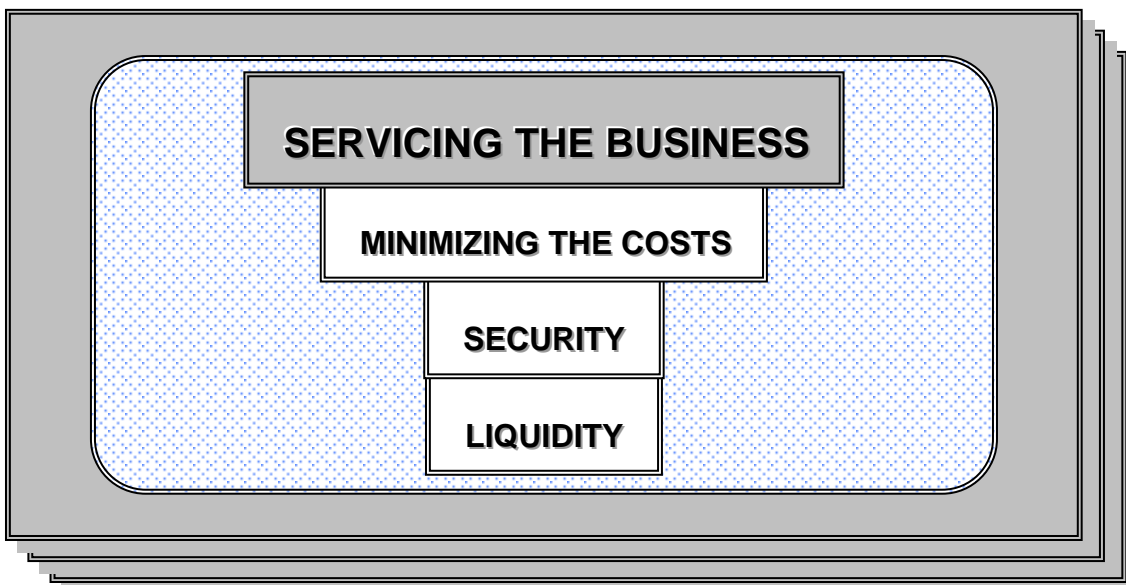


Figure 8.3. **The first ingredient of working capital**

The items embraced by the term "working capital" sustain the business by bridging the time lapse between incurring of expenditure and the receipt from the purchaser. Thus, working capital provides materials and labor for

inventories and the overhead activities to support the production and selling function of the business. Thereafter it finances the customers from whom funds will be collected to pay for the next cycle of activity.

Servicing the business also requires provision of current assets financing, for example through short-term debt, long-term debt or equity.

This means that the service function of working capital can be seen as a progression of cash, through other forms of current assets and liabilities, back into cash as shown in the fig. 8.4 that describes the trading cycle.

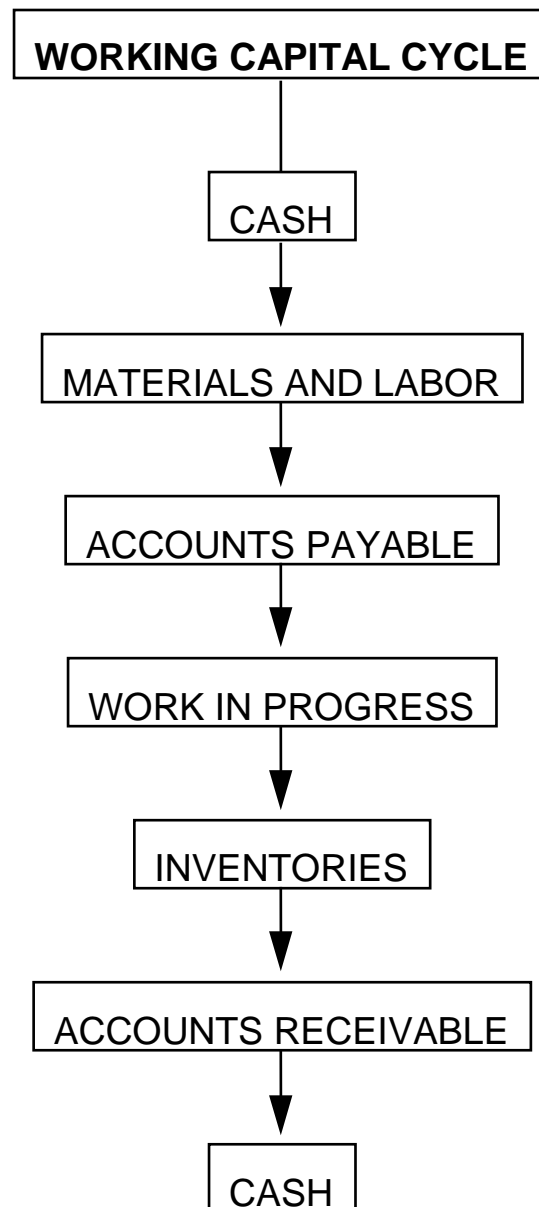


Figure 8.4. **Working capital cycle**

The figure highlights a critical test of the success of the company: the cash at the end of the working capital cycle should exceed the input at the beginning, the difference being realized profit before capital charges.

If the funds are internally generated the cost can be regarded as the higher one of the rate of interest which could be obtained by investing in the external money market, and the return on the enterprise's marginal investment opportunity cost.

In the case of external funds, the cost is the higher one of the rewards they command by way of interest/dividend and again, the return foregone from the marginal investment opportunity.

Second ingredient of working capital is the minimizing the costs (fig. 8.5).

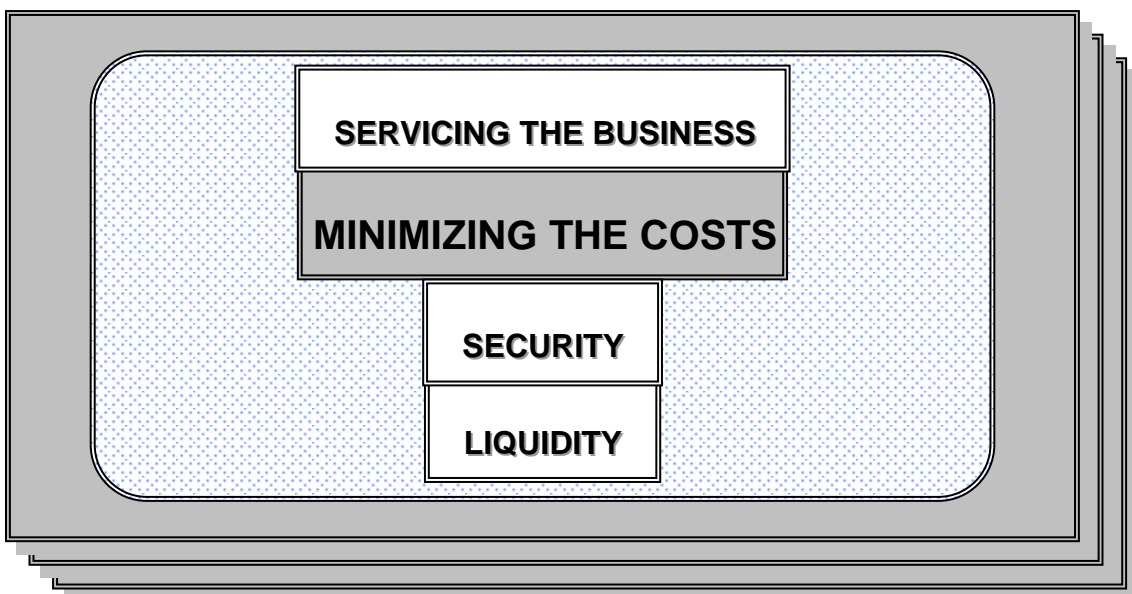


Figure 8.5. **Second ingredients of working capital**

Today business managers are usually aware of the costs associated with investment in working capital whether the funds are internally generated or are raised from external sources or are a mixture of both. This was not always the case, particularly where in a well established organization funds which supported working capital levels were internally generated, or where there was a lack of awareness of the financial implications connected with the working capital management [5].

Third ingredient of working capital is security (fig. 8.6).

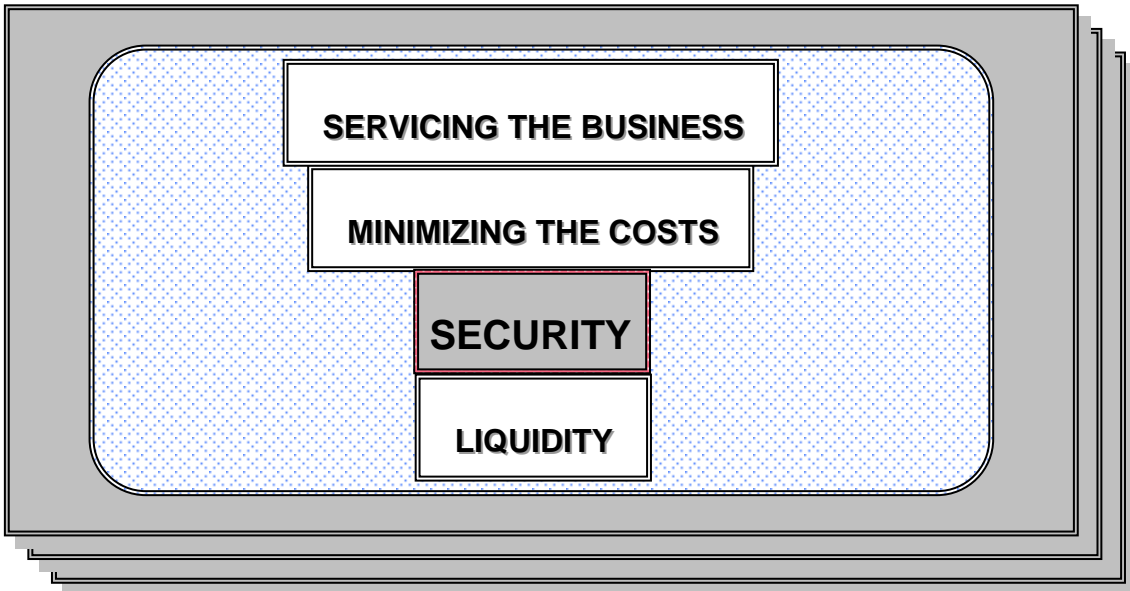


Figure 8.6. **Third ingredient of working capital**

The third element of working capital control is security. This comprises many areas of concern in relation to the integrity of the current assets in which funds are employed by the company. In the case of inventories, the question of theft, loss, deterioration and control over consumption must be considered and managed. The security problem of cash is self-evident.

Forth ingredient of working capital is liquidity (fig. 8.7).

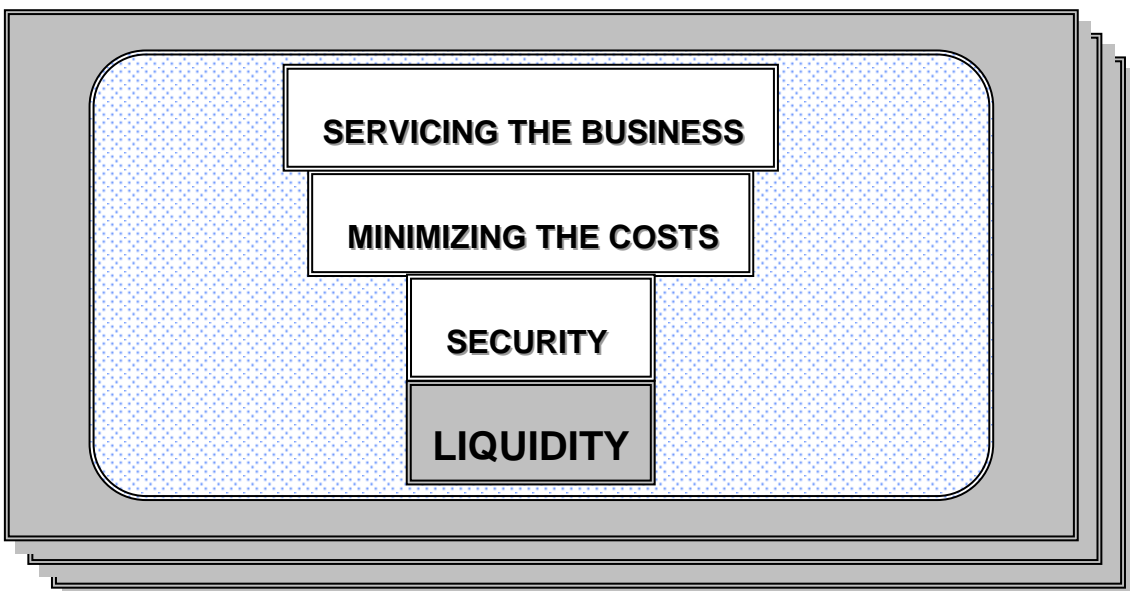


Figure 8.7. **Forth ingredient of working capital**

The essence of the liquidity problem is very simple, namely that a company must always be in the position to meet its liabilities as they arise. Consequently in this area, working capital control is especially concentrated

on cash and the need to predict cash requirements so that potential surpluses and deficits are forecast well before they prove to be an embarrassment.

8.2. Working capital management basic decisions

The basic decisions underlying proper working capital management policies are two interdependent issues, the determination of the (fig. 8.8):

- 1) optimal level of investment in current assets;
- 2) appropriate mix of short-term and long-term financing used to support this investment in current assets.

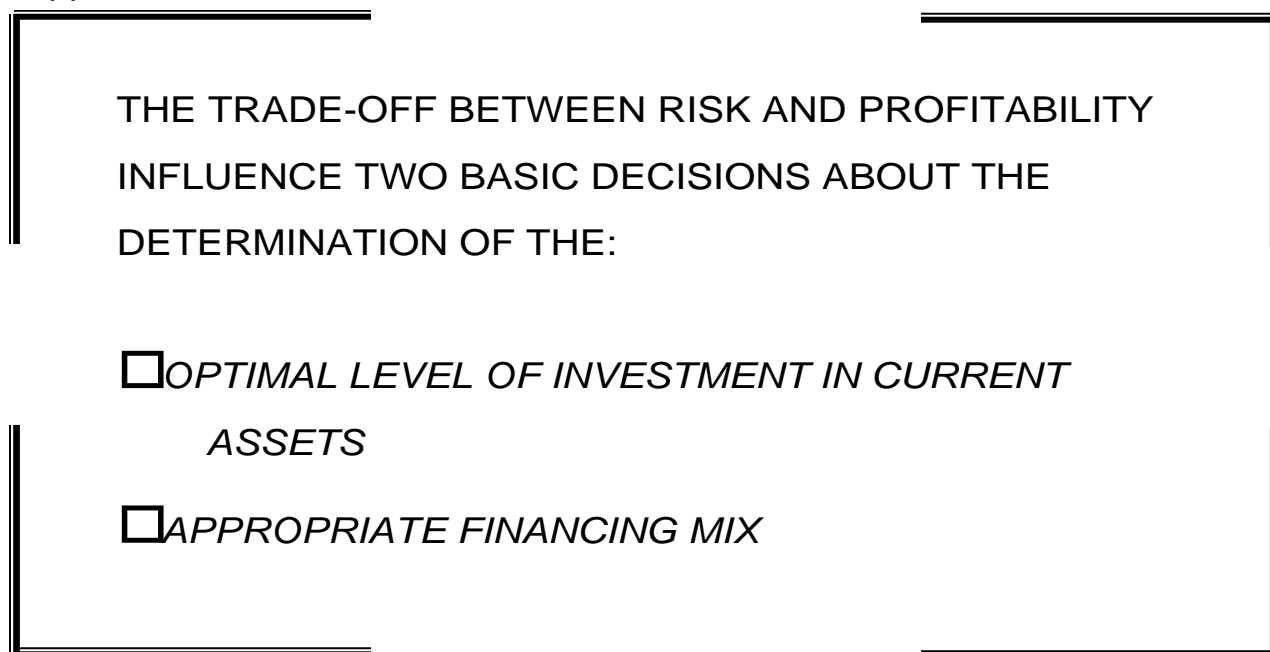


Figure 8.8. **The basic decisions in the working capital management**

These decisions are influenced by the trade-off between risk and profitability. This means that two basic principles in finance must be borne in mind:

1. Profitability varies inversely with liquidity: increased liquidity generally comes at the expenses of profitability.
2. Profitability moves together with risk. If we look for a greater profitability we must face greater risk.

Working capital management basic decisions consist of two levels. The first one is the determination of the optimal level of investments in current assets (fig. 8.9).

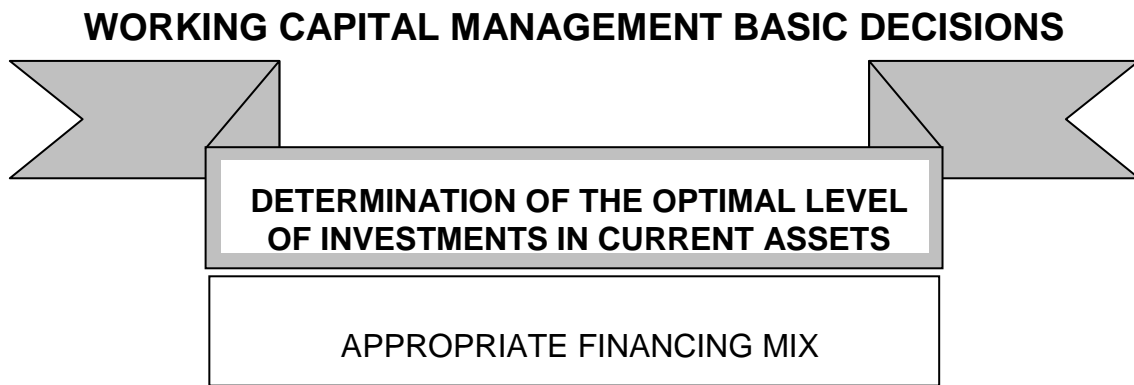


Figure 8.9. **First level of working capital management basic decisions**

The level of current assets is closely related to the sales of the company. Thus, a growing amount of sales requires a greater output, which in turn determines a larger investment in current assets.

The greater the level of current assets, the greater the liquidity of the company, and thus its ability to meet its financial obligations. It also means greater flexibility, since current assets may be modified easily as sales volume changes. The company will be able to comply with customers demand and the production schedule will not be delayed. Finally it may be worth while to invest in inventories in order to obtain discounts or bulk purchases to prepare for a sales promotion campaign.

On the other hand, a lower amount of current assets held, while still being able to support sales, will increase the potential profitability of the firm as measured by ROI. However, this policy will result in other unfavourable effects. A lower amount of liquidity will reduce the firm's ability to meet financial obligations as they occur. Stricter credit terms aimed at reducing receivables may result in lost customers and sales, just like decreasing inventory levels may result in lost sale due to products being out of stock.

Ultimately, the optimal level of current assets will be determined by management's attitude to the trade-off between profitability and risk.

The second level is the appropriate financing mix (fig. 8.10).

The decision over financing current assets once again involves a trade-off between risk and profitability.

As a general rule, the longer the maturity schedule of the financing used by the company, the less risky is the financing. However, a longer maturity schedule is likely to be more costly. In addition to paying higher costs of long-

term financing, the firm may end up paying interest on debt over periods of time when the funds are not needed.

WORKING CAPITAL MANAGEMENT BASIC DECISIONS

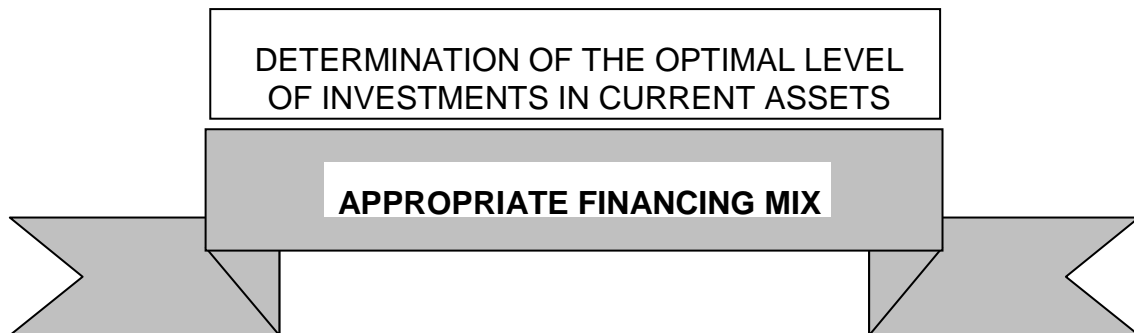


Figure 8.9. **Second level of working capital management basic decisions**

On the other hand, a shorter maturity schedule is usually less costly, but is likely to increase the risk of the firm's ability to honour payments of principal and interest.

If the firm adopts a **hedging approach**, each asset would be offset with a financing instrument of the same approximate maturity. Short term or seasonal variations in current assets would be financed with short-term debt, while the permanent component of current assets and all fixed assets would be financed with long-term debt or equity [8].

Under conditions of uncertainty, net cash flows will deviate from expected flow. As a result this approach might not be appropriate. For small companies, the issue of selecting between long and short-term financing is often theoretical, since for these firms current liabilities are the principal source of external financing.

The question then becomes what margin of safety should be built into the maturity schedule in order to take into consideration the effects of these fluctuations.

To allow for a margin of safety, management might decide on the proportion of short-term and long-term financing.

8.3. Cash management

Cash management involves the efficient collection and disbursement of cash and the temporary investment of any idle cash (fig. 8.11). The treasurer's department is usually responsible for cash management.

The target of cash management is to have the optimum, neither excessive nor deficient, level of cash on hand at the right time. Cash can be invested inside or outside the firm for a return while retaining sufficient liquidity to satisfy future needs. The higher the interest rate, the greater the opportunity cost of holding cash and the greater the desire to reduce the firm's cash holdings.

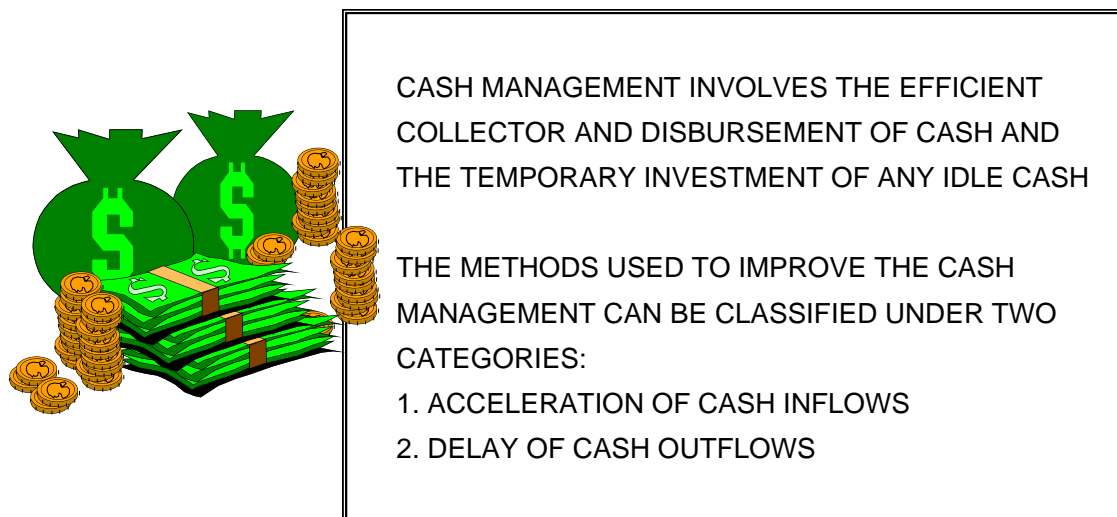


Figure 8.11. **Cash management**

The amount of cash to be held will depend upon many factors, such as the current liquidity position, the management's liquidity risk preference, the schedule of debt maturity, the firm's ability to borrow, the forecasted short- and long-term cash flow, and the probabilities of different cash flows under changing circumstances.

In any event, the optimal level of cash should be the larger of:

- 1) the transaction balances required when cash management is efficient;
- 2) the compensating balances requirements of banks with which the firm has deposit accounts.

Proper cash management requires knowledge about how much cash is needed, as well as how much it has and where that cash is at all times. This is especially important in an inflationary environment.

A cash budget is thus instrumental in the process. In addition to the cash budget the firm will need frequent reports, generally on a daily basis, on cash balances in each of the company's bank accounts, on cash disbursements and receipts, on average daily balances.

In deciding whether to adopt a cash management system, the firm should consider the associated costs versus the return earned from the implementation of the system. Costs related to cash management systems include bank charges, financial manager's time, and office employee salaries. Some cash management systems use the firm's computer to make transactions with the computers of banks and of money market funds.

The various methods that a firm uses to improve its cash management can be classified under two categories that represent the two sides of the same coin:

- acceleration of cash inflows;
- delay of cash outflows.

There are some cash management methods: acceleration of cash flows and delay cash out flows. The first one is presented in the fig. 8.12.

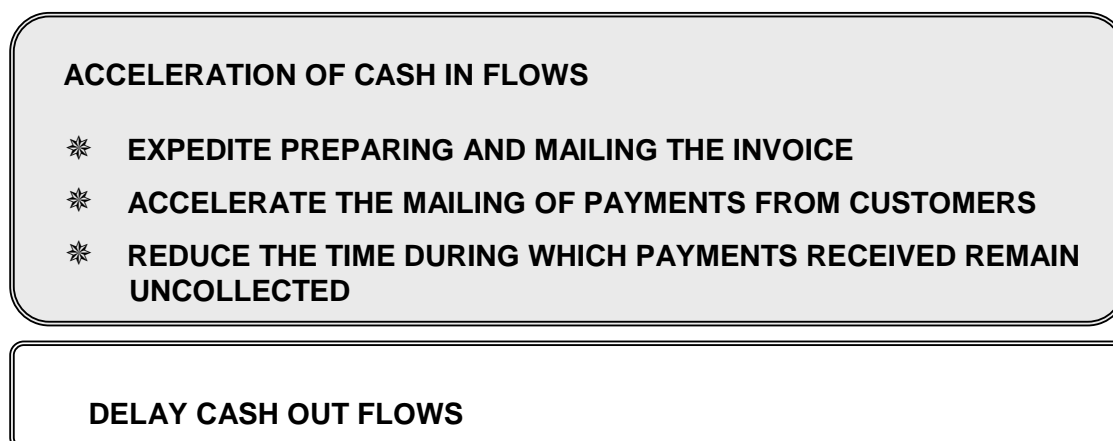


Figure 8.12. **Acceleration of cash in flows**

To accelerate cash receipts the firm must:
expedite preparing and mailing the invoice;
accelerate the mailing of payments from customers to the firm;
reduce the time during which payments received by the firm remain uncollected funds.

Prompt billing procedures are an obvious and often overlooked procedure to speed up the collection of receivables. The faster the customer receives the invoice, the sooner he will pay.

Point 2 and 3 represent the **collection float**, i.e. the total time between the mailing of a check by a customer and the availability of cash to the firm.

Point 3 is the **deposit float**, and has two aspects. The first one is the **processing float**, the time it takes for a creditor to deposit the check after

receipt. The second is the **availability float**, i.e. the time consumed in clearing the check through the banking system.

In many countries the banking authorities have established a schedule specifying availability for all checks deposited with collection.

Collection float problems can be alleviated through the use of the lock box, a post office box maintained by a firm's bank that is used as a receiving point for customer remittances. Under this system, the bank collects from the box periodically during the day and deposits the funds in the corporate account. The bank also furnishes the company with a computer listing of payments received by account and a daily total.

Before a lock box system is implemented, the firm should make a cost-benefit analysis that considers the average money amount of checks received, the savings resulting from using the lock box, the reduction in the mailing time and the processing cost.

Example.

It takes the Delta Company 7 days to receive and deposit payments from customers, and consequently a lock box system is being considered. It is expected that the system will reduce the float to 5 days. Average daily collections are 500.000 UAH. The rate of return is 15 %, while the cost of the system is 90.000 UAH per year.

The cost-benefit analysis is as follows:

Return on early collection of cash: $0.15 \times 2 \times 500.000 = 150.000$ UAH.

Cost = 90.000 UAH.

Advantage of lock box = $150.000 - 90.000 = 60.000$ UAH.

The second method of cash management is presented in the fig. 8.13.

As a general rule, payments to vendors should be delayed to the maximum extent, provided there is no associated finance charge or worsening of the company's credit rating. Naturally bills should not be paid prior to their due date because of the value of money. One procedure for controlling disbursements is the centralization of all payables into a single account. This allows a clear visibility over the payment schedule, and as a result, payments can be made at the precise time they are desired.

There are various ways to delay cash disbursements, including:

Taking advantage of the float. The float is the difference between the balance shown in a company's check book balance and the balance on the

bank's records. This is the result of delays between the time checks are written and their clearing by the bank. If the firm is successful in estimating accurately the size of the float, bank balances can be reduced and funds can be used to earn a positive return [10].

CASH MANAGEMENT METHODS

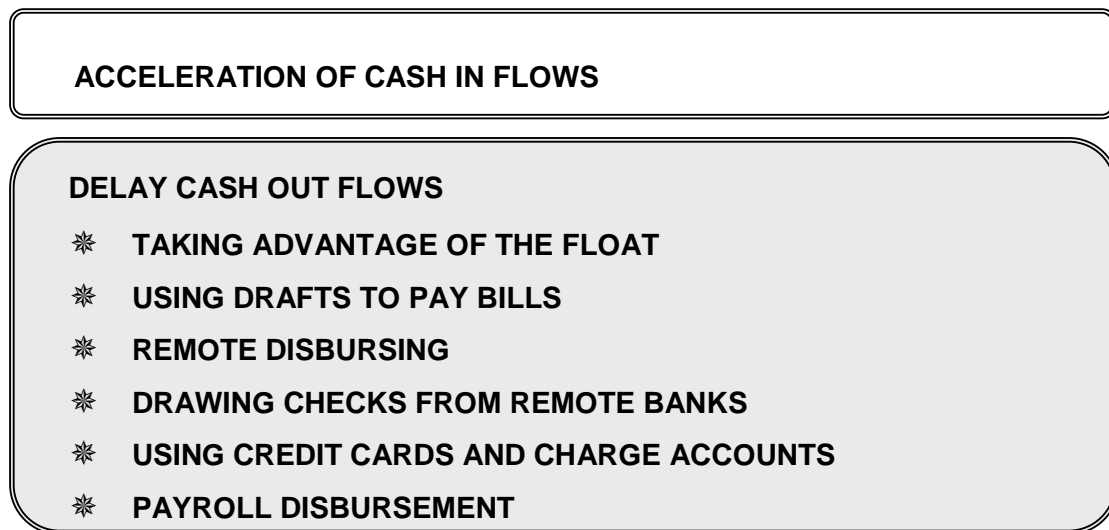


Figure 8.13. **Delay cash out flows**

Using drafts to pay bills. Unlike checks, drafts are not due on demand. When a bank receives a draft it must return it to the issuer for acceptance prior to payment. When the company accepts the draft, it then deposits the required funds with the bank. The advantage of the draft is that it delays the payment, and consequently it allows the company to keep smaller balances at the bank.

Remote disbursing. This system takes advantage of the disbursement float, i.e. the time between the mailing of a check by the firm and the check' clearing the company's checking account. This can be achieved by mailing checks from post offices having limited service or from locations where the mail must go through several handling points. Since in many countries, the postmark on the envelope sets the date in which the invoice is considered paid, this method maximizes the disbursement float. As a result, the amount of cash held by the firm will be reduced, and can be employed in more profitable activities.

Drawing checks on remote banks, i.e. a bank that is geographically remote from its customers in order to maximize the check clearing time.

Using credit cards and charge accounts in order to lengthen the time between the acquisition of goods and the date of payment for those goods.

Payroll disbursements. Many companies maintain a separate account for payroll disbursements. In order to minimize its cash balances the firm can use probabilities related to the expected time that the checks will clear. Deposits, for example, may be made to a payroll checking account based on the expected time needed for the checks to clear.

8.4. Management of accounts receivable

The management of accounts receivable is important since there is an opportunity cost associated with the investment of company's funds in receivable balances.

The optimum level of investment in accounts receivable must therefore be determined by comparing benefits to be derived from a particular level of investment with the cost of maintaining that level.

The key variables involved in the efficient management of accounts receivable are (fig. 8.14):

- setting credit policies;
- credit analysis and selection;
- collection policies and procedures;
- evaluation of management of accounts receivable.

THE KEY VARIABLES INVOLVED IN THE EFFICIENT MANAGEMENT OF ACCOUNT RECEIVABLE ARE:

- ☞ CREDIT POLICIES
- ☞ CREDIT ANALYSIS AND SELECTION
- ☞ COLLECTION POLICIES AND PROCEDURES
- ☞ EVALUATION OF RECEIVABLE STATUS
- ☞ CREDIT INSURANCE

Figure 8.14. **Management of accounts receivable**

The primary concern and involvement of the financial manager in the determination of the amount of accounts receivable are the **credit policies** and the **credit terms** it wants to implement.

Credit policies involve the determination of the quality of the credit extended to customers (credit standards), while credit terms deal with the length of the credit period (fig. 8.15).

MANAGEMENT OF ACCOUNTS RECEIVABLE

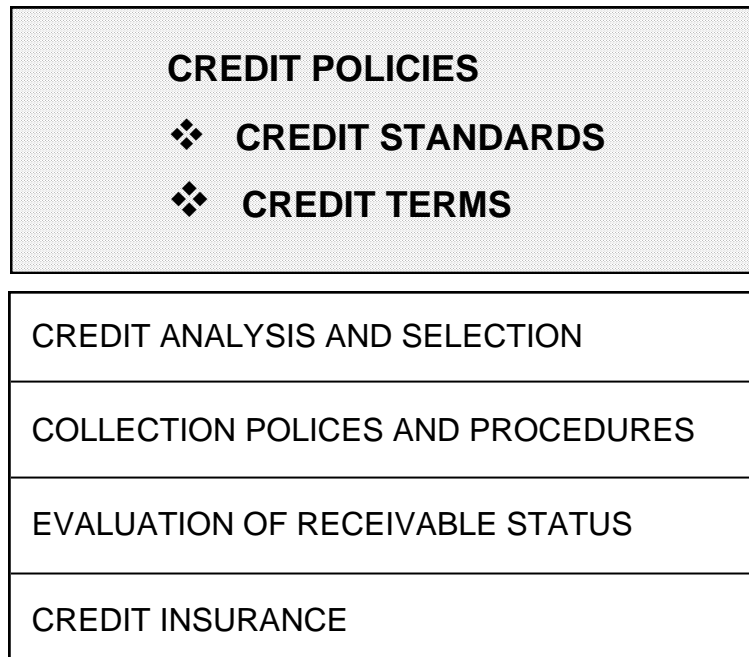


Figure 8.15. **Credit policies**

Credit standards. Credit is an important factor that influences the demand for a firm's product. The marketing efforts of a company could be negatively affected if a competitor extends credit more liberally. In theory, the firm should set its credit standards up to the point where the profitability of sales generated exceeds the added cost of receivables. Lowering credit standards has its costs too, such as a larger credit department, the clerical work involved in checking additional accounts, servicing the incremental volume of receivables, the higher probability of bad-debt losses [9].

Example

The firm is operating at less than full capacity and shows the following relevant data (table 8.1).

The firm wants to exploit the production capacity, even if there is no evident growth trend in credit sales. The increased production of 60.000 units can be sold by liberalizing credit. The relevant data for the incremental sales (table 8.2).

Table 8.1

Data for analyzing

Indicators	Meaning
Selling price per unit	100
Variable cost per unit	80
Contribution margin	20
Annual credit sales	24 million
Average collection period	1 month

Table 8.2

The relevant data for the incremental sales

Indicators	Meaning
Additional sales	6 million
Average collection period	2 months
Opportunity cost of carrying additional receivables	20 %

The effects of the new credit standards must be assessed considering the trade-off between the added expected profitability on the additional sales and the opportunity cost of the increased investment in receivables. With additional sales of 6 million and a receivable turnover of six times a year for new customers (12 months divided by the average collection period of 2 months), the additional receivables are $6.000.000/6 = 1.000.000$.

Calculating:

1) Profitability of additional sales=additional units sold x contribution margin per unit = $60.000 \times 20 = 1.200.000$.

2) Additional receivables=additional sales revenues / receivable turnover for new customers = $6.000.000 / 6 = 1.000.000$.

3) Investment in additional receivable=(Variable cost per unit/sales price per unit) x Additional receivables = $(80/100) \times 1.000.000 = 0.8 \times 1.000.000 = 800.000$.

4) Required after-tax return on additional investment=Opportunity cost x investment in additional receivables = $0.20 \times 800.000 = 160.000$.

According to the criteria set before, the company would be justified in relaxing its credit policies: the profitability of additional sales (1.200.000) is higher than the required rate before-tax return on additional investment (160.000).

These results, however, should be carefully evaluated taking into consideration the increase in risk of bad-debt losses. In our case, supposing

that on the basis of the new credit policy an average of 10 % of the additional sales will turn out to be a bad-debt, the incremental profitability (profitability of additional sales – required after-tax return on additional investment – bad-debt) will drop from 1.200.000 to 600.000, since 600.000 UAH will never be collected.

Credit terms measure the time length over which credit is extended to a customer and any eventual discount for early payment. It can be expressed as "3/10, net 30". The term "net 30" is the **credit period**, and indicates that if no discount is taken with an early payment, the full payment is due by the 30th day from invoice date. The term "3/10" means that a 3 % discount is given if the payment is made within 10 day of the invoice date. The **cash discount** is an attempt to speed the payment of receivables.

Seasonal dating are credit terms that encourage the buyer of seasonal products to take delivery before the peak sales and to defer payment until after the peak sales period. When the production is steady throughout the year, they are beneficial in reducing inventory carrying costs.

Credit terms are influenced by a number of factors, such as competition, attributes of the buyer (such as the stock turnover), the risk characteristics of the buyer, the financial strength of the seller, seasonal factors, etc.

Having defined the credit standards, the issue becomes whether credit applicants meet the standards and can be sold goods and services under the firm's usual credit terms.

The decision process requires information about the credit applicant (fig. 8.16). This information is used to judge the riskiness of the applicant. If the applicant meets the firm's credit standards, a credit limit may be established on the account.

It has to be noted, however, that information costs money to gather and analyze. At some point the incremental costs of refining this process may exceed the marginal benefits can be obtained. In addition, a shipment to a perspective customer cannot be delayed unnecessarily because of an elaborate credit investigation. Thus, as a general rule, the amount of information collected needs to be considered in relation to the time and expenses required.

There are many **sources of credit information** available to assist in making credit decisions. The extent to which they are used depends on the

variables discussed above, as well as the time available to make credit decisions.

Financial statements are one of the most useful sources of information for credit analysis. Financial statements may be obtained directly from credit applicant. The applicant's refusal to submit financial statement is often a clear indication of the firm's weak financial position.

MANAGEMENT OF ACCOUNTS RECEIVABLE

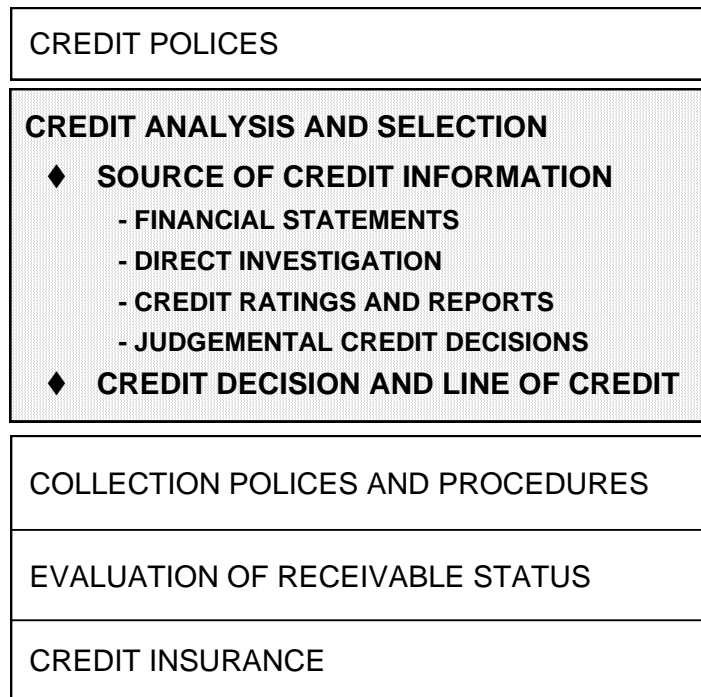


Figure 8.15. **Credit analysis and selection**

Direct Investigation. Personal interviews by salesmen or persons from the credit office may provide valuable information. Other creditors who have dealt with the applicant can be contacted in order to provide their experience. The applicant's bank may also supply information concerning its experience with the applicant or depositor.

Credit Ratings and Reports. In many countries, credit ratings are available from credit reporting agencies. Each firm is classified by a standard industrial classification code number. If additional information is required, subscribers may request a credit report.

Judgemental Credit Decisions. These usually rely on the "5 C of credit": Character, Capacity, Capital, Collateral, Conditions.

Character reflects the customer's willingness to pay obligations; it is an expression of honesty and integrity.

Capacity is the measure of the ability of the customer to pay promptly.

Capital represents the long-term financial soundness of the customer.

Collateral is the capability of the customer to pledge assets until is obligation is paid.

Conditions refer to the trends in the economy or in the particular industry represented by the credit applicant.

Credit decision and line of credit. Once the credit analyst has gone through the necessary information, a decision must be reached about the disposition of the account.

In an initial sale, the first decision to be made is whether or not to ship the goods and extend the credit.

If repeat sales are likely, the company will probably establish procedures so than it does not have to evaluate the extension of credit each time. One way to solve this problem is to establish a line of credit for an account, which represents the maximum risk exposure that the firm will allow itself to undergo for an account. Such line must be revised on a regular basis.

Once credit has been granted, the next step is to collect the amounts owed (fig. 8.17).

MANAGEMENT OF ACCOUNTS RECEIVABLE

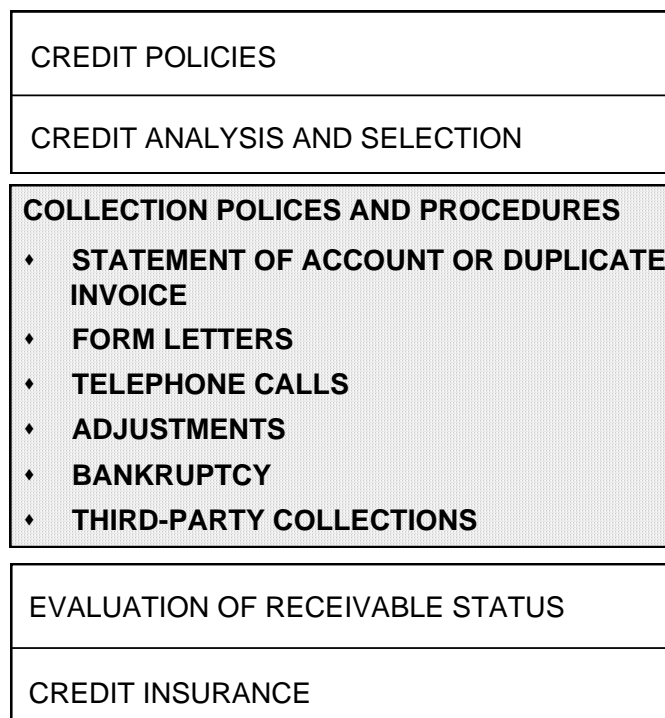


Figure 8.17. **Collection polices and procedures**

As a general policy its worth recalling that cash outlays on collection efforts are essentially a capital investment with the objective of increasing the expected value of the amount collected. In essence, collection policies should be based on the principle on not throwing good money after having lost bad money.

Accounts receivable should be aged in order to identify delinquent and high risk customers. Collection efforts should be undertaken at the very first sign of customer financial unsoundness.

Collection procedures follow a fairly standard routine.

Statement of account or duplicate invoice: initially delinquent debtors are sent a reminder when their account is past due a certain number of days.

Form letters: if no response is received, creditors may continue collection efforts with a series of form letters.

Telephone calls: this is often an effective collection method, especially as a means of learning the debtor's problems and obtaining a specific commitment for payments.

Adjustments: if a debtor who is in serious difficulty is an important customer, there are various methods of adjusting the account. A **rescheduling** of his obligations should be agreed to by all creditors of a firm. Such arrangements involve a formal extension of the due date. It is binding only on the creditors who sign the agreement and may involve payment of interest for the period of extension. Under a **composition settlement**, creditors agree to accept a partial payment in final settlement of the amounts owed.

Bankruptcy: if the voluntary settlements cannot be arranged, bankruptcy may be the only alternative

Third-party collections: if collection letters have failed and a voluntary settlement is not warranted, a creditor may turn the account over to a third party for collection. Collections agencies and attorney and attorneys may retain one third of any amounts collected.

The two principal measures of receivable status that are commonly recommended in textbooks and used in business practice are receivable turnover in days (RTD) or average collection period and aging accounts receivable (fig. 8.17).

These methods have already been discussed in the second unit.

Receivable turnover in days (RTD) is determined according to the following formula:

$$RTD = \frac{\text{Receivables} \cdot \text{days in the year}}{\text{Annual credit sales}}. \quad (8.1)$$

MANAGEMENT OF ACCOUNTS RECEIVABLE

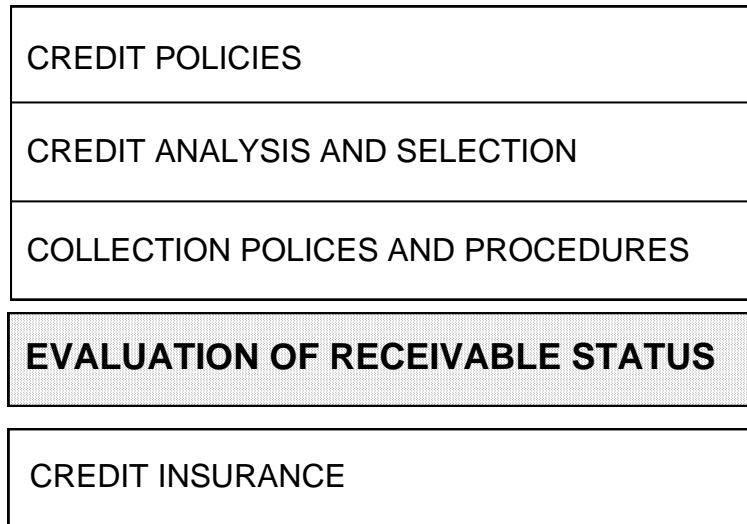


Figure 8.17. **Evaluation of receivable status**

Supposing that receivable are 6.780.000 UAH and annual credit sales amount to 39.920.000 UAH:

$$RTD = \frac{6.780.000 \cdot 365}{39.920.000} = 62 \text{ days}.$$

RTD figures are a direct consequence of the credit terms and policy followed by the company. If the credit term are "2/10, net 30", 62 days indicates that a sizable proportion of the receivables are past the final due date of 30 days.

A very low RTD may not necessarily be good, since it could be the symptom of an excessively restrictive credit policy.

With **aging accounts receivables** the receivables on a given date are listed according to the percentage billed in previous months.

The aging schedule of accounts receivable at December, 31 could be as follows (table 8.3).

If the credit terms are "2/10, net 30", this aging schedule indicates that 54% of the receivables outstanding in December are current, 29 % are up to

1 month past due, 10% are 1 or 2 months past due and so on. These results require a close examination of the credit and collection policies. In this example, a close examination of the receivables billed in August could lead to consider if any one should be charged off as bad debts.

Table 8.3

Percentage of accounts receivable

Dec.	Nov.	Oct.	Sept.	Aug. and before	Total
54 %	29 %	10 %	2 %	5 %	100 %

Credit insurance is a means of shifting the risk of extraordinary losses to a third party (fig. 8.18). However, it is not designed to protect credits against normal or primary losses, only abnormal credit losses.

MANAGEMENT OF ACCOUNTS RECEIVABLE

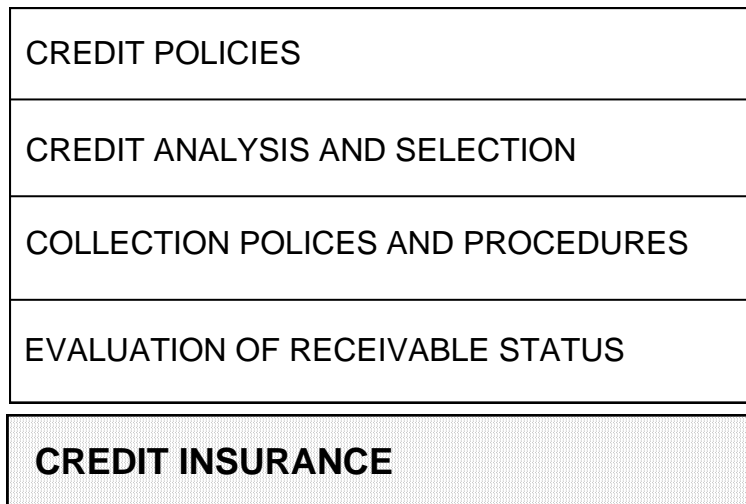


Figure 8.15. **Credit insurance**

Credit insurance is subject to two limiting features. First the insurance company will require the creditor to participate in 10-20 % of the loss suffered, in order to prevent careless granting of credit. Second, the coverage will be limited to an amount that is related to the credit rating of the customer at the time of shipment.

Delinquent accounts are filed with the insurance company within a specified time period (usually no more than 12 months). The insurance company will charge the policyholder a fee for its activity. If it is successful, the creditor receives a share equal to the coinsurance percentage.

Whether credit insurance is desirable depends on the premium and the management's attitude towards risk. The premium is in the range of 0,2 % of credit sales.

8.5. Inventory management

Like most financial issues, inventory management involves a trade-off between the costs and the benefits associated with the decision of keeping a given level of funds invested in inventories (fig. 8.16).

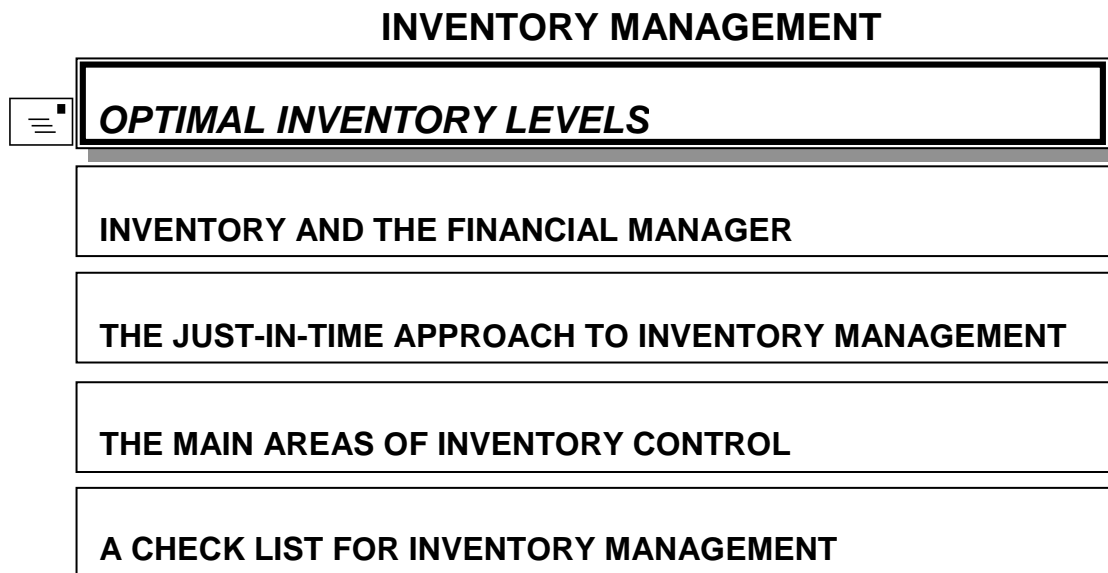


Figure 8.16. **Optimal inventory levels**

Higher inventory levels result in higher costs from storage, insurance, spoilage, and in the cost of interest on borrowed funds needed to finance inventory acquisition. The danger of obsolescence should also be considered.

On the other hand, higher inventory levels add to the firm's flexibility. A higher level of inventory minimizes the dangers of stock outs, enabling the firm to fill orders more quickly. Production slowdowns resulting from inadequate inventories can be avoided. Finally, large volume purchases will result in greater purchase discounts.

The natural inclination of the managers of the production, sales, and purchasing department toward a higher level of inventory is understandable.

Although inventory decisions do not usually fall under the direct operating responsibility of the financial manager, it is the financial manager's

responsibility to make the other corporate functions aware of the financial implications of having large amount of funds invested in inventory (fig. 8.17).

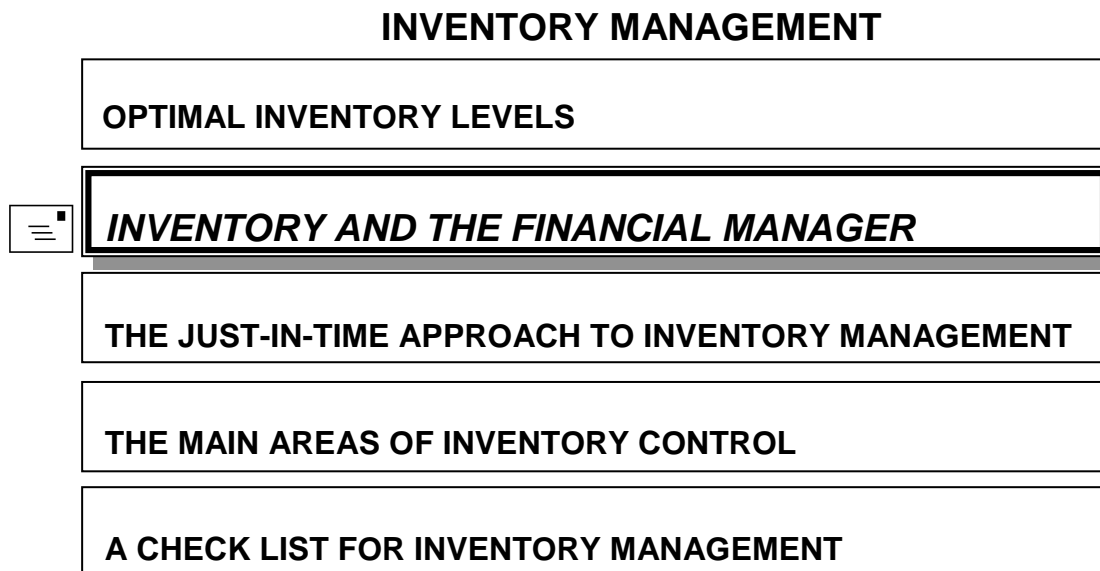


Figure 8.17. **Inventory and the financial manager**

The financial manager should continuously stress the point that the greater the opportunity cost of funds invested in inventory, the lower the optimal level of average inventory and the lower the optimal order quantity should be [1].

When usage of inventory is uncertain, the financial manager may try to enforce policies that will reduce the average lead time required to receive inventory once an order is placed.

As a result, the lower the average lead time, the lower the safety stock needed and the lower the total investment in inventory will be. The greater the opportunity cost of funds invested in inventory, the greater the incentive to reduce this lead time. The purchasing department may try to find new vendors to deliver faster. The production department may be able to deliver finished goods faster by producing a smaller run. In both cases, there is a trade-off between the added cost involved in reducing the lead time and the opportunity cost of funds tied up in inventory.

An additional support for the financial manager's concern over the maintenance of large inventories has come in recent years from an inventory control system called Just-in-Time (JIT) resulting from the Japanese experience (fig. 8.18).

JIT departs from the conventional approach of maintaining large inventory stocks as buffers against uncertainties. Its goal is to produce or receive a required item just when it is needed, or "just-in-time". In addition to enhancing productivity, product quality and flexibility, the JIT system should insure that inventories of all types would thus be reduced to a bare minimum.

INVENTORY MANAGEMENT

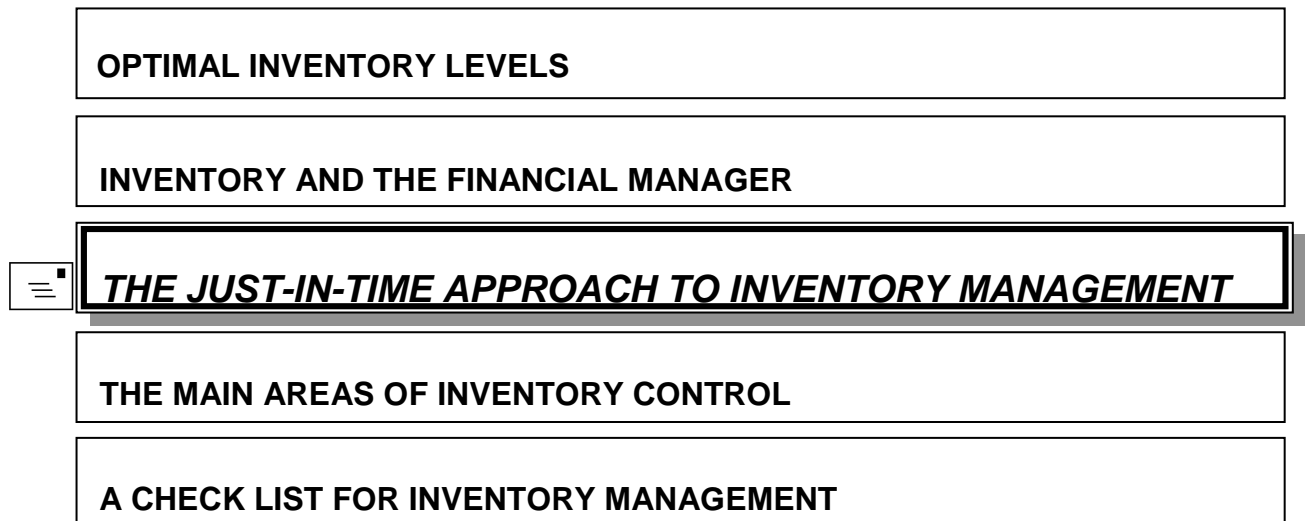


Figure 8.18. **The just-in-time approach to inventory management**

The basic message of JIT is that like accounts receivable, inventories should be increased as long as resulting savings exceed the total cost of holding the added inventory.

The balance finally reached depends on the estimates of actual savings, the cost of carrying additional inventory, and the efficiency of inventory control. Obviously, this balance requires coordination of the production, marketing, and finance areas of the firm in keeping with a global objective.

In order to insure a correct allocation of the firms' capital, the financial manager must be familiar with some basic concepts and measures to effectively control inventories (fig. 8.19).

Inventory **carrying costs** include those for warehousing, handling, insurance, and prosperity taxes. Provision for spoilage and obsolescence should also be included in this analysis, and the opportunity cost of holding inventory balances must be considered. Assuming that the carrying cost per unit is constant, then:

$$\text{Carrying cost} = \frac{Q}{2} \cdot C, \quad (8.2)$$

where $Q/2$ – the average quantity;
 C – the carrying cost per unit.



Figure 8.19. **Inventory control**

Inventory **ordering costs** are the costs of placing an order and receiving the merchandise [11]. They include freight charges and the clerical cost to place an order. In the case of produced items, they also include the scheduling costs. Assuming that they are constant, then:

$$\text{Ordering cost} = \frac{S}{Q} \cdot P, \quad (8.3)$$

where S – total usage;
 Q – quantity per order;
 P – cost of placing the order.

There is a trade-off between the ordering and carrying costs. A greater quantity ordered will increase carrying costs but lower ordering costs.

The Economic Order Quantity (EOQ) is the optimum amount of goods to order each time an order is made in order to minimize inventory costs over the planning period:

$$EOQ = \sqrt{\frac{2 \cdot S \cdot P}{C}}. \quad (8.4)$$

Example:

The company provides the following information:

S = 500 units per month;

P = 300 roubles per order;

C = 30 roubles per unit.

$$EOQ = \sqrt{\frac{2 \cdot 500 \cdot 300}{30}} = 100 \text{ units}.$$

The number of orders (N) required each month is:

$$N = \frac{S}{EOQ}, \quad (8.5)$$

$$N = \frac{500}{100} = 5.$$

As a consequence an order should be placed about every 6 days (31/5).

Stockout of raw materials or work-in-process can result in a shutdown or slowdown in the production process. In order to avoid this problem, a safety stock must be held in reserve as a cushion against uncertain demand (or usage) and replenishment lead time i.e. the length of time between the placement of an order for an inventory item and when the item is received in inventory. It can be determined by dividing the value of outstanding orders by the average daily purchases.

The safety stock level is the point where the increase in carrying costs equals the opportunity cost associated with a potential stockout:

$$\text{Stockout cost} = \frac{\text{Usage}}{\text{Order Quantity}} \cdot \text{Stockout Units} \cdot \text{Unit stockout Cost} \cdot \text{Stockout probability}. \quad (8.6)$$

$$\text{Safety stock} = \frac{\text{Stockout cost}}{\text{Unit Carrying Cost}}. \quad (8.7)$$

Example:

The company uses 100.000 units annually, and each order placed is for 10.000 units. The stockout is 1.000 units. This amount is the difference between the maximum daily usage during the lead time less the reorder point, ignoring a safety stock factor. The stockout probability management wishes to take is 30 %. The per-unit stockout cost is 4.600 UAH. The carrying cost per unit is 5.000 UAH. The inventory manager wants to determine:

a) the stockout cost:

$$\text{Stockout cost} = \frac{100.000}{10.000} \cdot 1.000 \cdot 4.600 \cdot 0,3 = 13.800.000 \text{ UAH}.$$

c) the amount of safety stock:

let X = safety stock

Stockout cost = Carrying cost of safety stock

$$13.800.000 = 5.000X$$

$$X = 13.800.000/5.000 = 2.760 \text{ units}.$$

The **Economic Order Point** (EOP) is the inventory level that signals the time to reorder merchandise at the EOQ amount. Safety stock should be considered in the computation

$$\text{EOP} = SL + F \cdot \sqrt{S(\text{EOQ})L}, \quad (8.8)$$

where S – usage;

L – Lead Time;

F – Stockout Acceptance Factor;

EOQ – Economic Order Quantity.

Example:

The company provides the following data:

S = 2.000 units per month;

L = 1/4 of a month;

F = 1.29, which represents the acceptable stockout level of 10 %;

EOQ = 75 units.

$$EOP = 2.000 \cdot \frac{1}{4} + 1,29 \cdot \sqrt{2.000 \cdot 75 \cdot \frac{1}{4}} = 750.$$

So the Economic Order Point is 750.

Last one level of inventory management is a check list for inventory management (fig. 8.20).



Figure 8.20. A check list for inventory management

A check list for inventory management consists of:

1. Appraise the adequacy of the raw materials level, which depends on expected production, condition of equipment, and any seasonal considerations of business.
2. Forecast future movements in raw materials prices, so that if prices are expected to increase, additional material can be purchased at the lower price
3. Discard slow-moving products.
4. Guard against inventory build-up, since it is associated with substantial carrying and opportunity costs.
5. Plan for a safety stock inventory balance that will guard against stockouts and possible loss of business.

6. Examine the quality of the merchandise received computing the ratio of purchase returns to purchases. A sharp increase in the ratio indicates that a more reliable supplier is needed.

7. Keep a careful record of back orders. A high back order level indicates that less inventory balances are required and that improvements can be achieved in production planning and procurement.

8. Closely supervise warehouse and materials handling staff

9. to guard against theft loss and to maximise efficiency.

10. Minimize the lead time in the acquisition, manufacturing and distribution functions. The lead time may indicate whether and increase in inventory stocking is required or whether the purchasing pattern should be altered.

11. Examine the time between raw materials input and the completion of production to see if production and engineering techniques can be implemented to speed up the production operation.

12. Examine the degree of spoilage

13. Maintain proper inventory control, such as through the application of computer techniques and operations research.

Control questions:

1. What do firm need to invest in net working capital?

2. What are the levels of model of the working capital management basic decisions?

3. How do changes in working capital affect project cash flow?

4. What are the cash management methods?

5. Give the list of collection polices and procedures.

6. Why is an understanding of inventory management useful for cash management?

7. What is the just-in-time approach to inventory management?

8. What is the Economic Order Point?

9. Give characteristic of cash management methods.

10. What are ingredients of working capital?

Unit 9. Financing corporate operations

- 9.1. Short-term financing
- 9.2. Long-term financing
- 9.3. Optimal capital structure
- 9.4. Dividend policy

9.1. Short-term financing

Functions of financial manager are presented in fig. 9.1

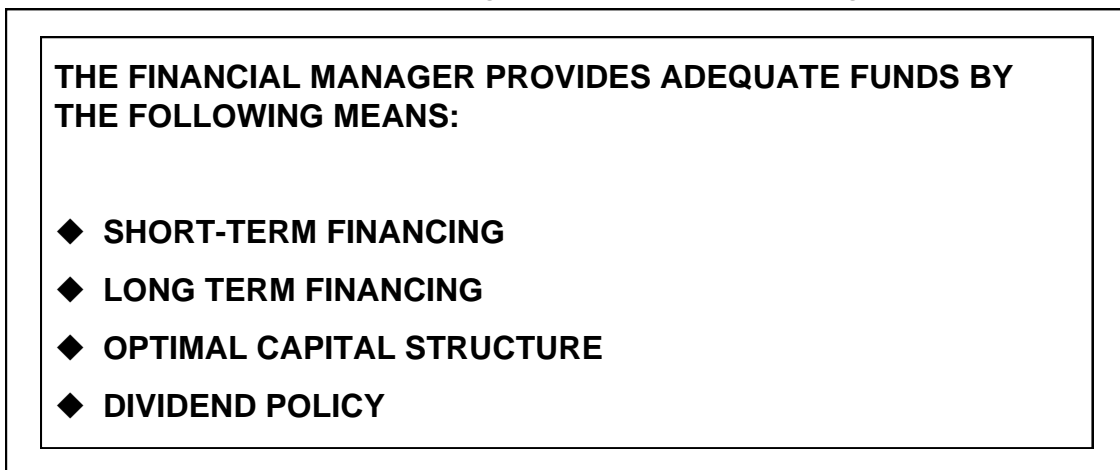


Figure 9.1. **Financing corporate operations: overview**

One of the basic responsibilities of the financial manager is to provide that adequate funds are available in order to finance the company's operations.

The financial manager is engaged in this problem at two levels.

The first is the short-term financing decision that is the direct consequence of the company's continuous operations. Short-term financing might be required to meet seasonal factors, or temporary cash needs of the business.

The second is the long-term financing decision, designed to supply the funds needed to finance permanent needs of the company, such as the acquisition of fixed assets or the increase in working capital needs resulting from the growth of the firm.

An analysis of the financing mix of firms across industries will show marked differences. Some firms have high relative amounts of debt, while others are almost debt-free. Does the type of financing employed make a

difference, and if so, why? And in some sense, can a certain mix of financing be considered as optimal?

Finally, the dividend policy must be viewed as an integral part of the firm's financing decision. Retaining a greater amount of current earnings in the firm means that fewer UAH will be available for current dividend payments. On the other hand, an excessive payment of dividends could result into a depletion of the company's resource base, and might require the need to look for alternative and more expensive sources of funds. The value of dividends paid to stockholders must therefore be balanced against the opportunity cost of retained earnings lost as a means of equity financing.

Short-term refers to financing that will be repaid in no more than one year. It is generally used to meet seasonal and temporary fluctuations in a company's fund position. It can also be used to meet permanent needs of the business (fig. 9.2).

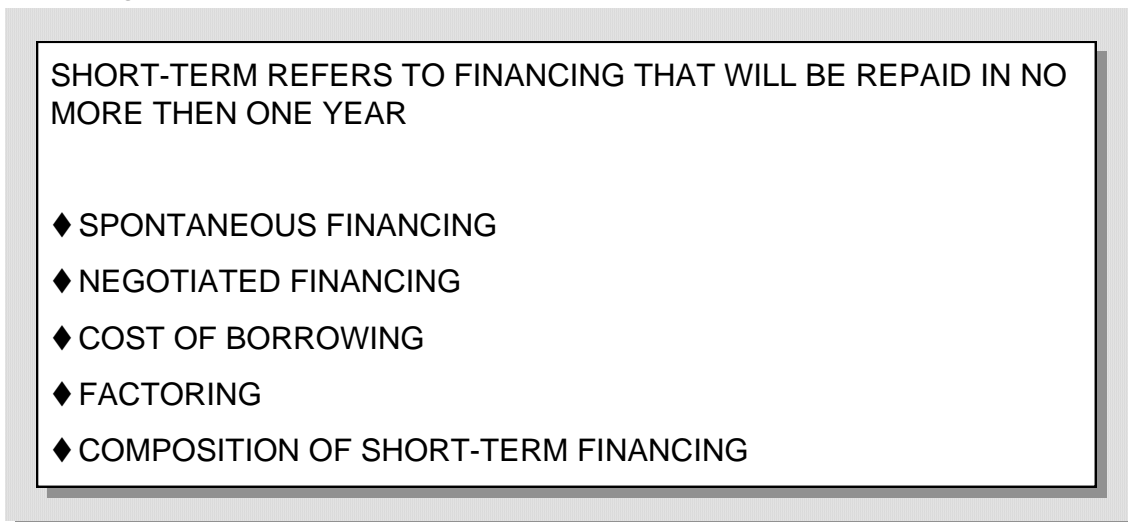


Figure 9.2. **Short-term financing: overview**

For example, short-term financing may provide extra net working capital, or provide interim financing for a long-term project.

Compared to long-term financing, short-term financing shows several advantages as well as disadvantages.

Short-term financing is easier to arrange, it is generally less expensive, and it affords the borrower more flexibility. On the other hand, short-term interest rates fluctuate more often than long-term rates; refinancing is frequently needed and delinquent repayment may be detrimental to the credit rating of a borrower who is experiencing a liquidity problem.

Short-term financing is usually classified under two main categories, spontaneous and negotiated financing. The first category is known as **spontaneous financing**. It is made up by accounts payable and accrued expenses that arise naturally from the firm's day-to-day transactions [3].

The other category of short-term financing is made up by **negotiated** sources of financing and consists of certain money-market credit and both unsecured and secured loans. This financing is not spontaneous since it must be arranged on a formal basis.

The issue of defining the optimal financing mix has been defined in the preceding unit as a problem of trade-off between risk and profitability.

The central problem in the selection among the different short-term financial instruments lies in the comparison of the related costs, availability, flexibility and timing.

Trade credit is the largest source of short-term funds for business firms. In advanced economies, most buyers are not required to pay for goods when they are delivered, but are allowed for a short deferment period before payment is due (fig. 9.3).

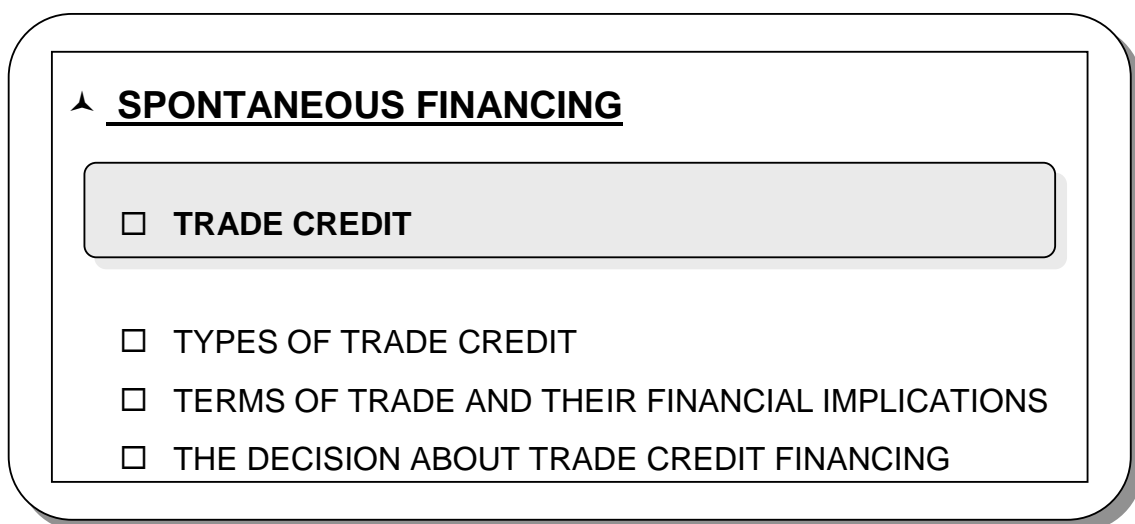


Figure 9.3. **Trade credit**

Thus the seller extends credit to the buyer, just like firms extend credit to their clients. Since suppliers are more liberal in the extension of credit than are financial institutions, companies, especially small ones, rely heavily on this form of financing.

Usually the trade credit is extended under three types of arrangement (fig. 9.4):

- open account;
- notes payable;
- trade acceptances.

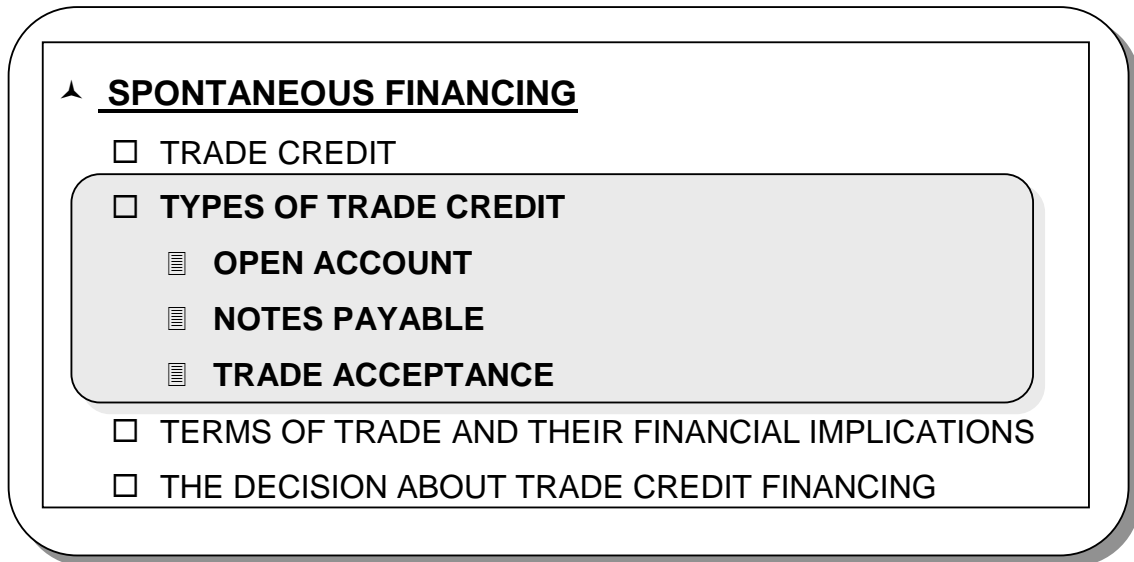


Figure 9.4. **Types of trade credit**

The **open account** is by far the most common kind of trade credit. Under this arrangement the buyer doesn't sign a formal debt instrument showing the amount owed. The seller ships the goods to the buyer and sends an invoice that specifies the goods shipped the total amount due, and the terms of the sale. The seller generally extends credit based on a credit investigation of the buyer following the same process that we have described for accounts receivable. Open account credit appears on the buyer's balance sheet as accounts payable.

Notes payable. The buyer signs a note that evidences his debt to the seller. The note calls for the payment of the obligation at some specified future date. This arrangement is employed when the seller wants the buyer to formally acknowledge the debt. A note, for instance, can be issued when the buyer's open account became due.

A trade acceptance is an arrangement that provides for the formal recognition of the buyer's indebtedness. Under this arrangement, the seller draws a draft on the buyer, ordering the buyer to pay the draft at some future date. Goods will not be released by the seller until the buyer accepts the draft. Accepting the draft the buyer designates a bank at which the draft will be paid when it becomes due. At that time the draft becomes a trade

acceptance that depending on the creditworthiness of the buyer, may have some degree of marketability [5].

The seller extends credit to the buyer on the basis of **terms of sale** that are similar to those described for accounts receivable (fig. 9.5).

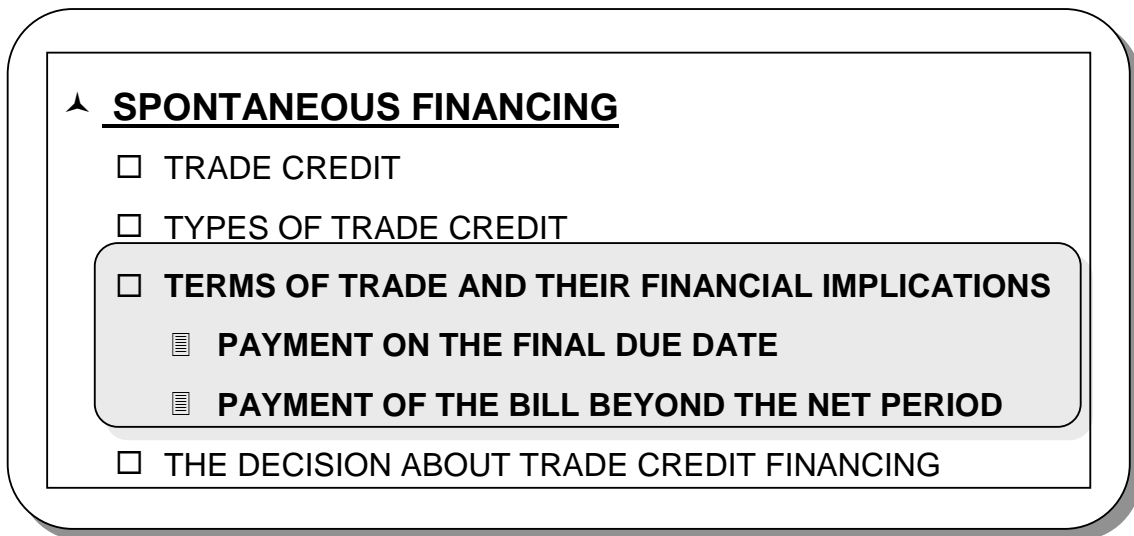


Figure 9.5. **Terms of trade**

The most common are:

Net period, that specifies the time period allowed for payment. The terms "net 30" means that the bill or invoice must be paid within 30 days. Under the **Net period with cash discount** the seller in addition to extending credit, offers a discount if the bill is paid during the early part of the net period. The terms "2/10, net 30" indicates that a 2 % discount is granted if the bill is paid within 10 days. Otherwise the buyer must pay the full amount.

Thus, on the basis of the terms of sale the buyer does not have to pay an explicit cost for trade financing. However, the financing provided has definite financial implications that are dependent on the firm's production cycle. It is therefore important to be aware of such implications under two circumstances, where the firm:

- 1) does not take a cash discount but pays on the last day of the net period;
- 2) pays the bill beyond the net period.

Payment on the final due date. There is a definite opportunity cost resulting from the decision not to take a discount when it is available. Suppose that the terms of sale are "2/10, net/30", and the firm does not take the cash discount but pays on the final day of the net period. For a

1.000 UAH invoice, it would have the use of 980 for 20 days (from the 11th to the 30th day), but for this privilege it pays 20 UAH (the discount it has foregone).

The cost, on an annual percentage basis of not taking a cash discount can be stated as follows:

$$\text{annual \% rate} = \frac{\% \text{ discount}}{100 - \% \text{ discount}} \cdot \frac{365 \text{ days}}{\text{payment date} - \text{discount period}} \quad (9.1)$$

In our case the annual interest cost would be:

$$\text{annual \% rate} = \frac{2}{100 - 2} \cdot \frac{365}{20} = 37,24 \%$$

As we can see, trade credit can be a very expensive of short-term financing when a cash discount is offered but not accepted.

The payment beyond the net period generates additional short-term financing for the firm by way of the additional build-up in a liability account.

This benefit must be considered against the associated costs that include, in addition to the cash discount forgone:

- 1) late payment penalties or interest that may be charged depending upon the industry practice;
- 2) possible deterioration in credit rating;
- 3) possible deterioration in the firm's ability to obtain future credit;
- 4) possible increase in selling prices charged by the seller as a result of the credit extension.

Generally, it may be possible to postpone certain payables beyond the net period without severe consequences. It rests in the interest of suppliers to increase, a case that we have covered analyzing accounts receivable. The supplier may be willing to accept a delayed payment if the risk of bad debt is negligible or in the case of seasonal purchases.

The firm must balance the advantages of trade credit against the additional costs resulting from the decision of foregoing a cash discount or to make payments beyond the net period and must compare the benefits of trade financing with other short-term financing alternatives (fig. 9.6).

The major advantage of trade financing is that it is readily available. Since there is no need to negotiate with the supplier, the decision is entirely upon the firm.

Unlike other forms of short-term financing, there is no need to negotiate formally with the lender over the terms of the loan. This means that the company can avoid the lead time between the time the funds are needed and the time when they are available, and this the firm is able to borrow, and therefore the company can enjoy a greater degree of flexibility and can avoid strict payment schedules. The firm can also avoid restrictions on its operations and security provisions imposed by the lender.

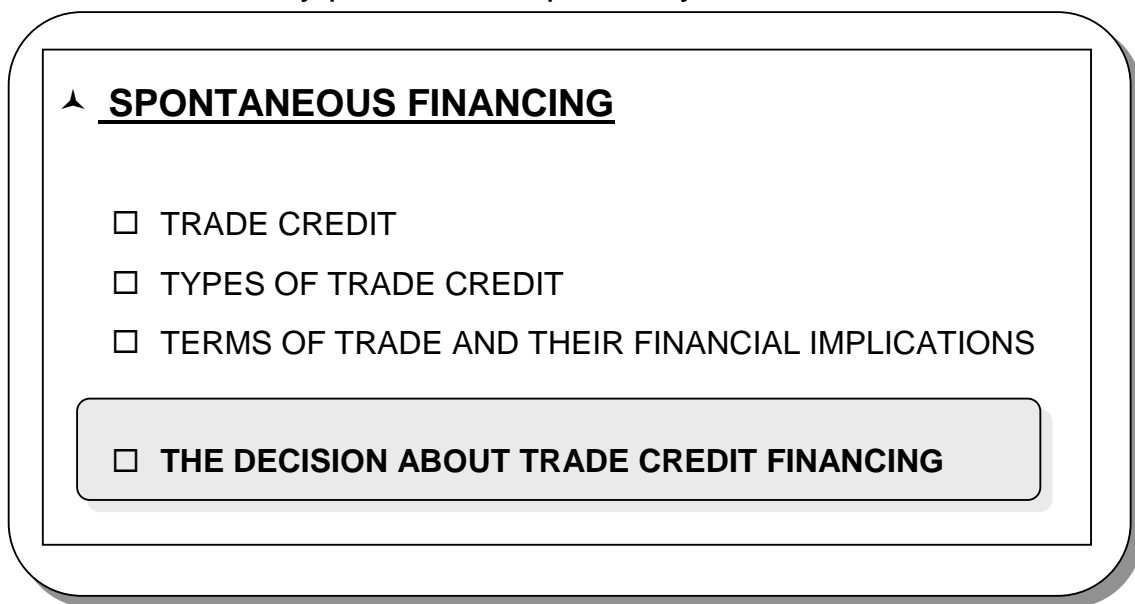


Figure 9.6. **The decision about trade credit financing**

Suppliers are frequently more lenient in the event of corporate financial problems bankers or other lenders. Finally, for certain firms there are no alternative sources of short term financing.

The advantages of trade credit must be carefully weighted against the cost that may be very high. Many firms utilize other forms of short-term financing in order to be able to take advantage of cash discounts.

The main forms of **negotiated financing** are money market credit and short-term loans (fig. 9.7). This type of financing is not spontaneous or automatic. It must be arranged on a formal basis [6].

Certain money market instruments provide corporations with financing when they are sold to investors. Such instruments are offered only in fully developed money markets, and are usually available to large companies with a high credit standing.

- **NEGOTIATED FINANCING**

-  **MONEY-MARKET CREDIT**

-  **SHORT-TERM LOANS**

Figure 9.7. Negotiated financing

The main sources of money market credit are (fig. 9.8):
commercial paper;
bankers' acceptances.

- **NEGOTIATED FINANCING**

-  **MONEY-MARKET CREDIT**

-  **COMMERCIAL PAPER**

-  **BANKER'S ACCEPTANCE**

-  **SHORT-TERM LOANS**

Figure 9.8. Sources of money market credit

Commercial paper represents an unsecured, short-term, negotiable promissory note sold in the money market.

Some corporations can also issue a "bank supported" commercial paper. A bank provides, for a fee, a **letter of credit** guaranteeing the investor that the company's obligations will be paid.

A banker's acceptance is short-term promissory draft notes for which a bank, having accepted them, promises to pay the holder the face amount at maturity.

The main sources of short-term loans are commercial banks and finance companies (fig. 9.10).

● **NEGOTIATED FINANCING**



MONEY-MARKET CREDIT



SHORT-TERM LOANS



UNSECURED LOANS



SECURED LOANS

Figure 9.10. Sources of short-term loans

Bank loans are not spontaneous financing. Borrowers must apply for loans, and lenders must grant them. Without additional funds, a firm may have to restrict its plans. Therefore, as a company's need for funds changes, it alters its borrowings from banks. One example is a self-liquidating seasonal loan which is used to pay for a temporary increase in accounts receivable or inventory. As soon as the assets realize cash, the loan is repaid.

In order to apply for a bank loan, a company must have sufficient equity and good liquidity. When a short-term bank loan is taken, the debtor usually signs a note stating that the borrower agrees to repay the loan at the due date. A note payable may be paid at maturity or in instalments.

Loans, of course, earn interest and the prime interest rate is the lowest interest rate applied to short-term loans from a bank. Banks charge only their most creditworthy clients the prime rate; other borrowers are charged higher interest rates.

Bank loans can be classified under two categories: Unsecured loans and secured loans. In the great majority of cases, finance companies do not offer unsecured loans, simply because a borrower who deserves unsecured credit can borrow at a lower cost from a commercial bank. Consequently, our discussion of unsecured loans will involve only commercial banks.

An unsecured loan is a form of debt that is not backed by the pledge of specific assets. This kind of loan is recommended for companies with good credit ratings for financing projects that have quick cash flows.

For this reason, they are typically regarded as "self-liquidating" since the assets purchased with the proceeds generate sufficient cash flows to pay off the loan.

The disadvantages of this kind of loan are that, because of its short term nature, it carries a higher interest rate than a secured loan.

The debt is evidenced by a promissory note signed by the borrower, stating the interest to be paid along with how and when the loan will be repaid.

Unsecured loans may be extended under a line of credit, a revolving credit arrangement or on a transaction basis (fig 9.11).



Figure 9.11. **Unsecured loans**

Line of credit / overdrafts. With a line of credit the bank agrees to lend money to the borrower on a recurring basis up to a specified amount depending on the bank's evaluation of the creditworthiness of the firm.

They are typically established for a 1-year period and may be renewed annually.

The cash budget often gives the best insight into the borrower's short-term credit needs.

The advantages of a line of credit for a company are the easy and immediate access to funds and the ability to borrow only as much as needed and repay immediately when cash is available.

Overdrafts are a line of credit against which drafts (checks) can be drawn up to a specified maximum amount. They are often extended year after year providing in effect a form of medium-term financing.

Revolving credit agreement. This is a formal, legal commitment to extend credit up to some maximum amount over a stated period of time. The borrower is required to pay a commitment fee on the unused portion of the revolving credit in addition to interest on any loaned amount.

Transaction loans. This instrument of short-term financing is particularly suited when the firm needs short-term funds for one specific purpose. A contractor may borrow from a bank in order to complete a job. When the work is completed, he will pay off the bank. The cash flow ability of the borrower to meet his obligation is of paramount importance.

An instalment loan requires monthly payments. When the principal on the loan decreases sufficiently, refinancing can take place at lower interest rates. The advantage of this kind of loan is that it may be tailored to satisfy a company's seasonal financing needs.

Discounting of trade bills. It usually results from the following set of transaction. A manufacturer selling goods on credit draws a bill on the buyer. The buyer endorses the bill, or it takes it to the bank to accept it, to which point it becomes a banker's acceptance. The manufacturer then takes the bill to the bank, and the bank accepts it for a fee if the buyer's bank has not already accepted it. The bill is then sold at a discount to the manufacturer's bank or to a money market dealer. The rate of interest varies with the term of the bill and the general level of local money market interest rates.

If a borrower's credit rating is deficient, the bank may lend money only a secure basis, that is, with some form of collateral behind the loan. Collateral may take many forms including inventory, marketable securities or fixed assets.

With security, lenders have two sources of loan repayment: the cash flow ability of the firm to service the debt and, if that source fails, the collateral value of the security.

The disadvantage of a secured loan is the decrease in the operating flexibility of the firm. On the other hand, in some cases, even though the company is able to obtain an unsecured loan, it may still give collateral in exchange for a lower interest rate.

The two main methods of secured loans are: accounts receivable-backed loans and Inventory-backed loans (fig. 9.12).



Figure 9.12. Secured loans

Accounts receivable are one of the most liquid assets of the firm, and therefore are a desirable security for a short-term loan.

In evaluating the loan request, the lender must analyze the quality of the receivables, the higher the percentage the lender is willing to advance.

The second concern of the lender is the size of the receivables, since it must keep records of each account receivable pledged. As a result, receivables of average small size will require higher administrative costs.

A receivable-backed loan can be on either a **nonnotification basis** or on a **notification basis**. The difference between the two arrangements depends on whether customers of the firm are not notified or notified that their accounts have been pledge.

When the company collects the account receivable, it forwards it to the lender, that will reduce the amount owed by the borrower by 75 %. The other 25% is credited to the borrower's account.

Inventory-backed loans. Inventory financing can be implemented when the goods in inventories have the following features:

- are marketable;
- are non-perishable;
- are standardized;
- have a quick turnover;
- are not subject to rapid obsolescence;
- can be marketed apart from the firm's marketing organization;

- have stable prices and selling expenses.

When all these conditions are met the advance is high. In general, the financing of raw materials and finished goods is about 75 % of their value. The interest rate approximates 3 to 5 % over prime.

The disadvantages of inventory financing include the high interest rate and the restrictions on some of the company's inventory.

The vehicles of inventory financing include a floating lien, warehouse receipt, and trust receipt.

In the case of a **floating lien**, the creditor's security lies in the aggregate inventory without the assets being specifically identified.

With a **warehouse receipt**, the lender receives an interest in the borrower's inventory stored at a public warehouse. There may be a field warehouse arrangement where the warehouse sets up a secured area directly at the debtor's location. The debtor has access to the goods but must continually account for them. Collateral is released only when the borrower pays a portion of the loan.

With a **trust receipt** loan, the creditor has title to given goods but releases them to the borrower to sell on the creditor's behalf. As goods are sold, the borrower remits the funds to the lender. A good example of trust receipt use is in automobile dealer financing. The drawback of the trust receipt arrangement is that a trust receipt must be given for specific items.

There are a number of important factors that affect the **cost of borrowing** on a short-term basis: stated interest rates, compensating balances and commitment fees (fig. 9.13).

Interest rates are determined through negotiation between the borrower and the lender. This rate will vary according to a number of factors such as the creditworthiness of the client, the level of cash balances and other business the borrower has with the bank [1].

There are two basic methods of computing interest rates, the **Collect basis** where the interest is paid at maturity and the **Discount basis** where the interest is deducted from the initial loan

On a 15.000 UAH loan and 12 % interest for 1 year the interest on a collect basis will be:

$$\text{interest} = \frac{1.800}{15.000 \text{ in useable funds}} = 12 \%$$

COST OF BORROWING

- ◆ INTEREST RATES
 - ❖ COLLECT BASIS
 - ❖ DISCOUNT BASIS
- ◆ COMPENSATING BALANCES
- ◆ COMMITMENT FEES

Figure 9.13. Cost of borrowing

While on a discount basis it will be:

$$\text{discount} = \frac{1.800}{13.200 \text{ in useable funds}} = 13,64 \%$$

Compensating balances are noninterest-bearing demand deposit balances that the commercial banks may require the client to maintain at the bank in direct proportion to either the amount of funds borrowed or the amount of the commitment. These balances can equal 10 % of a line of credit. Their effect is to raise the effective cost of borrowing.

In the example shown above for the collectable basis, we would have:

$$\text{discount} = \frac{1.800}{13.500 \text{ in useable funds}} = 13,33 \%$$

Commitment fees. This is an amount usually required under the terms of a revolving credit agreement.

Factoring involves the selling or transfer of title of accounts receivable to a factoring firm (the factor), which acquires the accounts as principal (fig. 9.14). The receivables are sold without recourse, meaning that the selling firm is not liable for any receivables not collected by the factor. As a result of the sale to the factor, receivables disappear from the seller's balance sheet.

Factoring involves two distinct services by the factor, each with a separate fee schedule.

Under the first service, called **maturity factoring**, the factor provides credit evaluation and collection services, and assumes the total credit risk and bad-debt losses on accounts purchased. A factor may however reject accounts offered at the time of sale. The company receives payments for the receivable sold each month on the average due date of the factored receivable. The factor commission ranges from about 0,77 to 2 %.



Figure 9.14. **Factoring**

A second service provided is **discount factoring**. Under this arrangement the firm selling the receivables may draw funds from the factor prior to the average maturity date. Funds available are equal to the net amount of the invoice, after cash discounts, less an allowance to cover estimated claims, returns, and other allowances. The interest charge is based on daily balances, and no compensating balances are required.

The advantages of factoring include:

- immediate availability of cash;
- reduction in overhead since credit examination is no longer required;
- utilization of financial advice;
- receipt of advances as needed on a seasonal basis;
- strengthening of the balance sheet position.

The drawbacks include:

- high cost;
- poor impression left on the customer because of the change in ownership of the receivables.

The key issues in a meaningful analysis of alternative sources of funds is a comparison of their costs, flexibility, timing, availability, and the degree to which the assets of the firm are used a security (fig. 9.15).

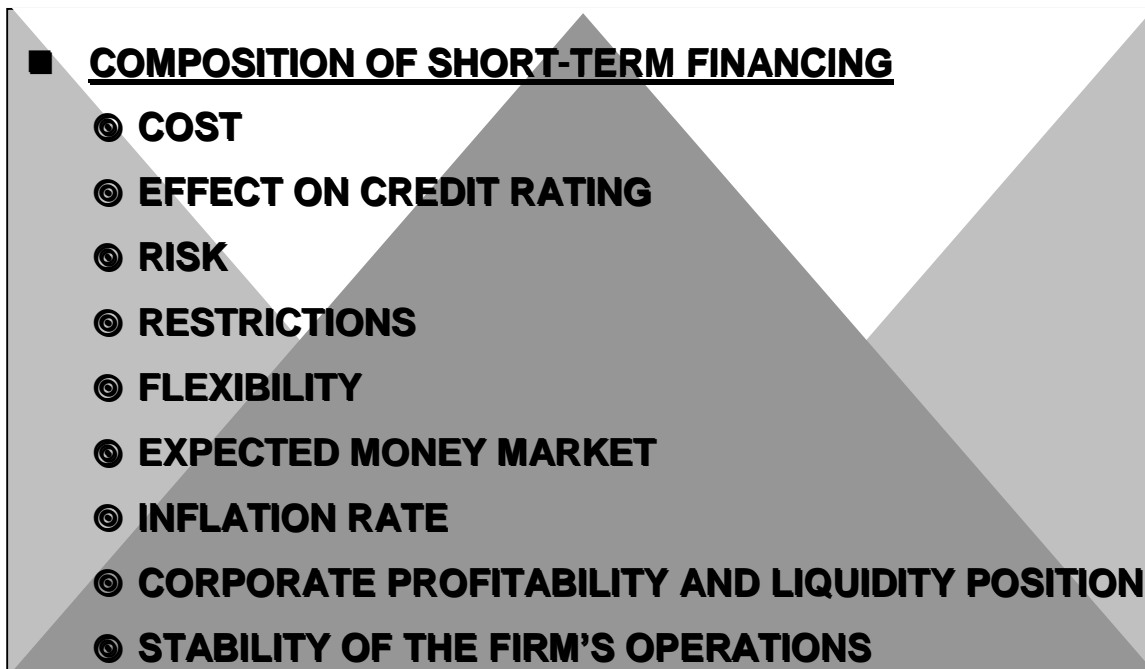


Figure 9.15. **Composition of short-term financing**

Cost differentials among the various short-term financing alternatives are not necessarily constant over time in keeping with changing market conditions. Thus, timing bears heavily on the question of the most appropriate mix of short-term financing.

Naturally, the availability of financing is important. However, the lower the credit standing of the firm the fewer the sources of that short-term financing available to it.

Flexibility with respect to short-term financing pertains to the firm's ability to pay off a loan as well as to its ability to renew or even increase it. With short-term loans, the firm can pay off the debt when it has surplus funds and thereby reduce its overall interest costs. With factoring, advances can be taken only when needed and interest cost incurred only as necessary. For commercial paper, the firm must wait until final maturity before paying off the loan.

Flexibility relates to how easily the firm can increase its borrowing on short notice. With a line of credit or revolving credit at a bank, it is an easy matter to increase borrowings, assuming the maximum limit has not been reached. With other forms of short-term financing, the firm is less flexible. Finally, the degree to which assets are encumbered impacts the decision. With secured loans, lenders obtain a lien on the various assets of the firm.

This secured position puts constraints on the firm's future financing possibilities. When receivables are actually sold under a factoring arrangement, the principle remains the same. In this case, the firm is selling one of its most liquid assets, thus reducing its creditworthiness in the minds of many creditors.

A list of the factors affecting the selection of the source of short-term financing is as follows:

1. Cost.
2. Effect on credit rating. Some sources of short-term financing may negatively affect the firm's credit rating.
3. Risk. The firm must consider the reliability of the source of funds for future borrowing.
4. Restrictions. Certain lenders may impose restrictions such as requiring a minimum level of net working capital.
5. Flexibility. Certain lenders are more willing than others to work with the borrower, for example, to periodically adjust the amount of funds needed.
6. Expected money market conditions.
7. The inflation rate.
8. Corporate profitability and liquidity position.
9. The stability of the firm's operations.

Example: “Negotiated financing”

The Alfa company needs 250 million UAH and in considering the alternative of arranging a bank loan, or going to a factor.

The bank loan terms are 18 % interest, discounted. The bank is requiring a compensating balance of 20 %.

The factor will charge a 4 % commission on invoices purchased monthly, and the interest rate on the purchased invoices is 12 %, deducted in advance. By using a factor, Alfa will save 1 million UAH monthly credit department costs, and uncollectible accounts estimated at 3 % of the factored accounts receivable will not occur. Which is the better alternative for Alfa?

1. Bank loan

The bank loan that will net the company desired 250 million UAH in proceeds is:

$$Bank\ loan = \frac{Proceeds}{100\% - percent\ deducted} \tag{9.2}$$

$$\text{Bank loan} = \frac{250.000.000}{100 \% - (18 \% + 20 \%)} = 403.225.806 \text{ UAH.}$$

The effective interest rate will be:

$$\text{Effective interest rate} = \frac{\text{interest rate}}{\text{proceeds}}. \quad (9.3)$$

$$\text{Effective interest rate} = \frac{0,18}{0,62} = 29 \%$$

2. Factoring

The amount of accounts receivable that should be factored to net the firm 250.000.000 UAH is:

$$\text{factoring} = \frac{250.000.000}{1 - 0,16} = 297.619.047 \text{ UAH.}$$

The effective interest rate associated with factoring accounts receivable is:

$$\text{Effective interest rate} = \frac{12 \%}{100 \% - (12 \% + 4 \%)} = 14,3 \%$$

The total annual cost of the **bank arrangement** is:

Interest (250.000.000 x 0,29)	72.500.000
Additional cost of not using the factor	
Credit cost (1.000.000 x 12)	12.000.000
Uncollectible accounts (297.619.047 x 0,03)	<u>8.928.571</u>
Total cost	93.428.571

The total annual cost of the **factoring alternative** is:

Interest (250.000.000 x 0,143)	35.750.000
Factoring (297.619.047 x 0,04)	<u>11.904.762</u>
Total cost	47.654.762

Factoring should be used since it will cost almost half as much as the bank loan.

9.2. Long-term financing

The long-term financing decision is designed to supply the funds needed to finance permanent needs of the company, such as the acquisition of fixed assets or the increase in working capital needs resulting from the growth of the firm (fig. 9.16).

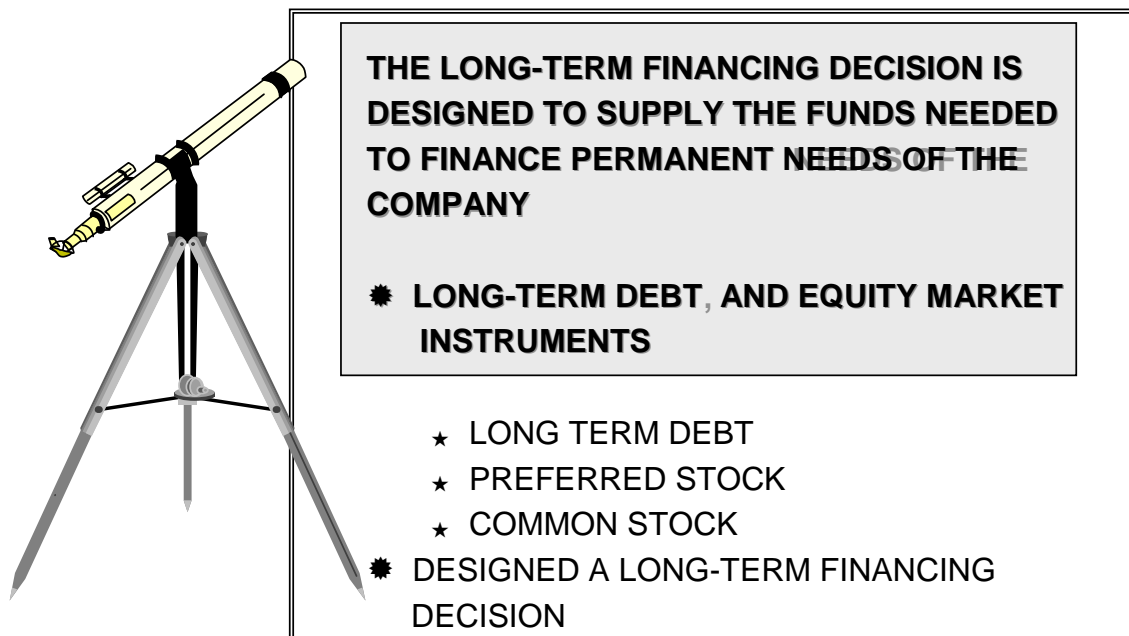


Figure 9.16. **The long-term financing decision**

The primary sources of permanent capital for a company are long-term debt, preferred stock and the common stocks markets.

One of the objectives of the firm is to combine these funds in such a way as to minimize the overall cost of capital. Although the issue of whether an optimal capital structure can be determined is still a question of debate among financial theorists, an understanding of the various sources of funds and the market in which they operate is important to the financial manager.

Given the present conditions of the Russian Federation capital markets and the focus on Small-Medium Enterprises, the discussion on long-term debt and equity market instruments could seem redundant. It is however appropriate to provide some brief notions about these instruments in order to provide a basic understanding of the potential opportunities offered by this source of financing as well as of the advantages/disadvantages of each instrument.

Sources of long-term debt include mortgages and bonds (fig. 9.17).

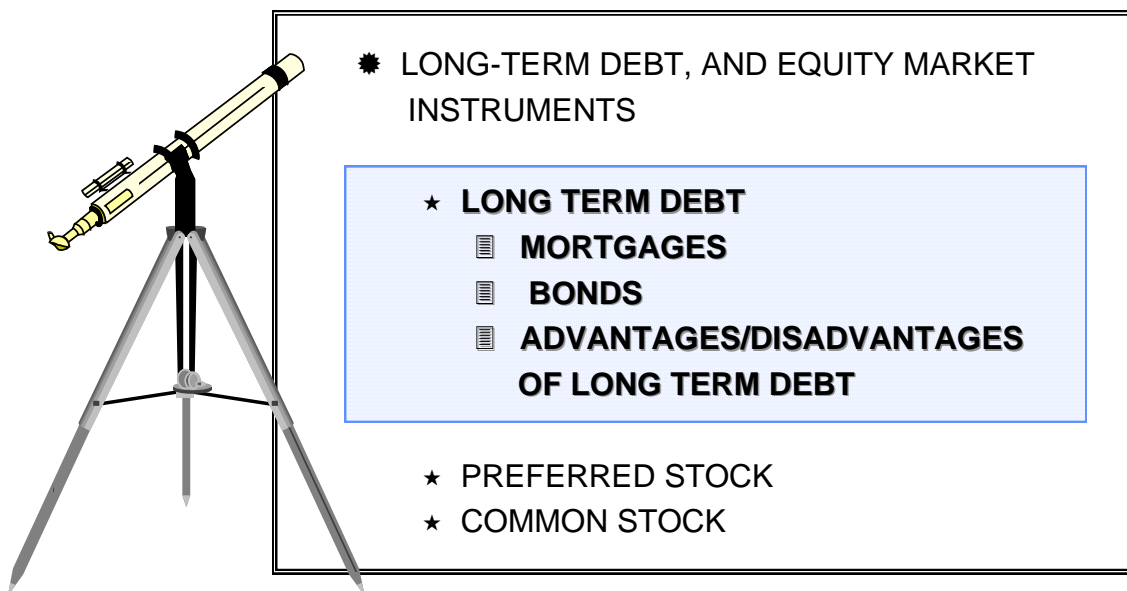


Figure 9.17. **Sources of long-term debt**

Mortgages are notes payables that have as a collateral real asset. They require periodic payments. Mortgages can be issued to finance the acquisition of assets, construction of plant, and modernization of facilities. The bank will require that the value of the property exceed the mortgage on the property. Most mortgage loans are for between 70 % and 90 % of the value of the collateral. Mortgages can be obtained from a bank, life insurance company, or other financial institutions [7].

There are two kinds of mortgages, a **senior** mortgage, which has the first claim on assets and earnings, and a **junior** mortgage, which has a subordinated lien.

Mortgages have a number of advantages, including favourable interest rates, less financing restrictions, and extended maturity date for loan repayment.

Long-term debt principally takes the form of bonds payable.

A **bond** is a certificate indicating that the company has borrowed a given amount of money that will be repaid at a future date. A written agreement, called indenture, describes the features of the particular bond issue. The indenture is a contract between the company, the bondholder and the trustee, that makes sure that the company is meeting the terms of the bond contract. The indenture provides for certain restrictions on the company, such as a limitation on dividends and minimum working capital requirements.

It may also have a negative pledge clause, which precludes the issuance of new debt that would take priority over existing debt in the event the company is liquidated. The clause can apply to assets currently held as well as to assets that may be purchased in the future.

If a provision of the indenture is violated, the bonds are in default.

Long-term debt has some advantages as well as some disadvantages that must be carefully evaluated when this source of funds is compared with other sources of long-term financing.

Advantages:

1. Interest is tax-deductible while dividends are not.
2. Bondholders do not participate in superior earnings of the firm.
3. There is no dilution of company control.
4. Financing flexibility can be achieved when a call provision is included in the bond indenture, allowing the company to pay the debt before the expiration date of the bond.
5. It may safeguard the future financial stability in times of tight money markets when short-term loans are not available.
6. During inflation the repayment of debt will be made in depreciated roubles.

Disadvantages

1. Interest charges must be met regardless of corporate earnings.
2. There is no flexibility in the repayment of debt.
3. Higher debt infers greater risk in the capital structure, which may increase the cost of capital.
4. Indenture provisions may place stringent restrictions on the company.
5. Over commitments may arise due to forecasting errors.

As a general rule it can be said that debt financing is more appropriate when:

1. Stability in revenues and earnings exists.
2. There is a satisfactory profit margin.
3. There is a good liquidity and cash flow position.
4. The debt/equity ratio is low.
5. Stock prices are currently depressed.
6. Control considerations are a primary factor.
7. Inflation is expected.

8. Bond indenture provisions are not burdensome.

Preferred stock combines features of debt and common stock. In the event of liquidation, a preferred stockholder's claim on assets comes after that of creditors, but before that of common stockholders (fig. 9.18).

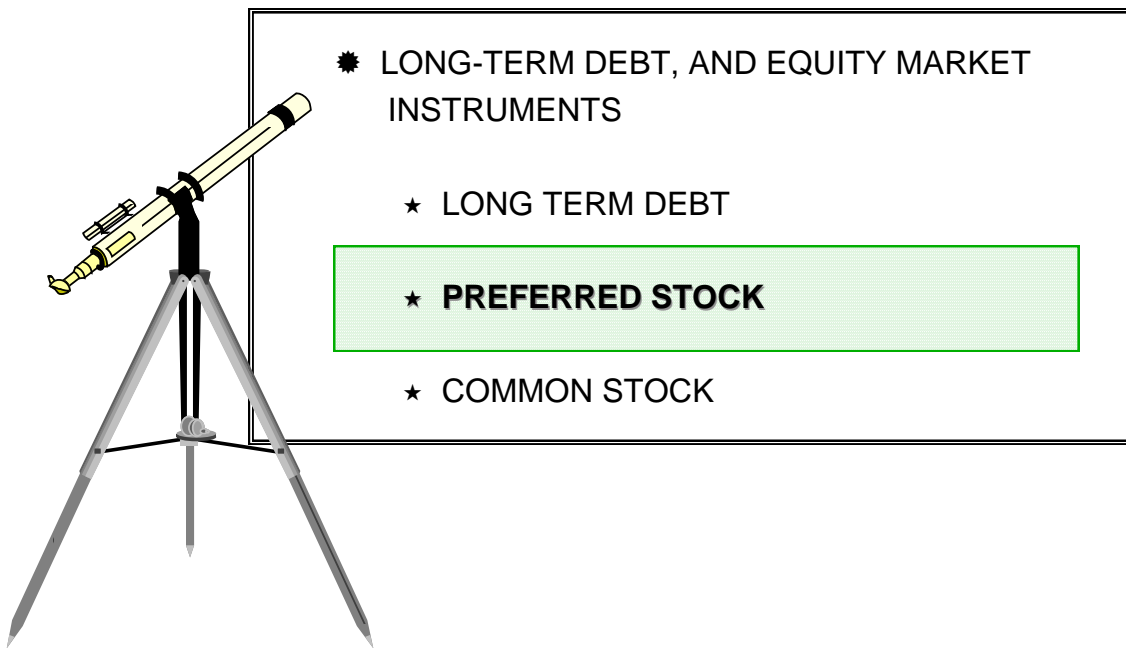


Figure 9.18. **Preferred stock**

Although preferred stock carries a stipulated dividend, the actual payment of a dividend is a discretionary rather than a fixed obligation of the company.

The best time to issue preferred stock is when the company has excessive financial leverage and an issue of common stock might create control problems for the owners.

On the other hand, preferred stock is more expensive than a bond because dividends are not deductible

As in the case of long-term debt, this source of funds is compared with other sources of long-term financing.

Advantages:

1. Preferred dividends do not have to be paid, while interest on debt must be paid.
2. Preferred stockholders cannot force the company into bankruptcy.
3. Preferred stockholders do not share in unusually high profits of the company.

4. Preferred stock issuance does not dilute the ownership interest of common stockholders in terms of earnings participation and voting rights.

5. Assets are not pledged as it happens when bonds are issued.

Disadvantages:

1. Preferred stocks require a higher yield than bonds.

2. Preferred dividends are not tax deductible.

The owners of a corporation are those who hold common stocks. As such they assume the ultimate risk associated with ownership (figure 9.19). Their liability, however, is restricted to the amount of their investment. In the event of liquidation, the common stockholders have a residual claim on the assets of the company after the claims of all creditors and preferred stockholders are settled in full. Like preferred stock, common stock has no maturity date.

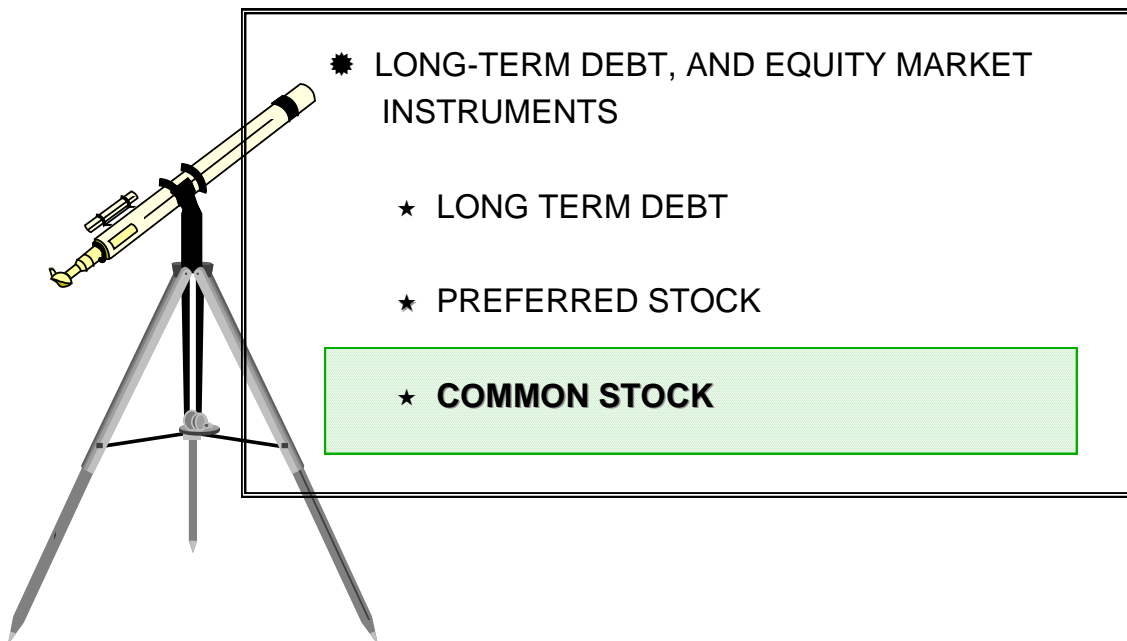


Figure 9.19. **Common stock**

Common stockholders can liquidate their investment by selling their stock in the secondary market.

Advantages:

1. There is no requirement to pay dividends.

2. There is no repayment date.

3. The issue of common stock improves the company's rating relative to the issuance of debt.

4. The degree of financial leverage is too high.

Disadvantages:

1. Dividends are not tax-deductible.
2. Ownership interest is diluted. The additional voting rights could vote to take control away from current ownership.
3. Earnings and dividends are spread over more shares outstanding.
4. The floating costs associated with a common stock issue are higher than with preferred stock and debt financing.

Designing a long-term financing decision is presented in fig. 9.20.

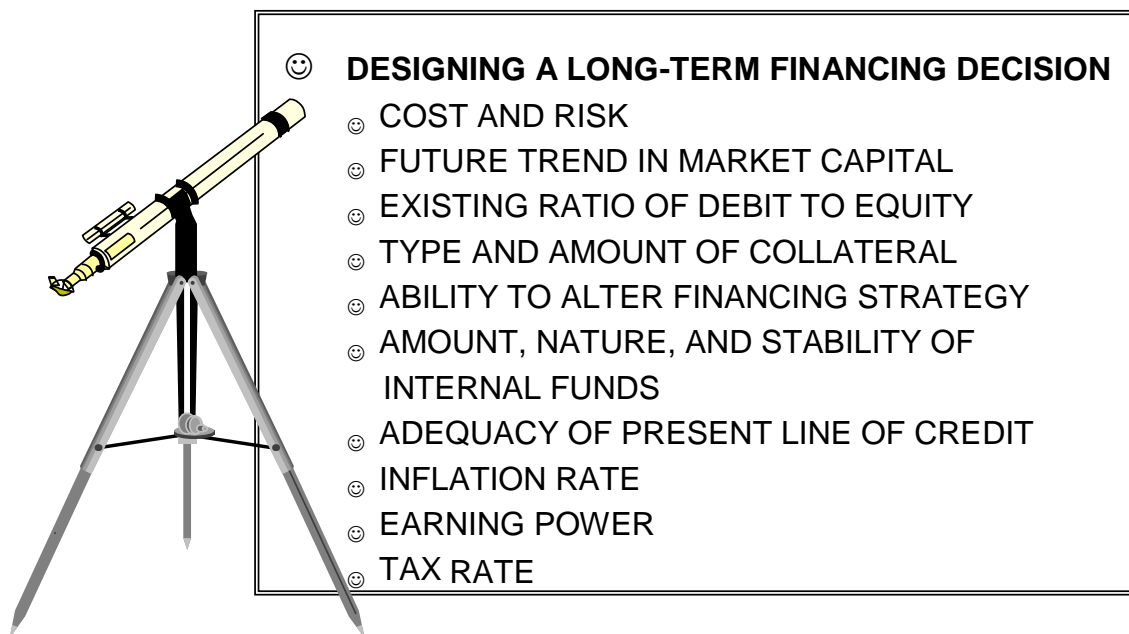


Figure 9.20. **Long-term financing decision**

In formulating a financing strategy in terms of source and amount, the following factors must be considered:

- 1) cost and risk associated with alternative financing policies;
- 2) future trend in capital market conditions and how they will affect future fund availability and interest rates;
- 3) existing ratio of debt to equity;
- 4) maturity dates of present debt instruments;
- 5) existing restrictions in loan agreements;
- 6) type and amount of collateral required by long-term creditors;
- 7) ability to alter financing strategy to adjust to changing economic situations;
- 8) amount, nature, and stability of internally generated funds;
- 9) adequacy of present lines of credit for current and future needs;

- 10) inflation rate, since repayment will be made in cheaper UAH;
- 11) earning power and the liquidity position of the firm.
- 12) tax rate

9.3. The optimal capital structure

The theory of capital structure is closely related to the firm's cost of capital, i.e. the mix of long-term sources used by the firm. The company has a variety of financial instruments that can be used, but it basically seeks that mix of sources that will maximize its market value. This mix, called the optimal capital structure, will minimize the firm's overall cost of capital (fig. 9.21).

**◆ THE ISSUE OF THE OPTIMAL CAPITAL STRUCTURE
... IS CLOSELY RELATED TO THE FIRM'S OF CAPITAL, I.E. THE MIX OF LONG-TERM SOURCES USED BY THE FIRM**

- ◆ CAPITAL STRUCTURE AND FINANCIAL LEVERAGE**
- ◆ OTHER METHODS OF ANALYSIS**

Figure 9.21. **The optimal capital structure**

Are all the efforts in defining an optimal financial structure really necessary? The real relevant decisions of a firm are those pertaining to its business, to its real assets, while those regarding the financial structure are nothing but details. The company needs to solve them, not to worry about them.

Much controversy had developed over whether a firm can affect its total valuation and its cost of capital by changing its financial mix.

The **traditional approach** to capital structure and valuation assumes that there is an optimal capital structure and that management can increase the total value of the firm through the judicious use of financial leverage.

Modigliani and Miller, on the other hand, argue that in absence of taxes and other market imperfections the total value of the firm and its cost of capital are independent of capital structure. The value of investment is the same independently from the way it is financed. Therefore the leverage is irrelevant. Behavioural support to this position is based on the arbitrage process.

The hypothesis of a world without taxes and market imperfections is too remote, and therefore we will have to explore the role of financial leverage and other methods of analysis [2].

The leverage is a process through which a force is transformed into a larger force (fig 9.22). Thus leverage is a magnification process.

◆ THE ISSUE OF THE OPTIMAL CAPITAL
STRUCTURE

◆ CAPITAL STRUCTURE AND FINANCIAL LEVERAGE
... I.E. A PROCESS THROUGH WHICH A FORCE IS
TRANSFORMED INTO A LARGER FORCE

◆ OTHER METHODS OF ANALYSIS

Figure 9.22. **Financial leverage**

In financial terms, leverage is the use of fixed costs in the attempt to increase the profitability of the company.

We already came across with the concept of **operating leverage** that is the use of "fixed operating costs" to increase profitability.

Financial leverage involves the use of "fixed-cost financing" in the hope of increasing the return to common shareholders. When the firm uses the funds obtained at a fixed cost (debt with a fixed interest rate or preferred

stock) and earns more than the financing cost paid, we have positive leverage.

The degree of operating leverage is the percentage change in a firm's earnings per share (EPS) resulting from a 1 % change in operating profit (EBIT).

$$DFL \text{ at EBIT of } X \text{ UAH} = \frac{EBIT}{EBIT - I - (PD / (1 - t))}. \quad (9.4)$$

This formula tells us that at a particular level of operating profit DFL is calculated by dividing operating profit (EBIT) by the difference between EBIT and the of before-tax operating profit necessary to cover total fixed financing costs of preferred dividends (PD) and interest (I).

Of course, the use of financial leverage involves the incurrence of a financial risk that comprises both the risk of insolvency and the added variability in earnings per share that is induced by the use of financial leverage.

When trying to determine the appropriate financial leverage for a firm, the company must analyze the cash flow ability of the firm to service financial charges. The greater the money amount of senior securities that the firm issues and the shorter the maturity, the greater the fixed financial charges of the firm. These charges include principal and interest payments on debt, financial leases payments and preferred stock dividends. Before taking on additional fixed financial charges, the firm should analyze its expected future cash flows, because fixed financial charges must be met with cash. The inability to meet these charges may result in financial insolvency. The greater and more stable the expected future cash flows, the greater the debt capacity of the firm.

Another method of analyzing the appropriate financing mix for a company is to evaluate the capital structure of other companies having similar business risk (fig. 9.23).

The firm may profit also seek the advice of investment analysts, institutional investors, and investment bankers on the appropriate amount of financial leverage.

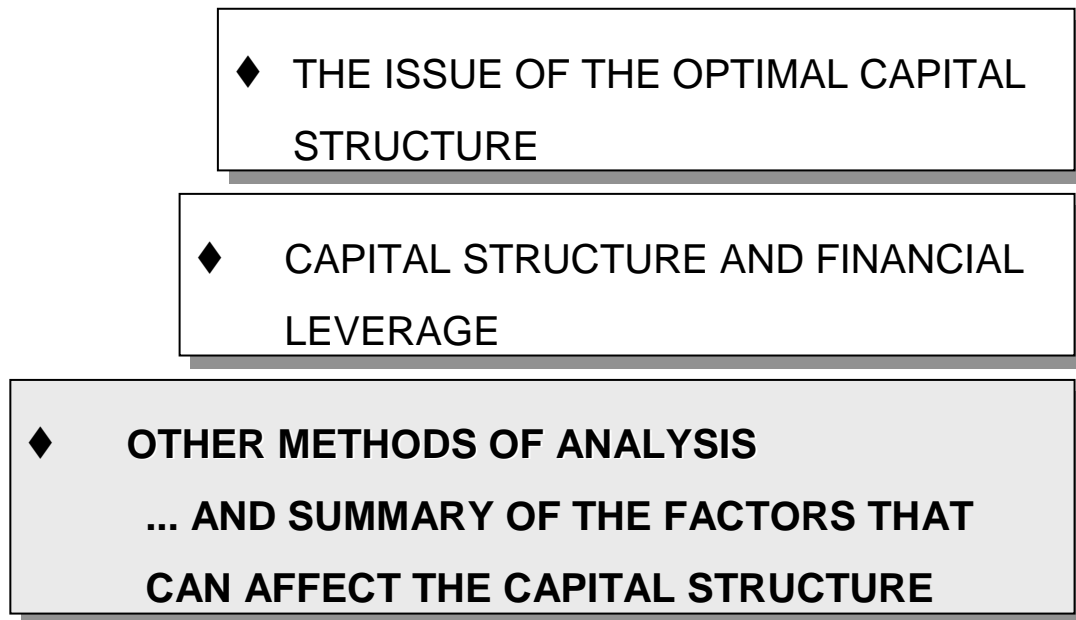


Figure 9.23. **Other methods of analysis**

As result of our discussion it is worthwhile to summarize some factor that can affect the capital structure of a firm:

1. Growth rate in the future.
2. Stability of future sales.
3. Competitive structure of the industry.
4. Asset composition of the individual firm.
5. Attitude of owners and management toward risk.
6. Control position of owners and management.
7. Lenders' attitude toward the industry and a particular firm.
8. Offset low operating risk with high financial risk.

9.4. Dividend policy

The dividend policy must be viewed as an integral part of the firm's financing decision. Retaining a greater amount of current earnings in the firm means that fewer funds will be available for current dividend payments. On the other hand, an excessive payment of dividends could result into a depletion of the company's resource base, and might require the need to look for alternative and more expensive sources of funds.

The value of dividends paid to stockholders must therefore be balanced against the opportunity cost of retained earnings lost as a means of equity financing (fig. 9.24).

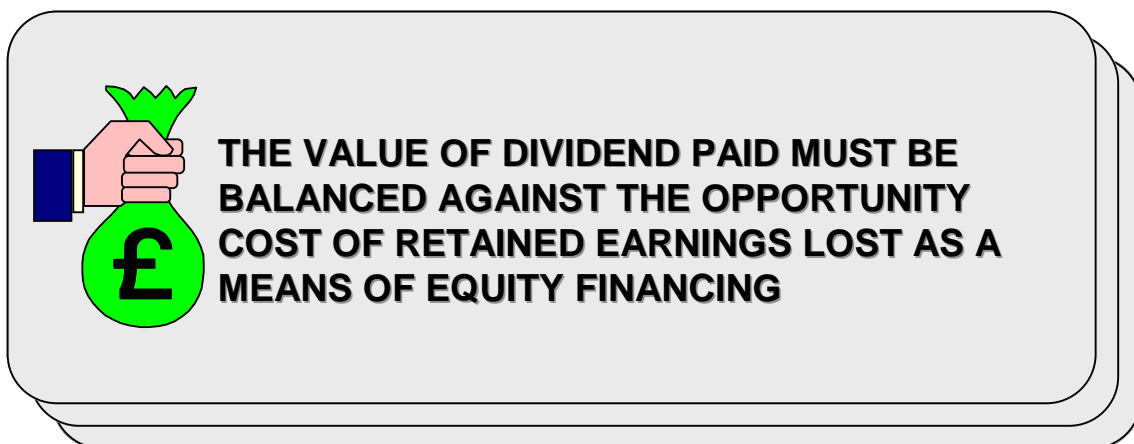


Figure 9.24. **Dividend policy: overview**

Dividends are corporate financial earnings distributed to the company's stockholders. They may be paid only out of retained earnings and not out of capital stock or paid-in capital (the excess received over stock par value) (fig. 9.24).

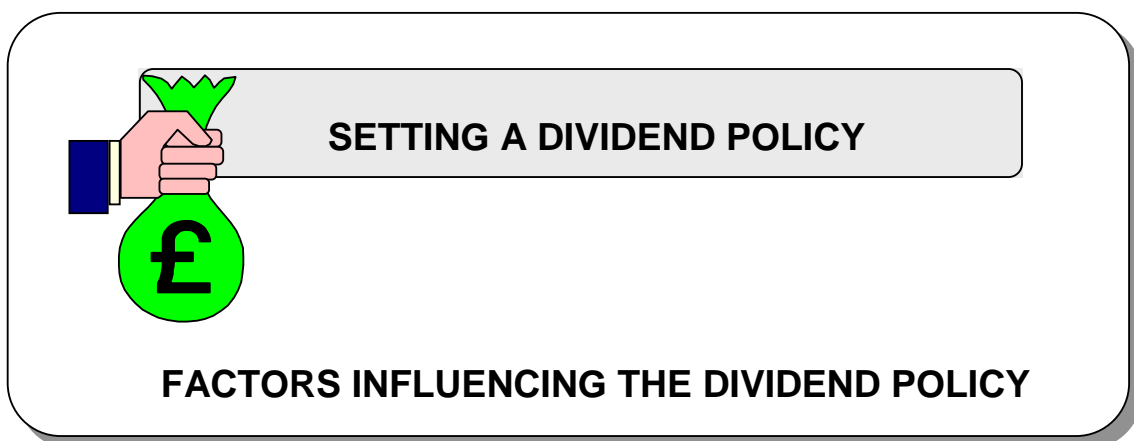


Figure 9.24. **Settings a dividend policy**

A company's dividend policy is important for several reasons:

- a) it promotes a favourable attitude in the investors. After all they have made an investment of the firm in the expectation of an even return on their investment;
- b) it impacts the financing plan and the capital budget of the firm;
- c) it affects the firm's cash flow position;

d) it lowers the stockholders' equity, since dividends are paid out of retained earnings. The effect of a dividends payment is to lower the company's resource base and increase the debt to equity ratio.

The finance manager's objectives for the dividend policy are to find an adequate compromise with the goals of maximizing of the owner wealth and providing adequate capital for the company.

Given the earnings fluctuations, there are different dividend policies that can be followed [1]:

1. **Stable dividend-per-share policy.** It is looked upon favourably by investors. Dividends stability can be implemented by low-risk companies.

2. **Constant dividend-payout ratio** (dividends per share/ earnings per share). With this policy a constant percentage of earnings are paid out in dividends. As a result, when net income varies, dividends paid will also vary.

3. **Compromise policy.** This policy is a compromise of the policies described under 1) and 2), and provides for the company to pay a low rouble amount per share, plus a percentage increment in good years. This policy allows flexibility but creates uncertainty in the mind of investors.

4. **Residual-dividend policy.** Management may want to consider a fluctuating dividend policy when the investment opportunities are not stable. Under this policy, dividends paid represent the residual amount from earnings after the residual amount from earnings after the company's investment needs are fulfilled.

In additions to those we have to consider factors influencing the dividend policy (fig. 9.25).

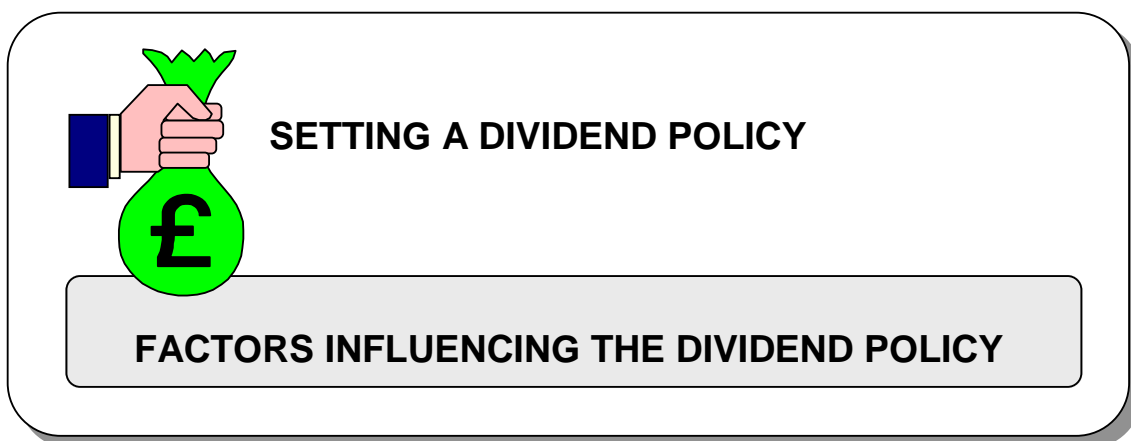


Figure 9.25. **Factors influencing the dividend policy**

There are some factors such as profitability, funding needs of the firm, business risk, liquidity, ability to borrow, control and restrictions in debt contracts are likely to affect the firm's dividend policy:

1. Company's growth rate. A company that is rapidly growing, even if profitable, may have to restrict its dividend payments in order to keep the needed funds within the company for growth opportunities.

2. Profitability. The dividend payment assumes that the company is profitable

3. Restrictive covenants. Credit agreements may at times limit the amount of dividends that may be paid.

4. Earnings stability. A company with stable earnings is more likely to distribute a higher proportion of its earnings

5. Degree of financial leverage. A company with a high debt-to-equity ratio is more likely to retain earnings so that it will have the needed funds to meet interest payments and debt at maturity.

6. Ability to finance externally. A company that is capable of having access to the capital markets can easily afford to have a higher dividend payout ratio. When there is a limitation to external sources of funds, more earnings must be retained to meet the planned financial needs.

7. Maintenance of control. Management that is reluctant to issue additional common stock because it does not wish to dilute its control of the firm will retain a greater percentage of its earnings. Internal financing enables the maintenance of control.

Control questions:

1. Give list of financing corporate operations.
2. What are sources of short-term and long-term financing?
3. What happens when capital structure changes?
4. How does long-term financing policy affect short-term financing requirements?
5. How do firms develop a short-term financing plan that meets their need for cash?
6. What are the trade credit?
7. What are the optimal structure of capital?
8. Types of stock.

9. How might differences in the tax treatment of dividends and capital gains affect dividend policy?

Unit 10. Managing in a context of changing prices and foreign exchange rates

10.1. The challenge of inflation

10.2. Inflation and financial statements

10.3. Inflation and the pricing decision

10.4. Inflation and working capital management

10.1. The challenge of inflation

In recent years, the pace of change has been rapidly accelerating. For most businesses, change is now the norm rather than the exception, with a consequent sharpening of the risk profile for most companies.

However, it is naive to conclude that everyone is harmed by inflation. Risk should not be exclusively identified with threats. Risk offers opportunities as well and after all risk is at the very foundation of profit.

The increased degree of risk requires the development of an in depth awareness of the new scenario (fig. 10.1).

◆ INFLATION INCREASES THE LEVEL OF UNCERTAINTY

◆ INFLATION AND FINANCIAL MANAGEMENT

Figure 10.1. **Inflation**

Different companies are affected in a different way by inflation according to:

- the external scenario:
 - the sector in which the company operates;
 - the technological content of the products;

- the market structure and the competition;
- the sourcing and the type of materials used in the production

process;

- the structure of prices;
- the labour environment;
- the company's structure:
 - the control of the company;
 - the company's size;
 - the length of the production cycle;
 - the financial structure.

It also requires the company's ability to react on a flexible and timely basis to the changing conditions that manifest themselves on the ever-evolving market.

Given an uncertain world, "changing prices" only add one more element of uncertainty. Inflation is a higher level of uncertainty. Numbers change, not the basic methods of analysis and management that need however to be consistent with the new perspective of an inflationary environment.

Thus, the threats associated with the uncertainty resulting from "changing prices" can be overcome by emphasizing and stressing the fundamental policies and methods of good and sound management that should be implemented in the pursuit of the company's goals [8].

Surprisingly inflation, by increasing the level of uncertainty and of risk, forces management to devote greater attention to the "fundamentals" that are often neglected when the company has to deal with a stable scenario.

The inflation induced risk spreads over all areas of corporate management (fig. 10.2).

To protect itself against the ravages of inflation, a company should consider the inflationary factors that impact it, how such factors develop and change, and the means to minimize the inflationary exposure.

A study of the impact of on a business involves looking at financial, economic, operating, marketing, planning, technological, social, political, and demographic aspects. We are primarily concerned with the issue of financial management in an inflationary environment.

Given the very nature of inflation and its impact on money, it is not surprising that finance is one the corporate functions that is most severely affected by the new environment.

◆ INFLATION INCREASES THE LEVEL OF UNCERTAINTY

◆ INFLATION AND FINANCIAL MANAGEMENT

- ◆ INFLATION AND FINANCIAL STATEMENTS
- ◆ INFLATION AND FINANCIAL ANALYSIS
- ◆ INFLATION AND THE PRICING DECISION
- ◆ INFLATION AND WORKING CAPITAL MANAGEMENT
- ◆ INFLATION AND INVESTMENT PROJECTS MANAGEMENT
- ◆ FINANCING CORPORATE OPERATIONS IN INFLATION

Figure 10.2. **Inflation and financial management**

Changes in price levels add important complexities to financial management. While the basic financial analysis techniques used in a non-inflationary environment still apply, the interpretation of events is somewhat more difficult. Also, another level of complexity is added by inflation to the making of financial decisions.

We will first of all consider the effects of inflation on conventional financial statement, a reservoir of data that are used in order to analyze the performance of the firm.

The impact of inflation on financial statements also provides a useful insight into areas that fall under the direct and primary responsibility of the financial manager, such as the management of working capital and the financing decision.

They also provide a good insight into areas that are outside the direct responsibility of the financial manager, such as pricing and the investment project evaluation and management.

10.2. Inflation and financial statements

Allocation of scarce resources among competitive uses requires information: the greater the reliability of information, the greater the probability that the decision will be correct. Financial information provides the basic data used for this purposes.

As we have seen in unit 2 and 3, financial statements also provide the basic information both to measure and to evaluate the operations of the company, enabling management to take the corrective measures that are deemed necessary.

In periods of high inflation, it is therefore important to understand the implications of the price levels changes in the relationship between the financial position of a firm, as reflected in its financial statements, and the firm's real financial position.

In order to appreciate the illusory results of conventional accounting in an hyperinflationary context, we will consider some very simple examples (fig. 10.3).

○ **INFLATION'S DISTORTION EFFECTS ON CONVENTIONAL ACCOUNTS**

◆ **THE PROFITABILITY ISSUE**

▢ **THE COMPARISON OF TWO PERIOD'S RESULTS IS MISLEADING**

▢ **PROFIT ILLUSION**

▢ **KEY IDEAS TO REMEMBER**

◆ **THE VALUATION AND RECOGNITION OF HOLDING GAINS AND LOSSES ISSUE**

○ **THE RESTATEMENT OF FINANCIAL ACCOUNTS**

Figure 10.3. **The profitability issue**

The comparison of two periods' results is misleading. Let us suppose that a firm has revenues but no expenses, and earns 1 million UAH of cash in year 1 and 2 million UAH in year 2. Conventional accounting measures indicate that income has doubled, and a naive conclusion follows that the firm is better off in year 2 than in year 1.

Now we add the information considering inflation. We use the price index, that measures the change in prices and therefore in the purchasing power of the monetary unit. Suppose that the price index went from 100 in year 1 to 500 in year 2. Deflating the income of year 2 for inflation gives $2 \text{ million} / 5 = 400.000 \text{ UAH}$ in terms of beginning of the year purchasing power.

The conventional accounting measure is therefore deficient when an attempt is made to compare the income of periods and when unadjusted figures are used to conclude the relative degree of well-being in the different periods.

Profit illusion. We move from this situation and assume that assets were acquired, placed in inventory and then sold [5].

The firm starts with the following balance sheet (table 10.1).

Table 10.1

Balance sheet

Cash	500.000
Inventory (two units)	1.500.000
Stockholder equity	2.000.000

Conventional accounting offers many methods of evaluating inventory, but we will consider only FIFO (First-In, First-Out) and LIFO (Last-In, First-Out). We will first use the FIFO method.

Assume that one unit is sold for 900.000 roubles and another unit of identical inventory is purchased for cash at a cost that has risen from 750.000 to 950.000 roubles. There are no other expenses other than cost of good sold.

The profit and loss statement is in the table 10.2.

Table 10.2

The profit and loss statement

Revenues	900.000
Cost of good sold	750.000
Profit	150.000

The ending balance sheet is in the table 10.3.

Table 10.3

Balance sheet

Cash	450.000
Inventory (two units)	1.700.000
Stockholder equity	2.150.000

The result is that the company shows a 150.000 UAH profit, while the cash at the end of the period is 450.000, a decrease of 50.000. This is due to the fact that the company had to use 200.000 UAH of its cash flow to finance the replacement of one unit of inventory whose cost is now 950.000 UAH.

As it can be seen, true economic profitability is distorted, because inventories that are sold are charged to the income statement at the prices prevailing when the oldest items in inventory were purchased. With inflation, these prices will be considerably below their replacement costs. In our case, the inventories sold are valued at 750.000 UAH for accounting purposes, whereas their current replacement cost at the time of sale was 950.000. If current cost prices were matched against current revenues, the company would have suffered a loss of 50.000 UAH. Hence, historical cost accounting tends to understate economic costs and to overstate economic profit.

On the other hand, the effect of using of FIFO is to provide a good approximation of inventories that express the value of the most recently purchased items of inventory.

A partial remedy to this situation is to use the LIFO method, since with this method the inventory most recently purchased becomes part of cost of good sold. However, the effect of using LIFO is and undervaluation of inventories. In our case both units of inventory are valued at 1.500.000 UAH, whereas their current value is 1.900.000.

An additional problem, similar to that illustrated for inventories evaluated with the FIFO method, is that of fixed assets. In a hyperinflationary environment, fixed assets are shown at the original cost, and as a consequence they do neither show the real sacrifice that the company had to undergo to acquire those assets in current monetary terms, nor reflect their current value.

As a consequence, depreciation charges are severely undervalued, and profits are further overstated.

Finally, as a consequence of the profit illusion, the firm will pay taxes and eventually dividends on profits that do not exist. This will greatly contribute to the depletion of the company's resource base in a period when the access to external funds becomes increasingly difficult.

We can try to draw the first conclusions on the effects of high inflation on conventional accounting results:

- 1) historical data are unable to provide a realistic measure of real assets values;
- 2) matching current revenues with historical costs determines a profit illusion;

3) conventional accounting figures are deficient when an attempt is made to compare the relative degree of well-being of the firm in the different periods;

4) the profit illusion will contribute to a depletion of the company's resource base as a result of payment of taxes and dividends.

The inflation factor, as it can be appreciated from the preceding remarks has serious consequences in the valuation of both assets and liabilities of the balance sheet (fig. 10.4).

○ INFLATION'S DISTORTION EFFECTS ON CONVENTIONAL ACCOUNTS

◆ THE PROFITABILITY ISSUE

◆ THE VALUATION AND RECOGNITION OF HOLDING GAINS AND LOSSES ISSUE

▢ NON MONETARY ITEMS

▢ MONETARY ITEMS

▢ KEY IDEAS TO REMEMBER

○ THE RESTATEMENT OF FINANCIAL ACCOUNTS

Figure 10.4. The valuation of assets

An additional issue is to be found in the definition of the economic nature of the difference between the conventional accounting figures and those that recognize the effect of inflation.

Are these differences to be considered as holding gains or losses in any event?

We will consider first the case of **non monetary items** such inventories and fixed assets.

Continuing with our simple examples, we suppose that the beginning stockholder's equity of 2.000.000 UAH is kept entirely in inventories for the whole period. According to conventional accounting, both the beginning and the ending balance sheet are as follows (table 10.4).

If the price index follows the same trend indicated above, the value of inventories stated in terms of present market value would amount to

10.000.000 UAH, and it would seem that there has been a market gain of 8.000.000 roubles. Is this gain real? Certainly not. The restated figure is nothing else than the current price of assets which represent in year-end roubles the sacrifice the company had to undergo in order to purchase the assets. The restated figure should then be the basis for determining the charges to the income statement if we want to determine the real profitability of operations.

Table 10.4

The beginning and the ending balance sheet

Inventories	2.000.000
Stockholder equity	2.000.000

Thus, in constant roubles accounting, gains and losses are not directly associated with holding fixed assets and inventories. If the value in roubles of a real asset changes as a result of price level changes, constant roubles accounting will not show gains or losses.

The gains or losses arise from holding **monetary items** whose value in terms of monetary units is fixed as the price level changes.

Suppose that the beginning stockholder's equity is kept entirely in cash for the whole period. As a consequence, both the beginning and the ending balance sheet are as follows in the table 10.4.

The amount of cash is correctly shown in both conventional balance sheets, since one UAH constantly shows through time its purchasing power. The identity however conceals an important factor, the **decreasing** purchasing power of the rouble.

The result of the unwise decision of the firm to keep cash idle for one year is a loss of purchasing power. It would take 10.000.000 UAH at the end of the year in order to have the same purchasing power that 2.000.000 UAH had at the beginning of the year. The difference of 8.000.000 is the purchasing power loss.

It is important to note that while the firm will incur a loss if it holds cash or accounts receivable, it will have a purchasing power gain from being in debt. The debt will in fact will be paid back with monetary units that have a lower purchasing power.

Once again we can draw some conclusions.

1) the increase in price of nonmonetary items is not a gain, simply a statement in current monetary terms of the sacrifice the company had to undergo for their acquisition;

2) gains or losses arise from holding monetary items whose monetary value remains constant since it is fixed in terms of monetary units as price level changes.

There is a widespread consensus that in inflationary periods conventional financial statements are severely distorted to the extent that their utilization could be misleading. The inflationary distortion effect should therefore be eliminated.

There is great variety of methods designed to this purpose (fig. 10.5). They can be classified under two main categories, accounting for inflation, and replacement cost accounting.

○ INFLATION'S DISTORTION EFFECTS ON CONVENTIONAL ACCOUNTS

○ THE RESTATEMENT OF FINANCIAL ACCOUNTS

- ◆ ACCOUNTING FOR INFLATION
- ◆ REPLACEMENT COST ACCOUNTING
- ◆ A THIRD AVENUE: INFLATION ACCOUNTING WITH REPLACEMENT COST ACCOUNTING

Figure 10.5 **The restatement of financial accounts**

The starting point for both methods is the same: no profit can be recognized unless the initial capital base investment has been maintained. The difference is to be found in the concept of the capital base investment.

According to the inflation accounting method, by capital base we mean the amount of **monetary resources** that have been invested in the business. Accordingly, the threshold for recognition of profit is the maintenance of the purchasing power of the capital invested in the business.

According to the replacement cost accounting, by capital base we mean that the capital invested into the business must maintain its productive capacity, that is, must be able to guarantee the production of the same quantity and quality of goods normally used in the production cycle.

The focus is on maintenance of the purchasing power of the capital invested in the business. As a consequence, the restatement is a method of systematically recognizing the effects of changes in the general price level in the accounting records (fig. 10.6). The end result is to have all the items of the financial statements expressed in monetary units having the same purchasing power.

- INFLATION'S DISTORTION EFFECTS ON CONVENTIONAL ACCOUNTS
- THE RESTATEMENT OF FINANCIAL ACCOUNTS
 - ◆ ACCOUNTING FOR INFLATION
 - ▮ THE RESTATEMENT PROCESS
 - ▮ A SHORT-CUT IN DETERMINING THE RESULTS FROM OPERATIONS
 - ◆ REPLACEMENT COST ACCOUNTING
 - ◆ A THIRD AVENUE: INFLATION ACCOUNTING WITH REPLACEMENT COST ACCOUNTING

Figure 10.6. **Accounting for inflation**

The restatement process. This is achieved by classifying the balance sheet items as monetary or monetary. Monetary items are those items whose settlement will take place in terms of fixed amount of units of money, regardless of inflation. Cash, marketable securities, accounts receivable, accounts payable and other debt are monetary items. Non monetary items are those items whose "economic" value is not affected by price changes such as inventories, net fixed assets, and net equity.

Monetary items do not have to restate since they are to be settled in a fixed amount of monetary units. As a consequence, by definition they reflect at all times their it current purchasing power. Purchasing power gains and losses must be computed using the general price level, as it has been explained above.

Non monetary accounts must be restated in order to express the historical cost in year-end UAH. In our example of inventory, supposing that the goods have been purchased at the beginning of the year and that during

the year the inflation index has grown from 100 to 500, the restatement process will be $2.000.000 \times (500/100) = 10.000.000$ UAH.

In the same fashion, all items of the profit and loss should be restated in year-end roubles. Particular care should be applied in guaranteeing a consistent treatment of depreciation and cost of goods sold on one side and accumulated depreciation and inventories on the other.

The main problem of accounting for inflation relates to the use of the general price index as the restatement factor and the capability of the restated figures to reflect current or replacement values. The general price level is an average, and does not necessarily reflect the price trend of a specific good.

The restatement process can be cumbersome, and at times a simple and quick way to find out the results from operations could be desired.

This result can be achieved on the basis of the following formula:

final net equity in year-end UAH:

+ beginning equity restated in year-end UAH;

+/- any factor affecting net equity (dividends, capital increase) that has occurred during the year restated in year-end UAH.

The supporters of the replacement cost accounting method contend that in order to safeguard the operating capacity of the firm, the ending net equity should be able to produce the same level of goods normally resulting from the company's operations (fig. 10.7).

- INFLATION'S DISTORTION EFFECTS ON CONVENTIONAL ACCOUNTS
- THE RESTATEMENT OF FINANCIAL ACCOUNTS
 - ◆ ACCOUNTING FOR INFLATION
 - ◆ **REPLACEMENT COST ACCOUNTING**
 - ◆ A THIRD AVENUE: INFLATION ACCOUNTING WITH REPLACEMENT COST ACCOUNTING

Figure 10.7. **Replacement cost accounting**

When we consider the company as an ongoing concern, we must note that whenever the company is selling a product is in fact sacrificing the resources required to replace the good that it has just sold.

The restatement of nonmonetary items must then determine the current or replacement value. Thus, specific price indices must be used.

Since price increases are more likely than decreases, the holding gains (that is the difference between replacement cost and historical cost) should be credited to a capital maintenance reserve. They cannot be distributed as dividends, since their purpose is to maintain the productive capacity of the invested capital.

The basic principles of the replacement cost accounting are therefore the following:

1. Profit is calculated by matching against business revenues the replacement cost of the resources consumed in the earning of revenues;
2. The business assets are shown in net current replacement cost
3. Holding gains cannot be regarded as profits available for distribution to shareholders, but should be set aside in order to safeguard the productive capacity of the firm.

The shortcoming of the replacement cost accounting is that no recognition is given to purchasing power gains/losses.

In order to overcome the shortcomings of inflation and replacement cost accounting, a third method can be used (fig. 10.8). This method is a combination of the two methods described before.

- **INFLATION'S DISTORTION EFFECTS ON CONVENTIONAL ACCOUNTS**
- **THE RESTATEMENT OF FINANCIAL ACCOUNTS**
 - ◆ ACCOUNTING FOR INFLATION
 - ◆ REPLACEMENT COST ACCOUNTING
 - ◆ **A THIRD AVENUE: INFLATION ACCOUNTING WITH REPLACEMENT COST ACCOUNTING**

Figure 10.8. **A third avenue**

Basically it is an inflation accounting method that restates fixed assets and inventories using specific price indices in order to determine their current replacement value.

The difference between the inflation adjusted value of such assets and their replacement value should be set aside in order to safeguard the productive capacity of the firm.

Example: “Inflation and financial analysis”

The distortion caused by inflation on conventional accounting has serious implications on financial analysis.

An example can be useful to illustrate the problem. The Rams Company has the following balance sheet at the beginning of the year (in million UAH) (table 10.5).

Table 10.5

Balance sheet at the beginning of the year

ASSETS		LIABILITIES AND SHARE-HOLDERS EQUITY	
Cash	40		
Inventory	100		
Net fixed assets	100	Common stock	240
	240		240

The fixed assets are depreciable over 10 years. For the ease of illustration we assume straight-line depreciation. Inventory is reported on a FIFO basis. Sales occur entirely at the end of the year, and inflation is 30 %.

Operations for the first year are reported on a traditional historical basis and are as follows (table 10.6).

Table 10.6

Income statement

Sales	180
Cost of goods sold	
Beginning inventories	100
Purchases	130
Ending inventory	(130) 100
Depreciation (100 x 10)	10
Selling and administrative expenses	30
Net profit	40

The balance sheet of the company at the end of the year is in the table 10.7.

If we compute two of the more widely used profitability ratios, we find them to be:

Net profit margin (40/180) = 22,22 %.

Return on investment (40/280) = 14,29 %.

In both cases the true economic profitability is overstated.

Table 10.7

Balance sheet at the beginning of the year

ASSETS		LIABILITIES AND SHARE-HOLDERS EQUITY	
Cash	60		
Inventory	130		
Net fixed assets	90	Common stock	240
		Retained earnings	30
	280		270

For one thing, with the FIFO method, the inventories sold are valued at 100 million for accounting purposes, whereas their current replacement cost at the time they are sold is 130 million. This is the first situation where historical cost accounting understates economic costs and overstates economic profit.

We already know that the second source of distortion is depreciation. Once again, with inflation the historical cost is lower than the current replacement cost of these assets. If they increase in value by 30 %, their replacement value is 130 million, and the economic depreciation would be 13 instead of 10 million.

A simplified version of the adjusted income statement that does not take into account holding gains is then (table 10.8).

Table 10.8

Income statement

Sales	180
Cost of goods sold	130
Depreciation (120.000x10)	13
Selling and administrative expenses	30
Net profit	7

Total assets used to calculate the ROI based on a replacement basis are equal to 307 (60 in cash, 130 in inventories and 117 in net fixed assets). Using these data, the economic profitability ratios are:

Net profit margin (7/180) = 3,89 %.

Return on investment (7/307) = 2,28 %.

The example above illustrates some of the problems that financial analysis faces when historical accounting information is used in an inflationary environment (fig. 10.9).

Financial ratios send misleading messages. Historical cost accounting data are distorted as a result of inflation and financial ratios, particularly those dealing with profitability, are likewise distorted. Upon closer examination, what may appear to be a significant change in profitability may be due to the effects of inflation?

Deficiency in trend analysis. We already discussed the fact that conventional accounting measures are misleading when an attempt is made to compare the performance of different periods.

MAJOR SHORTCOMINGS OF FINANCIAL ANALYSIS USING CONVENTIONAL ACCOUNTING DATA AND INFLATION

- FINANCIAL RATIOS SEND MISLEADING MESSAGES
- DEFICIENCY IN TREND ANALYSIS
- LACK OF RELIABILITY IN INTERCOMPANY COMPARISONS
- THE NEED FOR CAUTION IN FINANCIAL ANALYSIS

Figure 10.9. Inflation and the financial analysis

Lack of reliability in intercompany comparisons. Not only a company's financial ratios but also intercompany comparisons may be distorted. When historical costs are used, the company with older fixed assets will often show a higher return on investment than a company whose assets were acquired more recently. Thus, while a company with older assets could be relatively inefficient in economic terms, its return on investment may be as good as that of a more efficient producer, if not better. As a result there is a real danger that comparisons of return on investment based on historical data may lead to incorrect conclusions.

The need for caution in financial analysis. In periods of rapidly changing inflation, particular caution is necessary, and it is desirable to recomputed financial ratios using financial statements restated for inflation. In

this way, the financial analyst can better differentiate between performance attributable to inflation and performance more directly under management's control.

10.3. Inflation and the pricing decision

Although the pricing decision does not fall under the direct responsibility of the financial manager, he can greatly contribute to make management aware about the relevance of a correct pricing policy in an inflationary environment.

One of the most critical factors that a company faces in protecting the real income flow in an inflationary environment is the price the company sets for its products.

Inflation accounting tells us that one of the main sources of the profit illusion is to be found in a situation where current roubles revenues are matched against historical UAH costs.

Consider a producer of paints who produces 1.000 tons of paint which cost him 10 million UAH. He would sell this product for 11 million UAH, be pleased with the profit and continue to produce. To his surprise, however, because of inflation, the 1.000 tons would now cost 12 million UAH. Since he does not have enough capital for that he produces only 900 tons. The next time it is 800 tons, and so on.

Over the last ten years, in many hyperinflationary countries about half of the medium sized companies have gone out of business this way – most of them still showing a nominal profit.

This is what happens in inflationary times. You can believe you are making a profit when in reality you are going broke.

In an inflationary environment a company should attempt to transfer inflation risks on to customers. To accomplish this, the firm must price on a replacement cost basis, not on an historical cost basis (fig. 10.10). Only then will you generate the cash flow which enables you to continue operations on the same level while maintaining a sufficient profit margin.

In addition, the company should price on replacement basis **immediately** and not only some time after the cost increases have started to come into the system. For example if the company delays the price adjustment by only two months instead of acting immediately, in an

environment where raw material and other costs increase by 6 percent per month, and assuming a net margin of 10 % on sales, the firm would have given up some 50 % of its total profits for the year. That is the kind of situation it is hard to recover from.

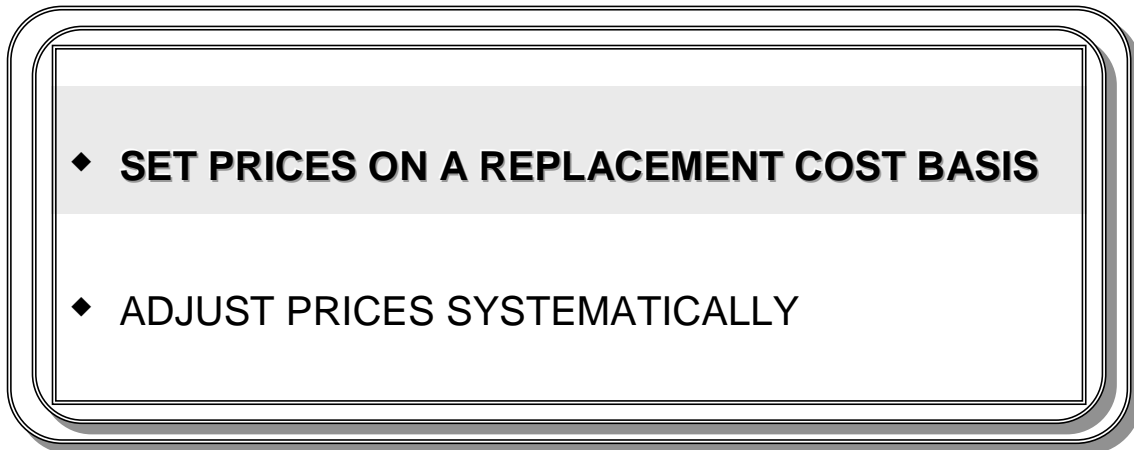


Figure 10.10. **Price on a replacement cost basis**

There is no alternative pricing policy in an inflationary environment. So all companies, big or small, must refuse to accept the often heard excuse: "I can't pass it on to my customers".

A company that primarily has costs incurred in the current period is more apt to have its selling price based upon current costs. Thus it is in a better position to cope with inflation. A company having costs applicable to past years (such as depreciation and amortization) or future periods (warranties) is apt to show inconsistent pricing in times of inflation [12].

The longer the nature of a company's transaction or contract, the more serious the effect of inflation on the business. Thus long-term contracts should be avoided during inflation unless there is a "cost plus" provision. Adjustments for escalating costs may be based upon some purchasing power index such as the consumer price index (CPI). It is especially important to include a price escalation clause in construction and engineering contracts because of the significant length of time between receiving an order and filling it.

Such a pricing policy is naturally difficult to implement for a company that faces serious competitive pressures or governmental price controls. Of course, before price is increased, one must take into account the market, by considering product substitution and product demand elasticity's. For example, it should be determined which product lines are priced sensitive, and which are not.

For this purpose it would be advisable to have a monthly profit and loss analysis for each main product line, covering all costs including a capital charge for fixed assets and working capital employed has to be prepared.

Adjusting prices may be difficult (fig. 10.1). However practice shows that the managements that have done the best job of maintaining margins won't readily accept that excuse.

One final point is that pricing decisions have to be made on a systematic and not sporadic basis

It is essential that the firm has the ability to quickly modify price catalogues and sales literature. In addition, price quotations should only be held for short periods of time.



Figure 10.11. **Adjusting prices**

Firms should provide in their selling agreement that prices may be adjusted up to the point of shipment if there is a long lag in time between an order being received and shipped. Also, in such cases, one should provide for progress collections as work is being performed.

10.4. Inflation and working capital management

Inflation and working capital management are considered in two terms.

During inflation, the **liquidity position** of a firm is typically harmed by a series of factors (fig. 10.12):

- slower current assets turnover resulting from a lower demand and consequent build-up in inventories and from a longer collection period from customers;

- illusory profits may lead to the distribution of dividends that often result in a reduction of the company's capital base. The capital drainage will be enhanced by the fact that the company will pay taxes on profit that do not exist.

✱ THE LIQUIDITY PROBLEM

✱ CURRENT ASSETS MANAGEMENT

Figure 10.12. **The liquidity problem during inflation**

The liquidity shortage happens just a time when the economic condition mandates a greater amount of funds required to carry out the firm's normal business activities:

- inventory items, when sold, must be replaced with higher priced items;
- replacement cost of an old plant and capital expansion becomes more expensive;
- wages, rents and interest are higher.

The company is therefore in need of greater funds. If these funds are not generated internally, the company will have to resort to additional external financing. Such debt is needed to meet higher ongoing costs. We already know that debt has the advantage of generating purchasing power gains because it will be paid back to the creditor in depreciated roubles. However, a firm already at the limit of its borrowing ability may not be able to take advantage of the debt financing to satisfy its inflationary cost requirements. Thus, a company's current level of financial leverage (debt to equity) must be appraised.

Finally during such period, the monetary authorities usually enforce strict monetary policies that result in higher interest rates and in severe credit shortages.

Operating in an inflationary environment mandates therefore that every possible effort should be made to insure an appropriate cash flow, i.e. an adequate amount of internally generated resources.

One of the best strategies a company can use to counter an inflationary erosion of cash flow and profit is rigorous management of the three components of current assets: cash, accounts receivable, and inventory (fig. 10.13.).

✱ THE LIQUIDITY PROBLEM

✱ CURRENT ASSETS MANAGEMENT

Figure 10.13. Current asset management

Cash management requires reducing the time period between cash disbursements and cash receipts. A company is at a disadvantage the longer the period between paying for materials a labour and receiving collections from customers. Roubles received now have less purchasing power than roubles expended to make the product.

Firms operating with high inflation and interest rates, severe credit shortages and rapid devaluation can get substantial by refining current assets management.

Inflation accounting tells us that in inflation cash will generate purchasing power losses (fig. 10.14). Thus the goal of the firm is to keep idle funds at the lowest possible level in order to shelter them from monetary erosion.

✱ THE LIQUIDITY PROBLEM

✱ CURRENT ASSETS MANAGEMENT

- CASH BALANCES
- ACCOUNTS RECEIVABLE MANAGEMENT
- INVENTORY MANAGEMENT

Figure 10.14. Cash balance

This must be done keeping in mind that firms might be compelled to temporarily build-up cash balances in order to pay dividends or taxes, to finance expansion plans or to build up strategic inventories.

A company is wrong in waiting to start long-term investment projects because it anticipates that interest rates on financing will drop slightly. Higher project costs caused by inflation will probably outweigh the savings in lower interest costs.

Finally, a company should build up inventory prior to anticipated inflation after appraising supply/demand relationships, manufacturing costs, financing costs, and cash needs. During inflation, the profit from low-cost inventory sales made at current selling prices will exceed the costs of holding higher inventory balances.

Finally it must be borne in mind that a total drainage of cash has unfavourable effects in the evaluation of any bank credit [1].

As a result of this companies must be willing to accept a reasonable amount of surplus funds. These, however could be invested in some **securities**.

Like cash, accounts receivable are subject to the monetary erosion (fig. 10.15). Thus, every effort should be made in order to minimize the investment in these assets.

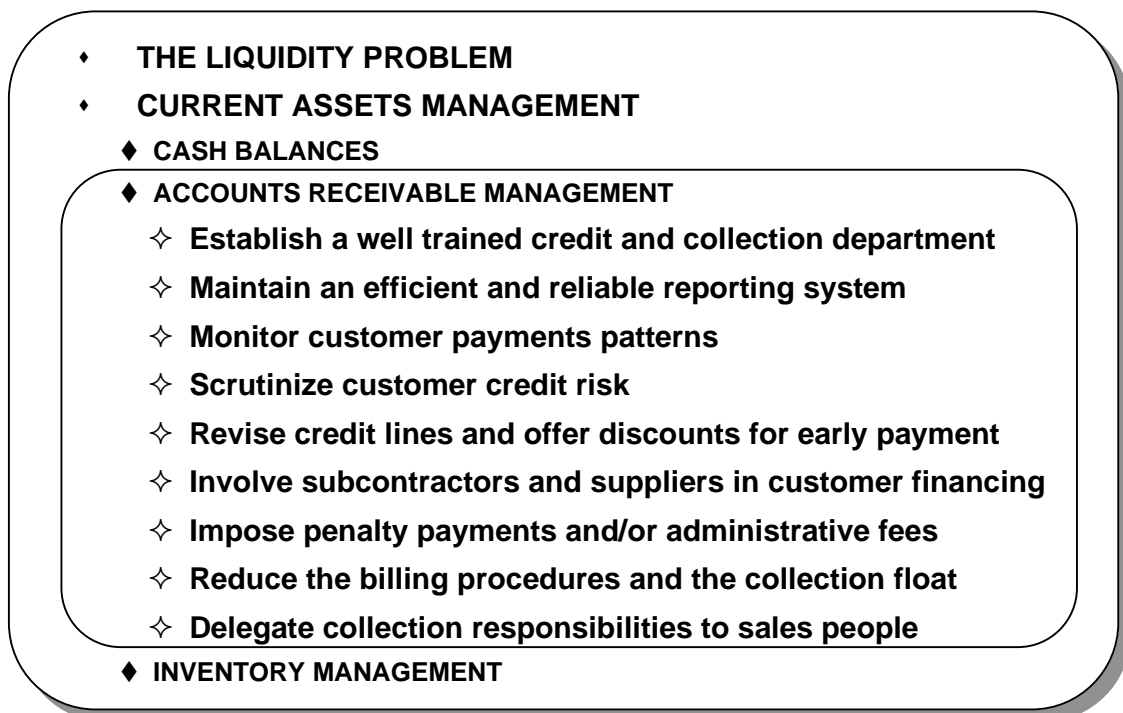


Figure 10.15. **Accounts receivable management**

Considering these potential savings, companies should seriously reconsider their receivables management strategies in order to shrink their receivable turnover in days. The following factors should be taken into consideration.

1. Establish a well trained credit and collection department. Every effort should be made in order to make the personnel department aware of the financial implications of accounts receivable in an inflationary environment and to make sure that the receivables policies are closely coordinated with sales people.

2. Maintain an efficient and reliable reporting system. One of the most ingredients for a successful management of accounts receivable is the timely monitoring of sales, collections, deposits and float time. The centralization approach to the management of receivables and payables could result in a number of beneficial effects. It enables the management to be enforced by skilled people; it reduces costs of personnel and enables a clear and global view of the problem.

3. Monitor customer payment patterns. Some companies use computers to store information on customer's credit terms that will be used in computing aging of receivables and receivable turnover in days.

4. Scrutinize customer credit risk. Careful examination of customer credit rating should be taken during inflationary periods because insolvencies are on the rise. A stricter screening should minimize the problems of slow payments. Although in many countries credit analysis is hampered by the lack and/or unreliability of published credit data, companies should resort to other sources of information such as banks, local industry groups, credit associations, financial association could provide some useful information.

5. Revise credit lines and offer discounts for early payments. To speed up receivables companies might tighten credit terms policies. When the company does not have a dominant position on the market, the potential effect on the loss of revenues should be assessed.

Another method to speed up receivables is to offer discounts for early payments. In this event the discount must be competitive with both the current rate of inflation and the yield rate on standard short-term investment instruments.

6. Involve subcontractors and suppliers in customer financing.

When a customer pays under a deferred payment plan, an attempt should be made to have subcontractors and suppliers participate in customer financing. On certain contracts customers are allowed to withhold a certain percentage of the contract price (10 percent, for instance) until they are fully satisfied with the quality of what has been acquired rather than using this approach, other means should be made available to insure satisfaction, such as taking out performance bonds.

7. Impose penalty payments and/or administrative fees. Interest should be charged on overdue accounts in order to speed up collections. These charges, based on local financing costs are particularly useful in hyperinflationary environments.

8. Reduce the billing procedures and the collection float. Every effort should be made in order to minimize the collection problems arising from administrative billing procedures and from the collection float.

Accelerating cash inflows will lower interest costs, and reduced interest risk. If possible, customers should be prebilled. Also, invoices should be mailed shortly after shipment, and should be timed ahead of the customer's cut off period for payment. Collection can also be improved by means of immediate correction of errors in shipping or billing as well as immediate resolution of disputes. A lock box could prove to be quite useful.

In many countries collections for smaller companies are not credited to the corporate account until two or three days after the payment has been received. Same-day transfer of the funds from the local bank to the corporate account can be negotiated. Companies should also inquire what terms other firms are getting from banks on their receivable float as a part of the negotiation for better services.

9. Delegate collection responsibilities to sales people. Using sales people to collect payments reduces delays in the mail and the banking system. In addition, the sales force has a first hand knowledge of the customers. This system is also useful in making the sales organization aware of the financial consequences of their actions.

Finding the optimal level of inventory in a hyperinflationary environment is not always easy, since conflicting situations may exist (fig. 10.16).

The idea of reducing inventories to improve liquidity and lower financing costs are sound.

☀ THE LIQUIDITY PROBLEM

☀ CURRENT ASSETS MANAGEMENT

- CASH BALANCES
- ACCOUNTS RECEIVABLE MANAGEMENT
- INVENTORY MANAGEMENT

Figure 10.16. Inventory management

A company with a rapid turnover is in a better position because less investment in inventory is required. Funds can therefore be alternatively invested. Of course, a firm with minimum inventory dependence is in the most advantageous position during inflationary times. It is also better off if it owns saleable goods because cash flow may immediately be generated.

Secondly, one of the quickest methods of increasing the return on capital is to reduce the amount of capital invested in the business.

However there are other important factors that may influence the inventory level decision.

We have already mentioned the case of a company that would be well advised to build up inventory prior to anticipated inflation after appraising supply/demand relationships, manufacturing costs, financing costs, and cash needs.

When such circumstances do not exist, we must be aware that liquidity is important provided it can be used for some worthy cause. Otherwise it is subject to the monetary erosion while the inventory is not. It is therefore preferable to be rich in inventories than in cash.

The means through which the reduction in turnover is achieved should also be considered. Reducing inventory through discounts offered in an attempt to win customers can be harmful. Increased discounts offered to a market declining in consumption must be paid for out of net profits. At the same time as company profits decrease, borrowing increases and the cost of borrowing depresses profits further. Finally the firms should try to pursue any possible method to reduce the inventory cost.

The company should try to cut costs by finding cheaper ways of doing things. The incidence of scrap and salvage should be minimized. In addition, poor product lines should be cancelled. To be especially avoided are components that traditionally experience excessive price increases.

With respect to the **purchase of materials** the following factors should be taken in consideration [7].

A firm is in a better position if it not susceptible to rapidly rising raw materials costs. Thus a company which must acquire goods that have a strong demand will have difficulty in an inflationary environment.

A company is in a strong position if it owns raw materials rather than having to buy them from the outside. Alternatively, whenever possible, the firm should have the customers furnish important raw materials needed to manufacture the product. This reduces the need for corporate funds to be tied up in inventory.

To minimize cost increases, the firm should enter long-term contract agreements and encourage suppliers to quote firm prices. A change in suppliers may be warranted if one allows for more liberal credit and grants easier credit terms.

When available, contracts in the futures market may be entered into when inflation is expected to get worse. The firm may lock itself into buying a raw material at a stated price that is lower than the anticipated future price.

Vertical integration that reduces a company's price and supply risk of raw materials improves its stability. An example is a furniture company that has a joint venture with a lumber company in order to guarantee a steady supply of an important material.

Good relationship with vendors should be developed to assure adequate flow of components and supplies during a shortage period.

It should also be noted that a total quality approach to the production process would reduce bottlenecks in the inspection. In addition to reducing the number of inspectors and to improving the quality of the product, this approach will allow to achieve a reduction in costs.

The following factors should be taken into consideration when considering investment projects.

During an inflationary period, there exists greater operating risk. Experience shows that under these circumstances some companies prefer to invest in short-term securities in order to reduce their risk exposure. However,

the return on such securities is generally much less than the return that could be obtained from investing in property, plant and equipment. In addition, long-term investment may result in productivity and efficiency gains as well as in new products development.

To protect itself against rapid inflation, the firm should stay out of investments in vulnerable areas of nonessential items. Luxury long-term investment proposals should be temporarily scrapped if higher costs occur and the firm has a weak funds-flow position and/or credit is tight.

On the other hand, low investment opportunities such as obtaining licenses for new developments or granting licenses for the firm's products to others should be pursued.

Because high rates of inflation affect projects requiring short-lived assets more than those requiring long-lived ones, it would be beneficial to shift towards high-quality machinery, with a longer life or to stretch replacement intervals.

An attempt should be made to divide projects into self-contained economic units so that success is not dependent upon the completion of the whole project. This flexibility may help in controlling costs.

It would probably be best for the company to avoid investing in projects with long lead times because the impact of inflation on these items is difficult to control. Perhaps risks can be minimized through joint ventures.

A company in a technologically oriented industry that does not keep up to date will be incurring higher operational costs in maintaining equipment. Production stoppages will result and, in a later period, the higher replacement cost for property, plant, and equipment may place a severe cash drain on the firm.

A capital-intensive business is quite vulnerable to inflation because of the high costs and availability problems of replacing heavy machinery. Once the project is started, construction should continue regardless of the point in the business cycle. Delay will only cause higher capital, shutdown, and start up costs, and lower productivity.

A company is wrong in waiting to start long-term investment projects because it anticipates that interest rates on financing will drop slightly. Higher project costs caused by inflation will probably outweigh the savings in lower interest costs.

One should be prepared to buy used facilities. They may be acquired at a cheaper price, and the rehabilitation cost may result in the total cost of a new plant. Environmental problems will also be reduced.

For lessees during inflation, it is better to lease than to own because funds are freed for operating needs. Lessors should attempt to retain the leased property at the end of the lease because they could probably sell it at a higher price than the originally estimated salvage value.

During inflation, a company's greatest need is for its assets to be flexible. Specially designed and produced machinery which cannot be resold puts a company in a very high risk situation if there is a turndown in the market. It would be far better to have disposable assets which can be traded if necessary, such as land, non tailor made buildings, standard machinery. Even cash is better than a long-term fixed asset in time of trouble. It may be wasting away, but at least it can easily be pushed into something more profitable.

Leasing instead of buying machines, making use of outside suppliers instead of internal services, all these provide a greater flexibility and enable a company to concentrate its affairs upon the activities which it does well and which make company profit.

It is critically important for a company to recognize which of its activities and of its assets are highly productive and which are not. Those activities and assets which are not fully productive should be eliminated. The resultant surplus energy concentrated on highly productive areas of the business will produce profits in excess of any earnings which might have been made from the marginal activities.

Control questions:

1. Give the definition of inflation. Explain it.
2. What is the role of inflation in the financial management?
3. What is the impact of inflation by investment decision making?
4. What are the profitability issues?
5. What is the valuation of assets?
6. What is the replacement cost accounting?
7. What is the role of inflation in the pricing decision?
8. Give the characteristics of the three components of current assets.
9. What is the essence of accounts receivable management?

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CONTENTS

Introduction	4
MODUL 3. FINANCE OF ENTERPRISES	5
Unit 1. The role of corporate finance and the business environment	5
1.1. Financial management and the goal of the firm	5
1.2. The decision functions of financial management	9
1.3. Organization of the financial management function	13
1.4. The business environment	14
1.5. The financial environment	20
1.6. The tax environment	24
1.7. The role of finance in a changing socio-economic scenario	26
Unit 2. Fundamentals of business accounting and finance	30
2.1. Fundamental of business accounting and finance	30
2.2. Working capital in action	36
Unit 3. Financial statements and their analysis	40
3.1. Financial analysis and planning	40
3.2. Financial statement analysis	42
3.3. Index analysis	44
MODUL 4: FINANCE AND FINANCIAL ACTIVITY OF AN ENTERPRISE	60
Unit 4. Tools of financial analysis and planning	60
4.1. The funds flow analysis	60
4.2. Statement of cash flow	72
4.3. Cash flow forecasting	74
Unit 5. Cost analysis	77
5.1. Financial planning and control techniques	77
5.2. Cost analysis	80
5.3. Manufacturing costs	88
5.4. The cost-volume-profit relationship	90
Unit 6. Planning and control techniques	107
6.1. Financial planning	107
6.2. The budget	108
6.3. Budgetary process	114
Unit 7. The investment evaluation process	135
7.1. The capital budgeting process	135

7.2. Project evaluation and selection	143
7.3. Leasing and investments	153
Unit 8. Working capital management	157
8.1. Working capital concepts	157
8.2. Working capital management basic decisions	163
8.3. Cash management	165
8.4. Management of accounts receivable	170
8.5. Inventory management	179
Unit 9. Financing corporate operations	187
9.1. Short-term financing	187
9.2. Long-term financing	205
9.3. Optimal capital structure	211
9.4. Dividend policy	214
Unit 10. Managing in a context of changing prices and foreign exchange rates	218
10.1. The challenge of inflation	218
10.2. Inflation and financial statements	220
10.3. Inflation and the pricing decision	233
10.4. Inflation and working capital management	235
References	245

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