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FINANCIAL MANAGEMENT AND DECISION-MAKING OF A COMPANY

Analysis, Investing, Valuation, Sensitivity, Risk, Flexibility

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Preface

The typical features of the current world economic development phase are the steadily increasing mutual connections and adaptations of particular processes. The crucial determinants and influential factors of economies should be characterized as the continual and distinctive linking with the world market and especially the European area and the enforcement of more market procedures and managerial methods. Such economies are regularly exposed to the increased influence of the external environment and the implicit necessity for adaptation.

Finance can be considered as one of the significant synthesizing tools enabling the effective and rational management of various economic and financial processes both the micro-level and the macro-level. Knowledge and the adoption of financial management and decision-making apparatus in corporations are among the fundamental and most important assumptions and aspects of successful economic development.

The basic intention of this textbook is to apply, describe and verify new and innovative approaches and methods applicable in financial decision-making. Another objective is to provide a comprehensive survey and information concerning financial management and decision making. The emphasis is placed on the presentation of substantial methods such as financial analysis, investment and valuation. Furthermore, because of the specific financial and economic characteristics, attention is given to the risk and flexibility aspects of the financial decision-making process. The textbook contains the basic topics on financial management and decision making. Therefore, it could be used as the list of methods for dealing with real-world problems, furthermore as a survey text acting as the benchmark concerning the possibilities and instruments applicable in financial management and decision making.

The monograph is especially appropriate for those who are interested in corporate financial management and decision making. It is possible to mention finance and economics researchers, analysts, specialists and experts; managers concerned with finance in cross-sectional subjects; and last but not least other concerned readers.

The publication can be used as a specialized text of innovative methods and comprehensive survey and approaches for researchers, analysts. The text is suitable for students of advanced courses and doctoral students in finance, especially as the fundamental text of the finance topic. Furthermore the text could serve for master's and bachelor's degrees students in finance and economics and managerial study programmes. The text could be useful for financial modules in the framework of MBA (Master of Business Administration) programmes. Furthermore, the textbook should be primarily used in courses taught in the English language. Naturally, the monograph is addressed to all students of the Faculty of Economics, VŠB-Technical University of Ostrava. Obviously, the textbook is

aimed at all professionals interested in the financial management and decision-making fundamentals, approaches and methods.

The publication is outlined and written for readers with different backgrounds and interests. Therefore, it includes both more complex easier and parts, implying that it can be studied in various ways.

We can recommend all the chapters except Chapter 3 and respectively Chapter 9 for readers who are interested in the basic information and methods applicable in financial management and decision making. Readers with deeper topic knowledge and concern can follow the chapters in order or skip Chapter 3 and subsequently return to it. For those who are interested in the applicable methods and methodologies, Chapter 3 is recommended. Chapter 9 is appropriate for experts, specialists and other persons interested in the modern and innovative methods and procedures or generalized tools applied in financial decision making. The solutions to the simplified comprehensive problems (exercises) in the chapters, including computation, are aimed at readers who deal with particular procedures and methods implemented in company practice.

The monograph has been partly elaborated in the framework of the ESF project, the European Social Fund, within project CZ.1.07/2.2.00/28.0065. It has been supported by the IT4Innovations Centre of Excellence project, reg. no. CZ.1.05/1.1.00/02.0070, supported by the operational programme 'Research and Development for Innovations' funded by the Structural Funds of the European Union and the state budget of the Czech Republic.

The monograph was prepared and worked out by a group of authors from VSB-Technical University of Ostrava, Faculty of Economics, Department of Finance. Particular co-authors participated in the preparation of the book as follows. Conception of the monograph and co-operation in all chapters prof. Dr. Ing. Dany Dluhošová; Ing. Miroslav Čulík, Ph.D., co-operated in Chapters 4, 5 and 9; Ing. Petr Gurný, Ph.D., worked on Chapters 6 and 8; Ing. Aleš Kresta, Ph.D., worked on Chapter 7; Ing. Jiří Valecký, Ph.D., worked on Chapter 2; and prof. Dr. Ing. Zdeněk Zmeškal co-operated in Chapters 3 and 9.

We hope the monograph can contribute to the better understanding and mastery of financial decision making and management stressing the aspects of analysis, valuation, risk and flexibility. We appreciate any remarks, comments and suggestions concerning the investigated topics and problems that could lead to improvements in the next edition.

Ostrava, May 2014

Authors

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List of Chosen Abbreviations

a	Component ratio (indicator)
A	Assets
APM	Arbitrage Pricing Model
APV	Adjusted present value
B-S-M	Black-Scholes-Merton continuous model
BVE	Book value of equity
c	Option price
C	Economic capital employed
CAPM	Capital assets pricing model
CEM	Certainty equivalent method
CFROI	Cash flow return on investment
CVaR	Conditional Value at Risk (Expected shortfall)
D	Debt
DCF	Discounted cash flow model
DDM	Dividend discount model
DEP	Depreciation
DIV	Dividends
E	Equity
EAT	Earnings after taxes
EBIT	Earnings before interest and taxes
EBITDA	Earnings before interest, taxes, depreciation and amortisation
EBT	Earnings before taxes
EVA	Economic value added
EPS	Earnings per share
FCF	Free cash flows

FCFD	Free cash flow to the debt
FCFE	Free cash flow to the equity
FCFF	Free Cash Flow to the Firm
FV	Future value
g	Growth rate
GCF	Gross cash flow
i	Interest rate
I	Interest paid
Inv	Inventories
INV	Investment outlays
IPO	Initial public offering
IRR	Internal rate of return
IV	Intrinsic value
LBO	Leverage buy out
L-TA	Long-term assets
L-TD	Long-term debt (liabilities)
MVA	Market value added
MVL	Market value lost
N(·)	Cumulative probability distribution function
NPV	Net present value
PI	Profitability index
PP	Payback period
PV	Present value
R	Cost of capital
RACC	Risk adjusted cost of capital
RAROC	Risk adjusted return on capital
Rev	Revenues
ROA	Return on assets
ROCE	Return on capital employed
ROE	Return on equity
RP	Risk premium

S	Underlying asset value
S-TA	Short-term assets
S-TD	Short-term debt (liabilities)
t	Tax rate
T	Maturity (or life of a project)
TC	Total costs
TS	Tax shield
TSR	Total shareholder return
VaR	Value at Risk
WACC	Weighted average cost of capital
x	Base ratio (base indicator)
X	Ecercise (strike) price

Chapter 1

Introduction

The monograph is devoted to the various aspects and methodical procedures concerning the financial management and decision-making problems.

The text is composed such that first the common principles and methodical procedures applicable in financial decision making and management are described and explained. We introduce for example financial cash flow categorization and definitions, the time value of money principle and methods for influence quantification, sensitivity analysis, risk computation and quantification, and valuation based on the present value principle. Next, the following crucial topics and problems are worked out and discussed: financial statement conceptions, financial performance measurement, the application of financial analysis on the basis of financial ratio usage and pyramidal decomposition, sensitivity analysis application, determination of the cost of capital, capital budgeting and business valuation. The last part contains the real option methodology as a generalized decision support and valuation approach. This approach allows the capturing of possible future decisions and flexible managerial active measures for decisions and risk computations.

The chapters include the following parts: a description of the given topic and problem, its conception and solution methods, a pilot solution, comprehensive examples clarifying the given procedures and a summary of the topic and problem. The exercises with solutions include the following subsections: introduction and task description, procedure, results and comments.

The starting point of the text with respect to the financial management is the determination of the company's development phase, because every phase is characterized by the specific volume and structure of financial sources and their usage including the applicable financial management instruments. The next step is to state the goals and the methods of the financial development of the company. Therefore, the following section is devoted to the company's growth strategies and the determination of the company value and financial performance. Subsequently, the text presents development alternatives and conceptions of financial performance measures applying accounting or market indices.

One of the basic tasks of the financial management is the composition determination and the search for the equilibrium among the crucial financial aspects, for example profitability, leverage and liquidity. The particular financial solution and decision implemented depend on the company's development stage, attitude to risk and agency problem solution.

In a separate chapter, the fundamental financial statement characteristics are introduced to serve the mapping of company economic and financial activities. The complex system of recording the financial–economic evolution, including the mutual relationship of the assets–resources balance (balance sheet statement), revenue–consumption balance (income statement) and inflows–outflows balance (cash flow statement), is described and analysed.

Financial analysis is the basic methodical approach to various decision-making problems. Ratio analysis represents a method serving to evaluate companies' financial health. Influence quantification and determination analysis are applied and explained. In particular, the pyramidal decomposition of the crucial financial ratios describing companies' financial performance is described.

Financial decision procedures and instruments are associated with company valuation methods and the criteria of investment project choice. We can apply both static and dynamic procedures to any decision problems and respecting the time value of money is the crucial instrument in the financial decision.

It suggests that the investment decision and the valuation of a company are based on the same principle. The difference is that the investment project's valuation assumes an initial investment outlay, and in the case of company valuation only the cash flow generated by the company. Usually, when dealing with financial problems, three crucial factors can be combined: the value, financial flows and cost of capital. Attention is paid to the various alternative definitions of the term free cash flow, given by the cost of capital and cash flow definition. The similarities of the following approaches are explained: *NPV-WACC* and *DCF-Entity*, *NPV-Equity* and *DCF-Equity*, and *ANPV* and *APV*.

The significant features of decision making are risk and flexibility, because the future states are always uncertain and tied up with random development and flexibility, consequently being active measures. The monograph presents valuation possibilities under risk by the risk-adjusted cost of capital or the certainty equivalent method. The relatively new and generalized approach of the financial decision making reflecting both the risk and the flexibility is the method of real options, which is described in the last chapter, including possible applications.

Chapter 2

Financial Management and Decision Rules

Financial management and decision making are an integral component of all business activities. They play an unsubstitutable role in the complete management and decision making of a firm and they are fundaments of strategic and long-term business objectives as well. It is characteristic within finance that they carry out a synthetic role because it is possible to convert various activities on the common denominator by using financial means, assess them and compare various business operations. Through finance, they enable simultaneously management and decision making about fundamental development trends and the use of financial sources within the firm.

Financial management and decision making are a dynamic process, which means that it is necessary to manage and control the strategic, tactical and operational dimensions and variability over time. Concrete applied techniques of financial management, objectives, applied tools and the structure of financial sources depend on the stages of the business life cycle. Each stage relates to specific features that result in various structures of cash flows and capital requirements. The cycle of cash flows, including the generation and use of capital, is recorded in Figure 2.1.

It is obvious from the figure that requirements for great initial financial means in the form of venture capital arise upon theat start-up of a business (or a project or programme). Launching of the business activities follows, for which it is possible to acquire sources by initial public offering (*IPO*).

Management usually tries to stay persistently in the consolidation stage, which is characterized by a stable economic condition, market position, capital growth, etc.

After the consolidation stage and depletion of the capacity of the given project, a moment of change with only two possibilities only follows:, bankruptcy in the case of no other adequate project, or restructuringrestructure and changing thechange of business into the form of starting a new project and returning to theat start-up stage again. During this stage, a leverage buy out (*LBO*) may be used.

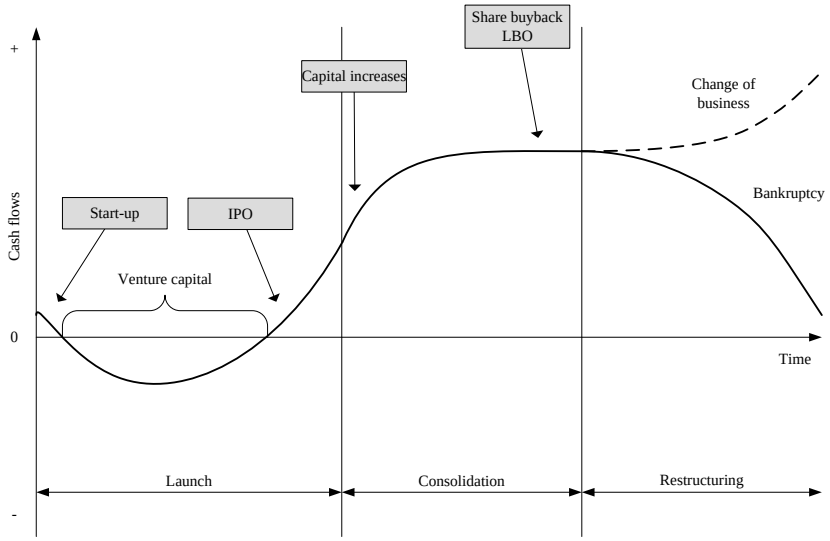

Figure 2.1 The life cycle of the firm

Various objectives relate to each stage of the life cycle of the firm. Growth of the firm's value and financial performance could be considered as the basic long-term objective.

One of the crucial roles of financial management is to plan how to generate and use the financial funds and means necessary to achieve the business objectives. This could be carried out in two ways: concerning investments, financial analysis and decision making within the firm; or linkage of the business itself and the broad financial environment.

Investment decisions (capital budgeting) represent investment in real assets (technologies, production equipment, inventories, receivables) as well as in financial assets (securities). Financial decision making leads to the decision on how much capital is necessary to assure the business activities and which capital structure should be assured, that is, the relationship between equity and debts.

The crucial task of financial management is to manage the cash inflows and outflows recorded in Figure 2.2.

The main sources are financial means generated by production activity and paid for by customers; further obtained from shareholders (equity capital); intakes from creditors follow (loan capital);) and also subsidies from the national budget. Financial means are expended on payments to suppliers (material, energy, etc.) and onto employees (salaries and wages), as well asfurther on loans repayments to lenders (banks), tax payments to the government and dividend pay-outs to shareholders (dividends).

A significant objective of financial management is to assure sufficiency of financial sources and allocate them to obtain their efficient usage conditioned by financial balance.

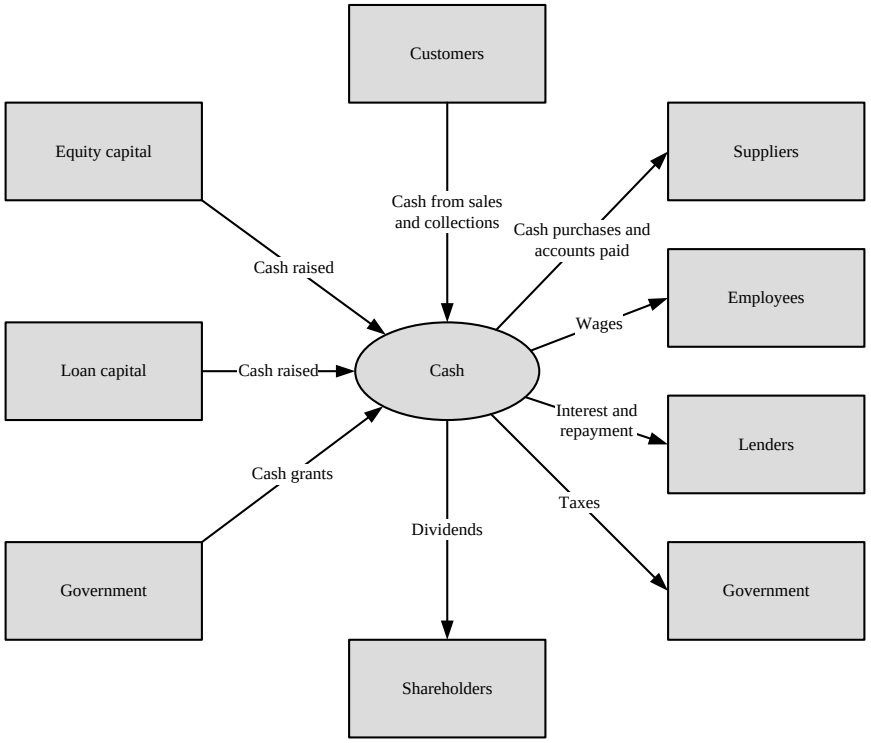

Figure 2.2 Cash inflows and outflows

In Figure 2.3, the financial inflows and outflows are depicted as an interconnected financial system in which financial markets and financial agents (brokers) represent an important role. Some of the most important components of financial markets are the money market, capital market, exchange market and derivative market.

The most important agents are banks, insurance companies, building societies, pension funds and investment companies. Within this system, firms, individuals and the government also play important roles. These subjects represent both users and suppliers of financial means.

Financial management represents the achievement of a balance between financial performance (profitability), capital structure (indebtedness or leverage) and solvency (liquidity).

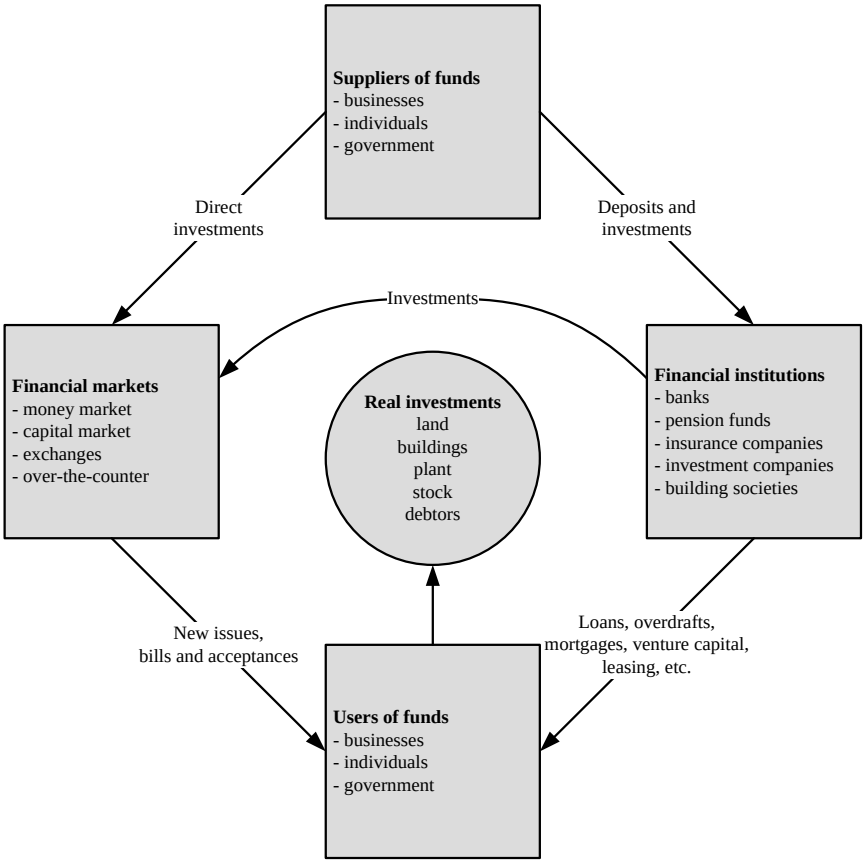

Figure 2.3 Financial system (financial markets, institutions, suppliers and users)

2.1 Approaches to measuring a firm's financial performance

One of the main financial management objectives is to increase firms' performance constantly.

Nowadays, the economic sphere and its culture are affected by globalization trends, increasing competition, the opening of new markets, and mergers and acquisitions. Managers have become more interested in long-term performance and, especially within the process of assessing the firm's successfulness and measuring its performance, managing the firm's value has become more important.

The adaptation of firms to the economic trends and increasing competitiveness has resulted in the conception and measurement of firms' performance. The approaches to measuring firms' performance have undergone substantial development and they reflect the technical–economic type of economy, the information possibilities and the degree of knowledge in managing economic systems.

During recent decades, the interest in assessing the efficiency of business activity has transferred from traditional performance to the preference for firms' market value. The increasing information efficiency of capital markets has improved the efficiency of capital allocation. The new conception of financial management is based on managing shareholder value. It is built on modified financial criteria enabling the better and more successful identification of the processes and activities that really increase shareholders' value as well as the firm's value in the long term.

The concept of shareholder value may be considered in two dimensions: shareholder value as a measure of performance (financial variable) and shareholder value as the most important business objective. The first point of view primarily concerns the maximization of shareholders' wealth. This should be natural because the shareholders own the company and, as rational investors, they expect long-term returns on their investment. Owners (shareholders) require higher profits than the returns that can be obtained by another investment possibility under conditions of the same undertaken risk. Otherwise, it means that the value of the invested capital did not increase, which implies that the firm's existence is or will be threatened.

From the point of view of shareholder value as firms' objective, firms are considered as tools for the accomplishment of shareholders' interests. Accordingly, the maximization of shareholders' utility through the maximization of shareholders' property becomes more important. Contrary to this approach, within the stakeholder approach, the interests of other parties (for instance creditors, investors, employees, colleagues, etc.) are also incorporated into the business objective. The difference between the two concepts consists of the fact that fulfilling the requirements of customers or the interests of employees is considered as an instrument to achieve a higher objective, that is, creating shareholders' value, and not as an objective in itself.

Approaches to measuring performance are still being developed. The development of the criteria used over time is depicted in Figure 2.4. It is obvious that the emphasis is turning from traditional accounting criteria to criteria measuring the performance determined by market prices.

According to the influence of financial markets and the moving focus of measurementon measure from accounting to market value criteria, the criteria forof measuring performance may be divided into three3 groups: accounting, economic and market criteria. In the following sections, the particular criteria are described in more details.

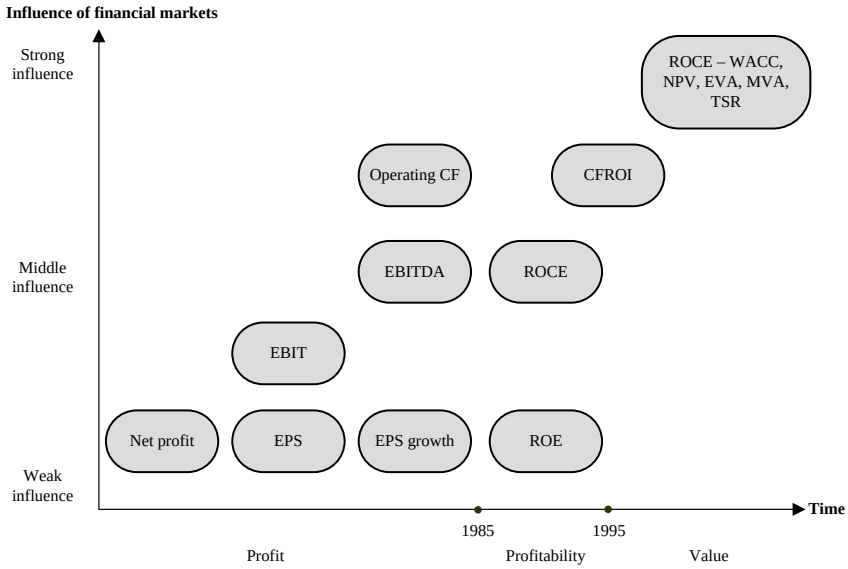

Figure 2.4 Development of performance criteria

2.2 Accounting criteria

Accounting criteria were used until the mid-1980s. These include earnings after taxes (*EAT*), earnings before interest and taxes (*EBIT*), earnings before interest, taxes, depreciation and amortization (*EBITDA*), earnings per share (*EPS*) and profitability ratios, for instance return on assets (*ROA*), return on capital employed (*ROCE*) and return on equity (*ROE*). These criteria are based on profit, which may rarely represent the firm's ability to generate cash flows. The use of the absolute ratio based on earnings after taxes accounts for specific imperfections because it is not possible to distinguish common and exceptional items. The growing emphasis on *EBIT* or *EBITDA* represented an improvement because it reduced the impact of exceptional revenues and costs.

The **earnings per share** (*EPS*) criterion is calculated as earnings after taxes per ordinary share. The idea and intention to improve the value of this indicator may result in an effort to increase earnings after taxes by methodological accounting procedures (creative accounting).

The second generation of accounting criteria appeared when investors began to think in terms of profitability by comparing the profit with the equity or the total capital used. The return on equity (*ROE*) represents the total profitability of equity. The rate of profit calculated from equity is an indicator that is used by shareholders to find out whether their capital is yielding sufficient returns, that is, whether it is being used appropriately in accordance with the level of investment risk.

The **return on capital employed** (*ROCE*) is another form of profitability. This indicator assesses the importance of long-term investments on the basis of summing equity and long-term debts. This indicator is used mostly for intercompany comparison.

The **return on assets** (*ROA*) is a more realistic measure of economic performance. Nevertheless, the costs of capital are not considered here. An outstanding return on assets is not a guarantee of increasing firm value. As long as the *ROA* is compared with the costs of capital, it is not possible to assess whether the firm's value is being created or destroyed. The *ROA* indicator is considered to be a crucial rate of profitability because the profit is measured against the total assets regardless of the financial sources. Anyway, it respects that the returns should cover the interests as well as generating other effects in the form of profit.

However, these indicators may also be affected by manipulation, for instance the company may increase its *ROE* by higher leverage. The *ROE* may seem to be acceptable even in the case in which no real value was created because the profit growth was eliminated by higher undertaken that was not incorporated into the accounting data. Because it is possible to avoid this bias by using the *ROCE*, it became one of the crucial indicators of performance. Nevertheless, in some industries, the *ROCE* is not suitable (for example the banking industry and insurance) and the *ROE* is widely and primarily used.

The criticism of the traditional profit variables and the indicators based on them could be summarized as follows: the low correlation with the firm's value in the capital market, the neglect of the costs of capital, the historical aspect, the failure to incorporate intangibles into the firm's value and the neglect of economic effects after the observation period.

2.3 Economic criteria

The economic criteria emerged from the fact that profitability is not correlated with shareholders' value. For evaluation purposes, yields must be compared with the costs of capital. If the weighted average costs of capital (*WACC*) are used, it is possible to estimate whether the firm's value (the return on capital is higher than the *WACC*) was created or 'destroyed'. Economic indicators, contrary to accounting criteria, respect all the costs of the capital invested. The risk undertaken and the time horizon are also incorporated into these indicators. The most important indicators are the following: net present value (*NPV*), economic value added (*EVA*) as an indicator on the basis of economic profit and cash flow return on investment (*CFROI*).

Net present value (NPV)

Undoubtedly, the most appropriate indicator of the creation of value is the *NPV*, which enables the calculation of the value created. The *NPV* represents the accumulation of property in association with the realization of the given project. Generally, *NPV* is the difference between the present value of free cash flows and the initial capital expenditures.

The *NPV* suffers from imperfection consisting of the fact that the free cash flows must be estimated over several future periods. For external analysts who cannot access all the necessary information, the calculation of the *NPV* is difficult. The indicators mentioned above, the *EPS*, *ROE* and *ROCE*, may be used as an alternative solution. It is necessary to note here that whereas these indicators are easy to obtain, they can produce biased results if they are not applied cautiously.

Economic value added (EVA)

The *EVA* is based on the known concept of economic profit, which is a component of economic and financial theory. Nevertheless, the application of this principle is conditioned by knowledge of many methodological problems related to the concrete availability of accounting data, measurement and interpretation. As a consequence, these problems have been solved recently and these indicators have been incorporated into the mainstream of established practice. More and more firms in developed and also transforming economic systems are accepting this indicator as crucial for corporate planning and for the monitoring of firms' performance. The novelty of this indicator consists of the consideration of the costs of debts as well as the costs of equity within the assessment of the performance.

The economic value added is a measure of firms' performance that was developed to motivate managers to focus on the growth of shareholders' value. Stern Stewart & Co. (see Stewart, 1991) popularized this approach in the USA and implemented it in corporate management at the beginning of the 1990s.

The *EVA* is based on the rule that the firm must produce enough to cover the costs of capital. These costs of capital or the required rate of return concern both equity and debts. As the creditors claim the interest, the shareholders also request an adequate rate of return on their invested capital that would compensate for their undertaken risk. From another point of view, the *EVA* is a method for shareholders to measure their profit after the payment of the opportunity costs of capital.

The general framework of the *EVA* as a performance measure represents excess profit, that is, the difference between the profit and the costs of capital represented by the minimal rate of return.

The concrete calculation of the *EVA* indicator is determined by data availability and by the method of calculation of the costs of capital. One can distinguish two basic approaches: a method based on the net operating profit after taxes and the value spread method.

The *EVA* on the basis of the net operating profit after taxes, sometimes termed *EVA-Entity*, is defined as follows:

$$EVA = \left(NOPAT - WACC \right) \cdot C \, .$$

The definition implies that the basic elements of *EVA* calculation are the net operating profit after taxes, economic capital employed (C) and weighted average costs of capital (*WACC*). The *EVA* is positive if *NOPAT* is higher than the capital requirements; this difference represents the value added to the wealth of shareholders over a given period. On the contrary, a negative *EVA* represents decreased wealth because the firm is not able to achieve even the minimal rate of return required by the parties providing the capital.

The **EVA** is influenced by three significant decision-making aspects that affect the input data: operational, investment and financial decisions.

Operational decisions concern the company output and affect *NOPAT*. Within investment decision making, they concern the decision about the capital employed (*C*).

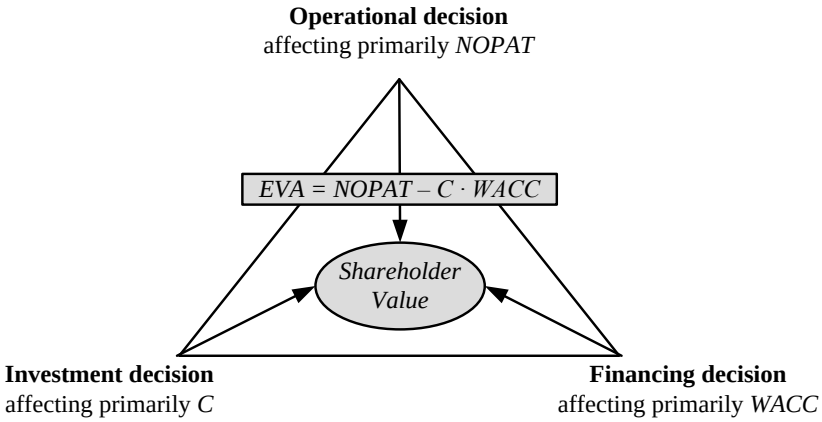

Figure 2.5 Fundamental components of the EVA and shareholder value

These decisions determine the size and structure of the assets. Financing decisions affect the capital structure (*WACC*) The problem is depicted in Figure 2.5.

Another possibility for *EVA* calculation could be expressed by the value spread. The value spread represents economic profitability, which could be determined as the difference between the profitability and the costs of capital.

The *EVA* on the basis of the value spread is calculated as follows:

$$EVA = (ROC - WACC) \cdot C$$

where *ROC* is the return on capital. The formula shows that the *EVA* is primarily dependent on the difference *ROC – WACC* and thus on the residual return on capital.

The *EVA* may also be formulated as follows, sometimes termed *EVA-Equity*:

$$EVA = (ROE - R_E) \cdot E ,$$

where *ROE* is the return on equity, R_E is the costs of equity and *E* is the equity. In this case, only the return on equity is considered. It is demanding for owners to achieve the largest difference between *ROE* and R_E, which should be at least positive. Only in this case does the investment yield more than the opportunity costs only.

The *EVA* on the basis of the relative value spread is calculated as follows:

$$EVA / E = (ROE - R_E) .$$

Here, the indicator is not affected by the equity and the relative firm's performance may be measured.

The *EVA* is one of the key indicators used not only for the measurement of financial performance, but also for the purposes of firm valuation, for the economic interests of management in value-oriented management. The maximization of the economic value

added should be a criterion used in the decision-making process about investments, changing of the manufacturing programme, inventories, receivables and supplier or distribution channel selection.

Cash flow return on investment (CFROI)

The original *CFROI* corresponds to the average internal rate of return of the actual firm's investments. The core of the indicator is similar to the *EVA*, contrary to the fact that the internal rate of return is compared with the average costs of capital; thus,

$$\sum_{t=1}^{T} GCF_t \cdot (1+CFROI)^{-t} + SV \cdot (1+CFROI)^{-T} = GCE ,$$

where *GCE* is the gross capital employed (calculated as the operating assets before depreciation and adjusted for inflation), *GCF* is the gross cash flow (i.e. *EBIT* (1 – *t*) + depreciation and amortization), *GCF* is considered as an annuity with the same length as the expected life of the assets and *SV* is the salvage value of assets at the end of their life, see Figure 2.6.

The *CFROI* is compared with the *WACC*. If *CFROI* > *WACC* holds, the company creates value; otherwise, value is destroyed.

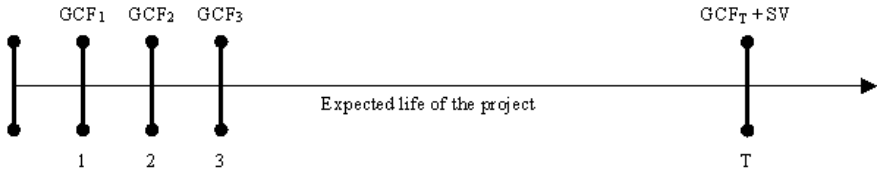

Figure 2.6 Cash flows of the CFROI ratio

2.4 Market criteria

The market criteria for performance are highly sensitive to the stock market; consequently, the performance is assessed from the point of view of the market. The market value added (*MVA*) and total shareholders' return (*TSR*) may be mentioned as two of the significant indicators.

The market value added, as the *EVA*, is registered as a trademark of Stern Stewart & Co.

In this way, another measure for assessing whether a firm is creating value was defined by the Stewart company. If the firm's value is higher than the capital employed, then it has created shareholder value. Otherwise, if the market value is lower than the capital employed, the firm has destroyed shareholder value. This difference between the market and the book value of the firm is termed the market value added (*MVA*). This indicator seems to be the most precise measure of the value created by a firm. The main reason for this statement is the fact that the stock price reflects all the relevant publicly accessible information on the efficient market. The price is a good information source due to continual evaluation of the listed shares, which is undertaken by mutual competing investors in order to obtain the highest possible profit. Successful firms increase their *MVA* and simultaneously they increase the value of the capital employed. Unsuccessful firms decrease

the value of the capital that was employed at the beginning. If a firm succeeds in creating *MVA*, it depends on the rate of return. If the rate of return exceeds the cost of capital, then the firm's shares are traded at the premium in the market; on the other hand, if the firm has lower profitability, then the costs of capital are sold at a discount. It follows that a firm creates shareholder value if the *MVA* is higher than zero, that is, if the total market firm value exceeds the total capital employed.

The *MVA* is defined on the basis of the value spread as follows:

$$MVA = MV - C \ ,$$

where *MV* is the market value of the firm and *C* is the total capital employed.

The *MVA* under the simplifying assumption of equality of the market and book value of debt is determined as follows:

$$MVA = MVE - BVE \ ,$$

where *MVE* is the market value of equity and *BVE* is the book value of equity.

In association with the increasing importance of analysis based on the net present value used for firms' market value evaluation, it still emphasizes that it is possible to determine the market value added as the present value of future *EVA*:

$$MVA = PV\left(EVA\right) = \sum_{t}^{T} EVA_t \cdot (1+R)^{-t} \ .$$

By increasing the *EVA*, the firm increases the difference between its value and its capital employed. The relation between *BVE* and *MVA* is used for the purpose of evaluation and it is possible to find a new definition of the firm's value:

$$MVE = BVE + MVA \ .$$

Thus, it holds that the market value of equity equals the sum of the book value of equity and the present value of future *EVA*. This mutual relationship is obvious in Figure 2.7, in which two possibilities are depicted. In the first case, a positive *MVA* is achieved; in the second case, a negative *MVA*, which is sometimes as market value lost (*MVL*), occurs.

Both indicators, *MVA* and *EVA*, involve the same problems but the difference is that the *EVA* assesses the successfulness of the firm from the point of view of the firm (management), whereas the *MVA* assesses it from the point of view of the market. The fundamental difference between these indicators consists of the fact that the *EVA* is based on internal information and the *MVA* depends on the share price.

As far as the mutual relationship between these indicators is concerned, it holds that the *EVA* appears in the *MVA*. For firms with positive and eventually increasing economic value added, price growth may occur. Increasing profits reduced by the costs of capital lead to growth of the market value added. To the contrary, firms that do not satisfy the yield for coverage of the weighted average costs of capital, the share price will decrease because the negative expected *EVA* reduces the actual value of the firm. This directly proportional relationship between *EVA* and *MVA* and the rule *a positive EVA leads to* a *positive MVA* mean that eventually *a negative EVA leads to* a *negative MVA* holds in most cases. There are also cases when the *MVA* is positive despite a negative *EVA*, and

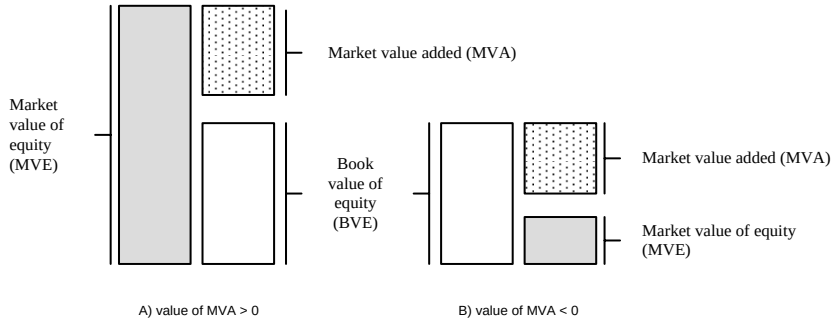

Figure 2.7 Relation of market value of equity (MVE) and market value added (MVA)

eventually another case violates this rule due to investors and the fluctuation of demand and supply. Not only does it depend on investors' expectations about the future of the firm, but their investments are also subordinated to psychological aspects without a direct relationship with the firm's actual financial conditions.

If the capital in the *EVA* formula reflects the common assets' value and if the return on capital reflects the real yield, it would not be necessary to examine the relation between *EVA* and *MVA*. It cannot occur because both capital and profitability are derived from historical prices. Within economies with an insufficiently developed financial market, the conditions to calculate and apply the *MVA* are not met because the precondition is a quality capital market.

The **total shareholder return** (*TSR*) is the market criterion for owners. It can be formulated as follows:

$$TSR = \frac{C_{t+1} - C_t + DIV}{C_t},$$

where C_{t+1} (C_t) is the market share price at time $t+1$ (t) and *DIV* represents the dividends per share.

The *TSR* is defined relatively and it corresponds to the sum of the dividend yield and the capital yield. It is the yield that shareholders obtain from buying shares. The main imperfection of these two indicators is the fact that they can indicate the destruction of value due to the investors' expectations about decreasing future profits in spite of the return on capital being higher than the costs of capital. On the other hand, in bull markets with average performance, the *TSR* and *MVA* may indicate positive values. These significant deviations are smoothed in the long term and reflect the firm's performance. Despite that, significant deviations may occur between these performance in intervals.

These considerations and findings have made stock exchange institutions distinguish economic and market indicators carefully. Economic indicators measure the performance achieved during previous years, whereas market indicators reflect the predicted future value. Market indicators respect the share prices reflecting future expectations. However, economic and market indicators could be considered as supplementary criteria rather than mutually excluding ones. The strengths and weaknesses of the indicators mentioned above are summarized in Table 2.1.

Table 2.1 Comparison of accounting, economic and market criteria of performance

Ratio	**Accounting criteria**			**Economic criteria**			**Market criteria**	
	Earnings per share	**Return on equity**	**Return on capital employed**	**Net present value**	**Economic value added**	**Cash flow return on investment**	**Market value added**	**Total shareholder return**
Acronym	***EPS***	***ROE***	***ROCE***	***NPV***	***EVA***	***CFROI***	***MVA***	***TSR***
Strengths	Historical data, simplicity.	Simple concept.	Simple concept.	The best criterion.	Simple indicator leading to concept *WACC*.	Not restricted to just 1 year.	Extraordinary simple. Reflects the total rather annual value created.	Represents shareholder return in the medium to long term.
Weaknesses	Does not factor in risks. Easily manipulated. Does not factor in the cost of equity.	Accounting measures; do not factor in risks. Restricted to 1 year. To be significant, must be compared with the required rate of returns.	Little connection with value created. Does not factor in risks.	Difficult to calculate for an external analyst.	Restricted to 1 year. Difficult to evaluate changes over a period of time.	Complex calculations.	Subject to market volatility. Difficult to apply to unlisted companies.	Calculated over too short period. Subject to market volatility.

2.5 Value drivers

As well as the accounting, economic and market criteria of firms' performance, value drivers are also observed. Value drivers represent the fundaments of firms' performance because they comprise predictive criteria of performance whereas financial indicators, such as the *ROCE*, can be considered as historical indicators of performance. The management strongly needs to understand the future trend of the firm's development. The special part is represented by key indicators specific to each industry. The key indicators of performance could be operational or strategic. In the case of pharmaceutical firms, they may concern for instance research and development costs; in the case of firms focused on packaging market share, in retail the number of new opened outlets or new products on the market may be involved. The analysis of value drivers is very often conducted by decomposition of the *ROCE* into the primary components, *EBIT* and *C*. Even though this is a good initial method, the true value drivers may be found by further decomposition into the factors affecting sales and costs. Thus, the value drivers are very specific to each firm and industry and we can identify many of them. Therefore, it is necessary to determine and modify them for each particular business entity.

Figure 2.8 shows the relationship between decision making and shareholder value. The focus is on how a business can plan and manage its activities to increase the value for shareholders and, at the same time, the benefit for other stakeholders. The key decisions, such as strategic, operational, investment or financial decisions, affect primarily the cash flows of the firm and the financial risk shown in the costs of capital.

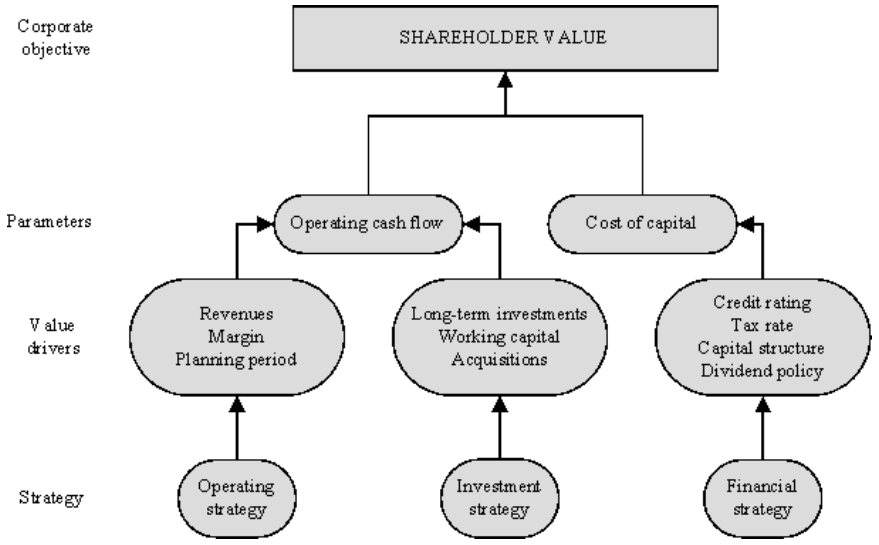

Figure 2.8 Shareholder value analysis framework

2.6 Summary

In this section, a brief characterization of firms' financial management and decision making was defined. Because of the necessity of using various approaches and techniques in accordance with the stage of the firm's development, the firm's life cycle is mentioned. Further, the basic methods of financial management, including the condition of application, were described. Because the crucial task of financial management is the creation and use of financial means, the system of cash inflows and outflows was presented. In accordance with the fact that financial management affects the environment, the financial system in the economy and the task of particular subjects were described. The basic objective of financial management is to increase firms' performance and therefore attention was paid to the approaches to measuring firms' performance and to their application in management. The history of financial performance criteria, which moved from accounting criteria based on profit towards value criteria based on market prices, was presented.

For further studies, the following publications are recommended: Ehrbar (1998), McLaney (2003), Pike and Neale (2003), Vernimmen et al. (2005) and Young and O'Byrne (2001).

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