



## KONCEPTUÁLNE ZÁKLADY INVESTIČNÉHO CONTROLLINGU A SPOLOČENSKY ZODPOVEDNÉ INVESTOVANIE: PROCESNÉ MODELOVANIE MEDZINÁRODNÝCH STRATÉGIÍ CONCEPTUAL BASES OF INVESTMENT CONTROLLING AND IMPACT INVESTING: PROCESS MODELING OF INTERNATIONAL STRATEGIES

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Článok skúma súbor prostriedkov politiky investičného controllingu a formovanie paradigmy impact investingu pre procesné modelovanie medzinárodných stratégii v kontexte globalizácie a európskej integrácie. Vysvetľuje koncepčné základy rozvoja programov strategického plánovania v medzinárodnom podnikaní. Uvádzajú ekonomické a matematické modely na hodnotenie investičných procesov a opodstatnenie vývoja medzinárodných stratégii, ich variabilitu a optimálnosť<sup>2</sup>. V predloženom článku je analyzovaná aplikácia nových mechanizmov inovatívneho rozvoja hospodárstva a jeho investičnej podpory. Článok taktiež predstavuje európsku prax úspešného impact investingu. Zdôrazňuje aj predpoklady rozvoja sociálneho podnikania na Ukrajine.<sup>2</sup>

Kľúčové slová: kontrola investícii, kapitálové investície, štatistické metódy, štandardný model oceňovania kapitálových aktív (CAPM), medzinárodné stratégie

This paper investigates the instrumental base of investment controlling policies and the formation of the impact-investment paradigm for the process modeling of international strategies in the context of globalization and

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European integration. The conceptual bases for the development of strategic planning programs in international business are examined. A number of economic and mathematical models for evaluating investment processes and justifying the development of international strategies, their variability and optimality are proposed. The application of new mechanisms of innovative development of the economy and its investment support is justified. Paper represents and analyze the European practice of successful impact-investment as well. Preconditions for the development of social entrepreneurship in Ukraine are highlighted.

Key words: investment controlling, capital investment, statistical methods, standard capital asset pricing model (CAPM), bonus-compensation

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## 1 INTRODUCTION

At the current stage of development of the enterprise's foreign economic activity, the strategic planning process, its realization on foreign markets and the policy of investment controlling in the system of financial and economic security take a significant place. The investment controlling has its own peculiarities.

Subject to the condition stabilization of economic situation investment activity comes forward and is one of important factors of growth and development in Ukrainian economy. However, the absence of the integral system of investment policy on many enterprises, that responds to request variable market environment and directed on providing of the rational use of investment resources, exacerbates the problem of perfection and development of scientific or methodical approaches and tools of management. Application of one will be instrumental in acceleration of socio-economic development of the Ukrainian enterprises through the investment of capital.

The high level of economic development, as shown by the experience of the industrial countries of the world, is provided by a number of conditions, the main of which is the accumulated scientific and technical, industrial, investment potential, institutional factors of technological progress, and state support for innovative transformations. Economic deformations are convinced of the expediency of activating and increasing the effectiveness of the investment and investment processes in the industry and minimizing the influence of the factors that are decomposing them. Significant influence on innovation and investment activity, ensuring of leading positions, competitiveness in industry has the power of its innovative potential. Under such conditions, the substantiation of the theoretical foundations and practical measures for the development of domestic production through the formation and realization of its innovative potential on a competent basis becomes of special significance.

To survive in a competitive struggle in the modern market, companies should be able to quickly use any favourable business opportunities anywhere in the world,

and respond promptly to changes that take place both on the domestic and foreign market. This situation requires a clear definition of a corporate mission, a vision of ways to achieve this mission, and a clear understanding of the methods of competition. Defining competitive positions requires careful assessment of the strengths and weaknesses of the company in comparison with its competitors, forecasting of probable political, economic and social changes among existing and potential consumers, as well as analysis of the impact of new technologies on business methods.

Research of potential strategy in the foreign market, structure and methods for evaluation, innovation and investment into enterprises development features of the strategic planning of the enterprise foreign economic activity, investment controlling in the system of financial and economic security were conducted in the studies by foreign and domestic scientists.

For example, Hilorrme (2018) presents innovative methods for the development of industries. Fabozzi (2008) explores investment management. Authors like Elton, Gruber, Brown or Goetzmann (2014) investigate the question of modern portfolio theory and investment analysis. Piarce (2013), for instant, had dedicated his works to strategic management, formulation, implementation, and control. Karpenko and Filyppova (2016) are working on the issues of strategic competitive analysis of innovative enterprises development and predictive validity. Some economists explore development issues of innovation policy of the European Union and West Africa (Lipková 2012, Kovarova 2016). Analysis of the recent scientific materials indicates the results of comprehensive research on the development and implementation of the innovation and investment mechanism elements, improvement of the investment climate, economic and statistical calculations, and modelling of functioning of enterprise development strategy in the foreign markets.

However, some issues need to be more mainstream, is of interest to develop a conceptual approach to the formulation of the administrative management at the enterprise, or “How to make the administrative work”. A number of researches are devoted to problematic issues of attracting investors at an initial stage of implementation of the project. A considerable part of innovative projects are left without financing owing to the lack of confidence of the investor on timely return of financial means.

The purpose of the paper is to study the economic nature of investment control and its development and maintenance the policy in the coordinates of in the coordinates of globalization changes and European integration; analysis and characterization of the investment control management steps. Studying the features and rationale for applying innovative investment tools in today's business environment – impact investment. The secondary goal of this paper is to analyze the European practice of successful impact investing and the preconditions for the development of

social entrepreneurship in Ukraine and to structure a portfolio to satisfy multiple liabilities.

New tasks of investment controlling in the economic security system create new requirements of the company. The purpose of this paper is to study the instrumental base of investment controlling in the context of sustainable development as well. The article explores and justifies the using of the tools for the policy of investment controlling in the system of financial and economic security. The functional tasks and objectives of investment controlling are systematized, which determine the formation of the necessary structural elements and the general scheme of organization of economic security. The tasks of investment controlling include the initiation of new investment projects, the development of proposals for their implementation, budgeting, compliance control in the coordinates of finance and economic security. Investment controlling is a system of methods and tools aimed at supporting investment management, covering information provision, planning, coordination, control and internal consulting. The Standard Capital Asset Pricing Model (CAPM) was investigated. The questions on conceptual bases for the development of strategic planning programs in international business were offered. The objective of research consists in defining the Executive Bonus Compensation Plans.

Theoretical and methodological basis of the research consist of the research of modern economic concepts of management, informatization, and system theory. To reach the goals of this research we apply methods of scientific abstraction, generalization and comparison. The economic and statistical methods for the characterization and classification of the types of successful investment impact were used. To study trends in the volumes of capital investment of industrial enterprises and determination of predictive validity correlation analyzes were used. We apply the methods of generalization and systematization for the development of managerial tools and methodological support for the process of impact-investing in the enterprise as well. Conducted analyses are based on the foreign and domestic theoretical background.

## **2 INSTRUMENTAL BASE OF INVESTMENT CONTROLLING**

Controlling, as an effective management tool, has not yet become a “panacea” for Ukrainian enterprises. The reality of Ukrainian enterprises is presented by the management of individual elements of the control system: the structuring of the existing organizational structure by the centres of responsibility, budget development, construction of two or three cascade schemes for calculating marginal profit, grouping expenses on the basis of elasticity from the volume of production, using the “theory of break-even” for making managerial decisions. At large enterprises (for example, pharmaceutical company “Darnitsa”) such advanced control technologies are being

introduced as costing for business processes. But all advancements or efforts at Ukrainian enterprises are aimed at finding levers of current cost management, which is considered to be the main criterion for the competitiveness of enterprise products in the Ukrainian consumer market (Karpenko 2016).

Controlling is a key tool of the system of target management. Controlling acts as a “feedback” in the management of the company. Investment monitoring includes a system for monitoring, evaluating and monitoring investment projects with a view to developing management solutions that will best achieve the stated objectives.

The main task of investment controlling is to achieve the targeted profit in the sphere of investment activity. There are main activities of investment controlling:

- planning and coordination of investment activities in the framework of strategic and operational planning;
- justification of the effectiveness of investment projects through an integrated system of performance indicators;
- budgeting for financial responsibility centres;
- implementation of investments (project-controlling);
- control over the implementation of investments, including ongoing verification calculations, as well as monitoring the budget of the investment project.

An important task of investment controlling is to conduct preparatory work before acquiring new property (enterprises). Preliminary selection of potential candidates is carried out, the rank of the enterprise and the acceptable purchase prices are determined. To conduct such work, appropriate methods should be developed. All management stages of investment controlling is shown in Table 1.

The tasks of investment controlling include the initiation of new investment projects, the development of proposals for their implementation, budgeting, compliance control in the field of finance and economic security. First of all, this refers to new investment projects that provide long-term success potentials (for example, merging with other enterprises, opening new branches, etc.). Investment monitoring is an element of the mechanism of financial and economic management and is implemented through certain methods and management principles.

Table 1: Management stages of investment controlling

<i>Stage</i>	<i>Characteristics</i>
Economic justification of the investment project in accordance with the goals and strategy	Establish the project goal, identify the nature and extent of the influence of external and internal factors on the achievement of this goal
Selection of the criterion for achieving the project goal	Possible project objectives: current value of future cash flows, market share, growth rate, degree of risk reduction of existing activities, financial freshness
Development of criteria for achieving goals and controlled indicators for each responsibility centre, taking into account the capabilities and authority of managers of such centres	Setting the budgeting system for financial responsibility centres. Coordination in accordance with the principles of financial and economic security of the company
Working out of organizational aspects of investment controlling and, above all, organizational aspects of monitoring and control	A structure of the reporting system for the investment project is being developed. Such reporting should record planned and actual indicators for the stages of work, timing, costs. It should also indicate deviations of the actual values of the controlled indicators from the planned ones and determine the degree of influence of the deviations that have occurred in achieving the goal of the whole project
Development and implementation of the document management system	Maintenance of the investment project, preliminary and current control over deviations

Source: systematized by the author.

The mechanism of financial and economic security of enterprise includes such research methods as administrative, economic, organizational and technological, institutional, legal, information, socio-psychological.

Forms of economic management methods: forecasts, national programs, government orders, tax policy, pricing policy, financial and credit policy; investment policy, investment control. Investment controlling supports the decision-making process for the selection of preferred projects at the stages of search and evaluation. The following tasks are solved:

- creation of an investment planning system;
- formation of the concept of investment settlements and the definition of criteria for decision-making;
- establishment of qualitative parameters that are of fundamental importance for investment calculations;
- carrying out detailed investment calculations for large projects;

- control over all investment projects and calculation of their effectiveness (Fabozzi 2008).

We will outline the criteria for evaluating investment projects in controlling. Central to controlling investment projects is the choice of criteria for assessing the achievement of goals. The objectives of implementing investment projects can be both financial and non-financial. Consider primarily financial goals as the most typical in the market economy conditions. There are many financial criteria for evaluating investment projects, each of which has its advantages and disadvantages.

It is normal that the using of different criteria for the evaluation of investment projects can lead to different results. Therefore, the final choice of criteria (or criterion) is used in controlling investment projects should be carried out taking into account the specific situation.

Consider these criteria in order to identify their advantages and disadvantages, as well as determine the scope of each. In the economic literature, the authors of the effectiveness of investment are classified according to the following characteristics:

- 1) Types of generalizing indicator (acting as a criterion of economic efficiency of investment): absolute, in which generalizing indicators are defined as the difference between the cost estimates of the results and costs associated with the implementation of the project; relative, in which generalizing indicators are defined as the ratio of cost estimates of project results to the total costs of obtaining them; temporary, which evaluates the payback period of investment costs.
- 2) Methods of comparing the different financial costs and results: static, in which cash flows arising at different points in time are valued as equivalent; dynamic, in which the cash flows caused by the implementation of the project are reduced to an equivalent basis by discounting them, ensuring the comparability of the different cash flows.

Static methods are called basing methods of accounting estimates, and dynamic methods are called basing methods of discounted estimates (Fabozzi 2008).

Our research have been concerned with how an individual or institution acting upon a set of estimates, could select an optimum portfolio, or set off portfolios. If investors act as we have prescribed, then we should be able to draw on the analysis to determine how the aggregate of investors will behave, and how prices and returns at which markets will be set.

The construction of general equilibrium models will allow us to determine the relevant measure of risk for any asset and the relationship between expected return and risk for any asset when markets are in equilibrium. Furthermore, though the equilibrium models are derived from models of how portfolios should be constructed,

the models themselves have major implications for the characteristics of optimum portfolios.

The subject of equilibrium models is so important that we have devoted four chapters to it. In this work we develop the simplest form of an equilibrium model, called the *standard capital asset pricing model*, or the *one-factor capital asset pricing model*. This was the first general equilibrium model developed, and it is based on the most stringent set of assumptions. The second step on general equilibrium models deals with models that have been developed under more realistic sets of assumptions. The third step in this sequence deals with tests of general equilibrium models. The final step deals with a new theory of asset pricing: arbitrage pricing theory.

It is worthwhile pointing out, at this time, that the final test of a model is not how reasonable the assumptions behind it appear but how well the model describes reality. Despite the stringent assumptions and the simplicity of the model it does an amazingly good job of describing prices in the capital markets.

### **3 THE ASSUMPTIONS UNDERLYING THE STANDARD CAPITAL ASSET PRICING MODEL**

Now, we are investigating the Standard Capital Asset Pricing Model (CAPM) (Karpenko 2015). The real world is sufficiently complex that to understand it and construct models of how it works, one must assume away those complexities that are thought to have only a small (or no) effect on its behaviour. As the physicist builds models of the movement of matter in a frictionless environment, the economist builds models where there are no institutional frictions to the movement of stock prices.

The first assumption we make is that there are no transaction costs. There is no cost friction of buying or selling any asset. If transaction costs were present, the return from asset would be a function of whether or not the investor owned it before the decision period. Thus, to include transaction costs in the model adds a great deal of complexity. Whether it is worthwhile introducing this complexity depends on the importance of transaction costs to investors' decisions. Given the size of transaction costs, they are probably minor importance. The second assumption behind the CAPM is that assets are infinitely divisible. This means that investors could take any position in an investment, regardless of the size of their wealth. For example, they can buy one dollar's worth of IBM stock. The third assumption is the absence of personal income tax. This means, for example, that the individual is indifferent to the form (dividends or capital gains) in which the return on the investment is received. The fourth assumption is that an individual cannot affect the price of a stock by his buying or selling action. This is analogous to the assumption of perfect competition. While no single investor can affect prices by an individual action, investors in total determine prices by their actions. The fifth assumption is that investors are expected to make decisions solely in terms of expected values and standard deviations of the

returns on their portfolios. In other words, they make their portfolio decision utilizing the framework discussed in other chapters. The sixth assumption is that unlimited short sales are allowed. The individual investor can sell short any amount of any shares. The seventh assumption is unlimited lending and borrowing at the riskless rate. The investor can lend or borrow any amount of funds desired at a rate of interest equal to the rate for riskless securities. The eighth and ninth assumptions deal with the homogeneity of expectations. First, investors are assumed to be concerned with the mean and variance of returns (or prices over a single period), and all investors are assumed to define the relevant period in exactly the same manner. Second, all investors are assumed to have identical expectations with respect to the necessary inputs to the portfolio decision. As we have said many times, these inputs are expected returns, the variance of returns, and the correlation matrix representing the correlation structure between all pairs of stocks. The tenth assumption is that all assets are marketable. All assets, including human capital, can be sold and bought on the market. It is allowed to see the reason for the earlier warning that manager might find many of the assumptions behind the CAPM untenable. It is clear that these assumptions do not hold in the real world just as it is clear that the physicist's frictionless environment does not really exist. The relevant questions are: How much is reality distorted by making these assumptions? What conclusions about capital markets do they lead to? Do these conclusions seem to describe the actual performance of the capital market?

The next, we are investigating the *Capital Asset Pricing Model* (Casidy 2014). The standard form of the general equilibrium relationship for asset returns was developed independently by Sharpe, Lintner, and Mossin (Casidy 2014). Hence, it is often referred to as the Sharpe-Lintner-Mossin form of the capital asset pricing model. This model has been derived in several forms involving different degrees of rigor and mathematical complexity. There is a trade-off between these derivations. The more complex forms are more rigorous and provide a framework within which alternative sets of assumptions can be examined. However, because of their complexity, they do not convey the economic intuition behind the capital asset pricing model as readily as some of the simpler forms. Because of this, we approach the derivation of the model at two distinct levels. The first derivation consists of a simple intuitively appealing derivation of the CAPM. This is followed by a more rigorous derivation.

The next we will describe Deriving the CAPM (Ilysheva and Krylova 2014). When we introduced riskless lending and borrowing, we showed that the portfolio of risky assets that any investor would hold could be identified without regard to the investor's risk preferences. This portfolio lies at the tangency point between the original efficient frontier of risky assets and a ray passing through the riskless return (on the

vertical axis).

We digress for a moment and point out one seeming fallacy in the potential use of the CAPM. Invariably, when a group of investors is first exposed to the CAPM, one or more investors will find a high Beta stock that last year produced a smaller return than low Beta stocks. The CAPM is an equilibrium relationship. High Beta stocks are expected to give a higher return than low Beta stocks because they are more risky. This does not mean that they will give a higher return over all intervals of time. In fact, if they always gave a higher return, they would be less risky, not more risky, than low Beta stocks. Rather, because they are more risky, they will sometimes produce lower returns. However, over long periods of time, they should on the average produce higher returns (Dobrowolskiy et al. 2011). We have written the CAPM model in the form:

$$\bar{R}_1 = R_F + B_i(\bar{R}_M - R_F) \quad (1)$$

This is the form in which it is most often written and the form most amenable to empirical testing. However, there are alternative forms that give added insight into its meaning. Recall that:

$$B_i = \frac{\sigma_{IM}}{\sigma_M^2} \quad (2)$$

We could then write the security market line as:

$$\bar{R}_i = R_F + \left( \frac{\bar{R}_M - R_F}{\sigma_M} \right) \frac{\sigma_{IM}}{\sigma_M}, \quad (3)$$

where  $\bar{R}_1$  is the expected return on the portfolio,  $R_F$  is the fraction of the portfolio held in asset F,  $R_M$  is the fraction of the portfolio held in asset M,  $\sigma_M$  is the standard deviation of the return on the portfolio,  $\sigma_M^2$  is the covariance between the returns on security M. This, in fact, is the equation of a straight line located in expected return  $\sigma_{IM}/\sigma_M$  space.

#### 4 PROGRAMS OF STRATEGIC PLANNING IN INTERNATIONAL BUSINESS

Currently, investment controlling is a part of the strategic planning program. Let's consider question of *conceptual bases for the development of strategic planning programs in international business* (Individual Competence Baseline for Project, Programme & Portfolio International Project 2015).

International business can be defined as the business interaction of firms of different forms of ownership or their units located in different countries, the main purpose of which is to profit from the benefits and advantages of business international operations. International business is an entrepreneurial activity connected with the use of capital in various forms and the advantages of increased business activity; it is carried out for the purpose of profit making and is extended to the field of international economics (Hilorme et al. 2018).

The international strategy of the company is a generalized description of the coordinated actions regarding the definition of the main direction of the activity of the international organization, its place in the International business and ways to realize the whole complex of its international goals. The main purpose of the international management strategy is:

1. Definition and content of the main direction of the company's development in the context of diversification of international operations;
2. The necessity to coordinate and integrate a variety of operations on a corporate scale;
3. Strengthening of positions in competitive struggle.

The result of the planning process is the Program of Plans. The plan includes the main performance indicators that must be achieved before the end of the planned period. For strategic planning, the clarity of the interpretations of the concepts "social program" and "social problem" is essential. The social program is the content and plan of activities, outlining the main goals and objectives of solving social problems, the nature of the activities, clarifying the terms of execution and determining the participants in the processes and their role functions. The social problem is objectively arising in the course of functioning and development of the social entrepreneurship. Programs usually determine the development of an important aspect of the organization. These may include programs for improving technology, quality control programs, inventory accounting programs, and others (Lipkova 2012). Types of Executive Bonus Compensation are introduced in Table 2.

Let's consider *Executive Bonus Compensation Plans* (Stanickova 2012). First of all, it seems advisable to analyze major plan types. The goal of an executive bonus compensation plan is to motivate executives to achieve maximization of shareholder wealth – the underlying goal of most firms.

Since shareholders are both owners and investors of the firm, they desire a reasonable return on their investment. Because they are absentee landlords, shareholders want the decision-making logic of their firm's executives to be concurrent with their own primary motivation. However, agency theory instructs us that the goal of shareholder wealth maximization is not the only goal that executives may pursue. Alternatively, executives may choose actions that increase their personal

compensation, power, and control. Therefore, an executive compensation plan that contains a bonus component can be used to orient management's decision making toward the owners' goals. The success of bonus compensation as an incentive hinges on a proper match between an executive bonus plan and the firm's strategic objectives. As James E. Nelson has written: "Companies can succeed by clarifying their business vision or strategy and aligning company pay programs with its strategic direction" (Pearce 2013).

Table 2: Types of Executive Bonus Compensation

<b>Bonus Type</b>	<b>Description</b>	<b>Rationale</b>	<b>Shortcomings</b>
1. Stock option grants	Right to purchase stocks in the future at a price set now. Compensation is determined by "spread" between option price and exercise price.	Provides incentive for executive to create wealth for shareholders as measured by increase in firm's share price.	Movement in share price does not explain all dimensions of managerial performance.
2. Restricted stocks	Shares given to executive who is prohibited from selling them for a specific time period.	Promotes longer executive tenure than other forms of compensation.	No downside risk to executive, who always profits unlike other shareholders
3. Golden handcuffs	Bonus income deferred in a series of annual instalments. Deferred amounts not yet paid are forfeited with executive resignation.	Offers an incentive for executive to remain with the firm.	May promote risk-averse decision making due to downside risk borne by executive.
4. Golden parachute	Executives have right to collect the bonus if they lose position due to takeover, firing, retirement, or resignation.	Offers an incentive for executive to remain with the firm.	Compensation is achieved whether or not wealth is created for shareholders. Rewards either success or failure.
5. Cash based on international business performance using financial measures	Bonus compensation based on accounting performance measures such as return on equity.	Offsets the limitations of focusing on market-based measures of performance.	Weak correlation between earnings measures and shareholder wealth creation. Annual earnings do not capture future impact of current decisions.

Source: systematized by author.

## **5 PARADIGM OF IMPACT INVESTING DEVELOPMENT IN THE CONTEXT OF GLOBALIZATION AND EUROPEAN INTEGRATION**

The newest mechanisms of innovation development of the economy and its investment support are organizational and investment instruments, which are applicable for activating innovation and investment development of industrial enterprises. Domestic industrial enterprises are confronted more often with the problems of investing large and longer than small and short innovative investment projects aimed at bringing innovation products to the market, carrying out certain researches, and introducing innovative technologies. Alternatives for attracting funds to such projects for them is getting a loan from banks, searching for large investors, and attracting funds from venture funds. But in the Ukrainian realities, lending is financially worst for the enterprise by way of attracting investments: interest rates are high, policies are unstable, loan conditions are large for the borrower, and in case of failure of the project, its initiator may find itself in a situation of need to pay a large debt, which is growing rapidly due to fines for delay. Innovative investment instruments in the modern business environment are impact investing, crowd funding, crowd sourcing, and crowd investing.

The paradigm of the development of impact-investing is based on the fundamental provisions of the sphere of social entrepreneurship. Social entrepreneurship is an innovative activity, initially aimed at addressing or mitigating the social problems of society on the terms of self-sufficiency and sustainability. In fact, this is a business solution to the social problem that the social entrepreneur tries to solve; this is the starting point of his business. There is no problem – there is no social entrepreneur (and there is simply a business with elements of the criteria of social entrepreneurship or a social project without an entrepreneurial approach). Social entrepreneurship is a balance of social goals and a commercial component, where money is not the goal, but a means to achieve these social goals, allowing the entrepreneur to remain stable and independent of constant donor infusions.

It should also be interpreted social Entrepreneurship as a business whose purpose is to address social problems. The profits of social entrepreneurship are directed primarily at business development, community affairs, or addressing acute social problems. Social entrepreneurship is a system of management, the components of social enterprises. Social enterprises are socially oriented entrepreneurs, whose activities are aimed at achieving the welfare of territorial communities (social, environmental and ethical goals) through the use of systemic interconnection of the development of social entrepreneurship and the development of local economies.

The constituent components of social enterprise are social enterprises, owners or cofounders, which are non-governmental, non-profit, non-governmental organizations, such an enterprise operates under all business laws and makes a profit,

and therefore it is not considered a charitable organization. It covers such areas as education, environmental protection, poverty alleviation, the protection of human rights, etc.

Criterions of social entrepreneurship are: social mission; entrepreneurial approach; innovation (innovation in solving a social problem, a new combination of resources, a new service for the region); reliability; self-sufficiency and financial sustainability.

From the point of world history view, social entrepreneurship is a very young phenomenon. Over the ocean, it exists about 30 years, in Russia and Ukraine - less than a decade. Despite such a young age, social business already today ranks among the non-profit initiatives, charity, venture philanthropy and corporate social responsibility. According to the chosen research problem it is expedient to investigate the socio-economic nature of the impact-investing process. Impact investing is a new word, it is not only in the area of social entrepreneurship: this approach is innovative for the modern market as a whole. Today's practice of impact investment can not be called widespread or very extensive. Nevertheless, examples of this type of investment are currently present in America, Asia, and Russia.

In June 2013, a meeting took place in London, in the title of which there is a defining phrase "impact investing" – the trend and "mantra" of the current sphere of development financing. The level of the meeting is the forum of the G8 Social Impact Investment Forum. Within the framework of the meetings, the guests of the event talked about giving this direction of investment a generally accepted structure, standardizing its tools, and also trying to provide all kinds of support. Members of the Forum decided to create a number of working groups, besides the main driving force for the implementation of their efforts in life – the Social Impact Investment Taskforce. We suppose that the subject of impact investing is paid special attention in their publications by the European Commission, the OSCE and the World Economic Forum.

We will outline the main definitions of impact-investing, which most fully reveal its socio-economic essence:

- the formation of new models, technologies and standards to ensure the entry of "investors from developed countries" into "new areas (previously inaccessible) of third world countries";
- involvement of all stakeholders in the process of creating infrastructure and operating mechanisms in new zones and investment sites in order to solve social and economic problems;
- popularization, implementation, mediation, consulting, study of tools and models for the further development of a new class of investments. Governments, international organizations and others are involved (Mamut 2018).

The most important thing is the concept of impact investing: the pursuit of profit is compatible with the benefits for society, solving environmental problems and social justice.

It is obvious that social impact investing is more a general concept than a specific investment strategy. The main criterion here is the desire to invest in a project that can bring tangible social benefits, in addition to economic benefits. Nevertheless, this type of investment is far from examples of pure charity and follows the classical principles of investment project management, most often implemented in developing countries.

In 2012, the Global Impact Investment Network conducted a survey among 99 investors who identified themselves as impact investors. According to the results, their total investments reached 8 billion USD 2012 and were planned at 9 billion USD in 2013. More than half of the respondents stressed that they focus on average market rates of return in their investments, that is, they are far from excessive altruism. There are, however, also those who knowingly go to invest with a yield substantially below the market (Social Entrepreneurship, 2018).

The most important thing is the concept of impact investing: the pursuit of profit is compatible with the benefits for society, solving environmental problems and social justice.

There is comparative statistical information. According to the estimates of the Monitor Group, by 2020, global volumes of impact investing can reach a qualitatively different threshold – 500 billion USD. Investors provide funds in various forms – purchase of a share in the capital, provision of a loan, credit lines or loan guarantees. Recently, impact investments have been contrasted with traditional "philanthropic projects" and interstate development financing programs that look less predictable and are more likely to change the subjective considerations of their main donors.

It is advisable to propose economic and mathematical recommendations for assessing the effectiveness of impact-investing in the regional aspect. Several models have been used to identify whether a stock is mispriced. Stocks that undervalued should be purchased; stocks that are overpriced should be shorted - assuming that the manager is given authority by the client to short stocks. These models fall into two general categories: dividend discount models and factorized models.

Systematization of different Examples of Successful Impact Investing is shown in Table 3 (Statistical yearbook of Odessa area in 2015, 2016).

Table 3: Examples of Successful Impact Investing

<i>Examples of Impact Investing</i>	<i>Characteristics</i>
Trade Finance Loans	An investment fund based in the UK finances small developing companies from the trade sector in Latin America and Asia. The amount of investments reached almost 200 million USD, covering about 300 enterprises. According to the fund's estimates, over 98 % of loans were returned on time. For example, part of the funds was invested in the company Fair Trade – Ecuadorian cooperative, specializing in the production of organic coffee. The cooperative numbered 300 active members-farmers, who needed to finance operating expenses and purchase new equipment. These needs were covered by a trade finance loan. Additional revenue from Fair Trade was reinvested in landscaping, education, and the creation of public medical clinics in the community.
Budget accommodation	The Brazilian private investment fund manages assets of 75 million USD. Its investment policy focuses both on the average market rate of return and on investments in agricultural communities in South America, which make it possible to achieve tangible social returns. The Fund invested 4 million USD in the construction of affordable housing for low-income families in agricultural areas. Within this investment project, more than 10 000 homes were built in South America, mainly in areas affected by natural disasters.
Access to “clean energy”	The 150 million euro investment fund, based in Europe, makes investments of 2-10 million euro in companies supplying “clean energy” to the agricultural areas of developing countries, where access to energy infrastructure is limited. For example, the fund invested 2 million euro in a company supplying solar energy for lighting and cooling to Indian rural homes, schools and hospitals without access to electricity. Investment occurs through the acquisition of a stake in the capital of an Indian firm. The very same company, thanks to this investment, installed about 40 thousand systems.
Drinking water	Base of impact investing in India has been involved in microfinance for more than a decade. The base was managed to achieve a profitability level of 14 % per annum, after which the second direction was opened. Within the framework of this direction, the fund provides risk capital and support to enterprises at the initial stage

	from the sphere of agriculture, medicine, education and renewable energy. The average size of investments is 50 thousand USD. An example of such a project can serve as a company installing water purification systems in villages. The cleaning stations are owned by local communities, and the management company sells purified water to the villages at an affordable price. In addition, it trains local entrepreneurs and helps them develop their own business to supply water.
J.P. Morgan	J.P. Morgan has repeatedly stressed the importance of impact investing for its corporate mission. It chooses the course to receive investment returns in the social sphere and the sphere of environmental protection. So, by entering into an agreement with the African Agricultural Capital Fund, J.P. Morgan made an investment in Wilmar Flowers, a Kenyan flower exporter that purchases flowers from more than 3 000 suppliers – private Kenyan farmers. Based on J.P. Morgan's investments, Wilmar plans to expand the supplier base to 5 000 farmers by 2016. In general, J.P. Morgan's program of cooperation with the African Agricultural Capital Fund in the long term implies support for 250 000 farmers from all sorts of agricultural fields in East Africa.
Goldman Sachs	According to Alicia Glen, who is a head of the Goldman Sachs department for investing in urban infrastructure, for her company the idea of social impact investing is to increase the financing of public social services at the expense of private capital. Recently Goldman Sachs has invested in the funds of social impact of the order of 10 million USD within the limits of one of the financing programs of New York. These program aims reduce adolescent recidivism in a number of correctional facilities.

Source: systematized by the author.

In this article, author focuses on how to determine the fair value or theoretical price of an equity option. The model for doing so is more complicated than the model for determining the fair value of a futures contract. The performance of a stock index option position can be replicated using stock index futures. Such strategies are called *option replication strategies*, the most popular being portfolio insurance. We discuss option replication strategies, the motivation for institutional investors using such strategies, and the associated risks.

We are interesting in researching the *Put-Call Parity Relationship* (Hilorme et al. 2018). There is a relationship between the price of a call option and the price of a put option on the same underlying instrument with the same strike prices and the same expiration dates. It can be shown that the put-call parity relationship for an option where the underlying stock makes cash dividends is:

$$\text{Put option price} - \text{call option price} = \text{present value of strike price} + \text{present value of dividends} - \text{price of underlying stock} \quad (4)$$

This relationship is actually the put-call parity relationship for European options; it is approximately true for American options. If this relationship does not hold, arbitrage opportunities exist. Portfolios consisting of long and short positions in the stock and related options that provide an extra return with certainty will exist.

The next, we present *Option Pricing Models*. Theoretical boundary conditions for the price of an option also can be derived using arbitrage arguments. For example, it can be shown that the minimum price for an American call option is its intrinsic value; that is:

$$\text{Call option price} \geq \max [0, (\text{price of stock} - \text{strike price})] \quad (5)$$

This expression says that the call option price will be greater than or equal to either the difference between the price of the underlying stock and the strike price or zero, whichever is higher. The boundary conditions can be “tightened” by using arbitrage arguments coupled with certain assumptions about the cash distribution of the stock. The extreme case is an option pricing model that uses a set of assumptions to derive a single price, rather than a range. As we shall see below, deriving a theoretical option price is much more complicated than deriving a theoretical futures price because the option price depends on the expected price volatility of the underlying stock over the life of the option.

Several models have been developed to determine the theoretical value of an option. The most popular one was developed by Fischer Black and Myron Scholes in 1973 for valuing European call options. Fischer Black explains how he and Myron Scholes came up with the formula for the option pricing model.) In October 1997, Myron Scholes and Robert Merton, were awarded the Alfred Nobel Prize in Economic Science for their work. Fischer Black died in 1996 and under the rules of the Nobel Committee could not be awarded this prestigious honour. However, the Nobel Committee made it dear he would have been a co-recipient.

Several modifications to the Black-Scholes model have followed since then. Another pricing model that overcomes some of the drawbacks of the Black-Scholes

option pricing model is the binomial option pricing model. Basically, the idea behind the arbitrage argument in deriving these option pricing models is that if the payoff from owning a call option can be replicated by (1) purchasing the stock underlying the call option and (2) borrowing funds, then the price of the option will be (at most) the cost of creating the replicating strategy.

We recommend using *Black-Scholes Option Pricing Model*. Arbitrage conditions provide boundaries for option prices; but to identify investment opportunities and construct portfolios to satisfy their investment objectives, investors want an exact price for an option. By imposing certain assumptions and using arbitrage arguments, the Black-Scholes option pricing model computes the fair (or theoretical) price of a European call option on a non-dividend-paying stock with the following formula:

$$C = SN(d_1) - X e^{-rt} N(d_2), \quad (6)$$

$$d_1 = \frac{\ln(S/X) + (r + 0.5s^2)t}{s\sqrt{t}}, \quad (7)$$

$$d_2 = d_1 - s\sqrt{t}, \quad (8)$$

where  $\ln$  is natural logarithm,  $C$  represents call option price,  $S$  is current stock price,  $X$  is strike price,  $r$  is short-term risk-free interest rate,  $e$  is natural antilog of 1 (2.718),  $t$  is time remaining to the expiration date (measured as a fraction of a year),  $s$  is standard deviation of the stock price, and  $N$  equals to the cumulative probability density. The value for  $N$  is obtained from a normal distribution function that is tabulated in most statistic textbooks (Fabozzi, 2008).

## 6 STRUCTURING A PORTFOLIO TO SATISFY MULTIPLE LIABILITIES

The next step is a study the *structuring a portfolio to satisfy multiple liabilities*. For pension funds, multiple liabilities must be satisfied – payments to the beneficiaries of the pension. A stream of liabilities must also be satisfied for a life insurance company that sells an insurance policy requiring multiple payments to policyholders, such as an annuity policy. Two strategies can be used to satisfy a liability stream: (1) multiperiod immunization and (2) cash flow matching.

*Multiperiod immunization* is a portfolio strategy in which a portfolio is created that will be capable of satisfying more than one predetermined future liability regardless if interest rates change. Even if there is a parallel shift in the yield curve, Bierwag, Kaufman, and Toevs demonstrate that matching the duration of the portfolio to the duration of the liabilities is not a sufficient condition to immunize a portfolio seeking to satisfy a liability stream. Instead, it is necessary to decompose the portfolio

payment stream in such a way that each liability is immunized by one of the component streams. The key to understanding this approach is recognizing that the payment stream on the portfolio, not the portfolio itself, must be divided in this manner. There may be no actual bonds that would give the component payment stream.

In the special case of a parallel shift of the yield curve, Fong and Vasicek demonstrate the necessary and sufficient conditions that must be satisfied to assure the immunization of multiple liabilities:

1. The portfolio's duration must equal the duration of the liabilities.
2. The distribution of durations of individual portfolio assets must have a wider range than the distribution of the liabilities.
3. The present value of the cash flows from the bond portfolio must equal the present value of the liability stream.

However, these conditions will immunize only in the case of a parallel shift in the yield curve. To cope with the problem of failure to immunize because of nonparallel shifts in the yield curve, Fong and Vasicek (Casidy 2013) generalize the immunization risk measure for a single liability discussed earlier. An optimal immunization strategy is to minimize this immunization risk; measure subject to the three constraints above (duration, dispersion of assets and liabilities, and equality of present value of asset cash flows and liability stream), as well as any other constraints that a client may impose.

Reitano (Pearce 2013) has explored the limitations of the parallel shift assumption. Reitano has also developed models that generalize the immunization of multiple liabilities to arbitrary yield curve shifts. His research makes it clear that classical multiperiod immunization can disguise the risks associated with nonparallel yield curve shifts, and that a model that protects against one type of yield curve shift may allow a great deal of exposure and vulnerability to other types of shifts.

An alternative to multiperiod immunization is *cash flow matching*. This approach, also referred to as dedicating a portfolio, can be summarized as follows. A bond is selected with a maturity that matches the last liability stream. An amount of principal plus final coupon equal to the amount of the last liability stream is then invested in this bond. The remaining elements of the liability stream are then reduced by the coupon payments on this bond, and another bond is chosen for the new, reduced amount of the next-to-last liability. Going backward in time, this cash flow matching process is continued until all liabilities have been matched by the payment of the securities in the portfolio.

Figure 1 provides a simple illustration of this process for a 5-year liability stream. Mathematical programming techniques can be employed to construct a least-

cost cash flow matching portfolio from an acceptable universe of bonds. As with immunization, there are constraints imposed when constructing a cash low-matched portfolio.

In practice, cash-flow-matching portfolios are subject to a variety of constraints imposed by both the logic of the problem and the degree of conservatism sought by the fund sponsor. These constraints relate to call vulnerability, quality, type of issuer, diversification across type and individual issuer, and the utilization of holdings from preexisting portfolios, among other things.

The call prepayment vulnerability of specific bonds or mortgage-backed securities – whether for refunding, sinking fund or other purposes – is an important concern for any portfolio designed to provide a prescribed cash flow. The problem can be avoided by purchasing only noncallable securities. Such a prohibition would rule out many higher-yielding securities, however. A more practical approach is to accept fixed income securities that have coupons low enough that the prospect of a refunding call or mortgage prepayment is either improbable or productive in terms of windfall gain as to assure adequate reinvestment income.

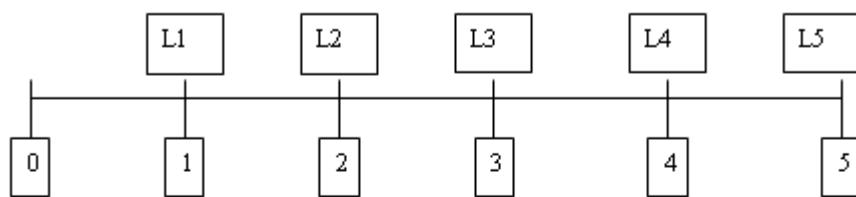
Similarly, the ultimate in credit quality would be a portfolio consisting of all U.S. Treasury securities. Again, this would prove to be expensive. In most cases, corporate securities of different qualities are acceptable, provided the mixture is appropriately diversified across industries and issuers.

Another important constraint relates to preexisting bond portfolios. In many cases, a fund sponsor may wish to construct cash-flow-matching portfolios using as many existing holdings as possible. This may reduce the new cash required to establish the matching portfolio, reduce transaction costs, and avoid problems associated with the recognition of realized gains or losses in the existing portfolio. The specific structure, aberrations and peculiarities of the marketplace at a given time will have a huge impact on the optimal cash-matched portfolio. The key is to apply the most modern computer optimization techniques to the broadest possible universe of truly available bonds identified with their truly available prices.

The differences between the cash flow matching and multiperiod immunization strategies should be understood. First, unlike the immunization approach, the cash low matching approach has no duration requirements. Second, with immunization, rebalancing is required even if interest rates do not change. In contrast, no rebalancing is necessary for cash flow matching except to delete and replace any issue whose quality rating has declined below an acceptable level. Third, there is no risk that the liabilities will not be satisfied with a cash flow portfolio. For a portfolio constructed using multiperiod immunization, there is immunization risk due to reinvestment risk.

Figure 1: Illustration of cash flow – matching process

Assume: 5-year liability stream  
Cash flow from bonds is annual

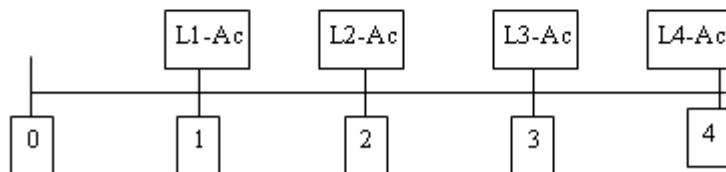


Step 1: Cash flow from bond A selected to satisfy L5

$$\text{Coupons} = A_c; \text{Principal} = A_p \text{ and } A_c + A_p = L5$$

Unfunded liabilities remaining:

*Unfunded\_Liability/Time*



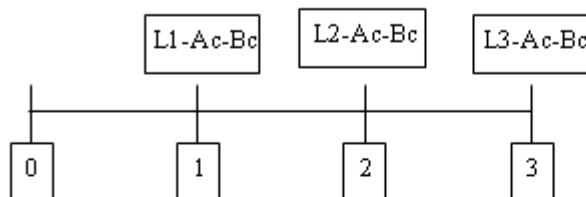
Step 2: Cash flow from bond B selected to satisfy L4

$$\text{Unfunded_liability} = L4 - A_c$$

$$\text{Coupons} = B_c; \text{Principal} = B_p \text{ and } B_c + B_p = L4 - A_c$$

Unfunded liabilities remaining:

*Unfunded\_Liability/Time*



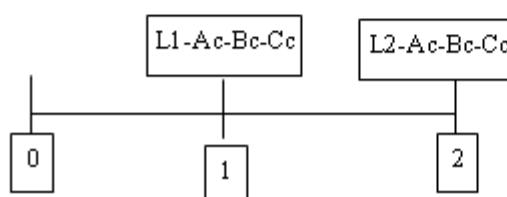
Step 3: Cash flow from bond C selected to satisfy L3

$$\text{Unfunded_liability} = L3 - A_c - B_c$$

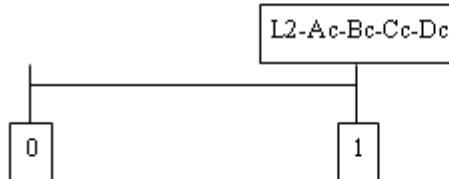
$$\text{Coupons} = C_c; \text{Principal} = C_p \text{ and } C_c + C_p = L3 - A_c - B_c$$

Unfunded liabilities remaining:

*Unfunded\_Liability/Time*



Step 4: Cash flow from bond D selected to satisfy L2  
 $Unfunded\_liability = L3 - Ac - Bc - Cc$   
 $Coupons = Dc ; Principal = Dp \text{ and } Dc + Dp = L2 - Ac - Bc - Cc$   
 Unfunded liabilities remaining:



Step 5: Select bond E with a cash flow of  
 $L1 - Ac - Bc - Cc - Dc$

Source: processed by author.

The differences just cited may seem to favor the use of cash flow matching. However, what we have ignored is the relative cost of the two strategies. Using the cost of the initial portfolio as an evaluation measure, Fong (Pearce 2013) has found that cash flow-matched portfolios, using a universe of corporate bonds rated *M*, least double A, cost from 3 % to 7 % more in dollar terms than multiperiod immunized portfolios.

Nowadays, the mechanism of cash flow is more expensive. This means that more funds must be set aside to match the liabilities. Optimization techniques used to design cash flow-matched portfolios assume that excess funds are reinvested at a conservative reinvestment rate. With multiperiod immunization, all reinvestment returns are assumed to be locked in at a higher target rate of return. Therefore, money managers face a trade-off in deciding between the two strategies: avoidance of the risk of not satisfying the liability stream under cash flow matching versus the lower cost attainable with multiperiod immunization.

A popular variation of multiperiod immunization and cash flow matching to fund liabilities is one that combines the two strategies. This strategy, referred to as combination matching or horizon matching, creates a portfolio that is duration-matched with the added constraint that it be cash-matched in the first few years, usually 5 years. The advantage of combination matching over multiperiod immunization is that liquidity needs are provided for in the initial cash flow-matched period. Cash flow matching the initial portion of the liability stream reduces the risk associated with nonparallel shifts of the yield curve. The disadvantage of combination matching over multiperiod immunization is that the cost is slightly greater.

Within the immunization and dedicated cash flow strategies, some portfolio managers are permitted to manage the portfolio actively by entering into bond swaps to

enhance portfolio performance. Obviously, only small bets can be made in order to minimize the likelihood that the liability payments will not be satisfied.

Liabilities may be uncertain with respect to both timing and amount of payment. We assume, moreover, that the cash flows from the assets are known with certainty, although you have learned that most non-Treasury securities have embedded options that permit the borrower or the investor to alter the cash flows. Thus, the models presented in this chapter are referred to as *deterministic models*, because they assume that the liability payments and the asset cash flows are known with certainty.

Since the mid-1980s, a good number of models have been developed to describe real-world situations. Such models are called *stochastic models* that require *portfolio manager incorporate interest rate model*. Optimal portfolios are solved for using a mathematical programming technique known as *stochastic programming*.

The complexity of stochastic models, however, has limited their application practice. Nevertheless, they are gaining in popularity as more portfolio managers become comfortable with their sophistication. There is increasing awareness that stochastic models reduce the likelihood that the liability objective will not be satisfied, and that transaction costs can be reduced through less frequent rebalancing a portfolio derived from these models.

In our discussion of contingent immunization, the money manager is permitted to actively manage the portfolio until the safety net is violated. However, contingent minimization is not a combination or mixture strategy. The money manager is either in the immunization mode (by choice or because the safety net is violated) or in the active management mode. In contrast to an immunization strategy, an active immunization combination strategy is a mixture of two strategies that are pursued by the money manager at the same time.

The immunization component of this strategy could be either a single-liability immunization or a multiple-liability immunization using the techniques discussed earlier in this chapter. In the single-liability immunization case, an assured return would be established so as to serve to stabilize the portfolio's total return. In the multiple-liability immunization case, the component to be immunized would be immunized now, with new requirements, as they become known, taken care of through reimmunization. This would be an adaptive strategy in that the immunization component would be based on an initial set of liabilities and modified over time to changes in future liabilities (e.g., for actuarial changes for the liabilities in the case of a pension fund). The active portion would continue to be free to maximize expected return, given some acceptable risk level.

The following formula, suggested by Fong (Pearce 2013), can be used to determine the portion of the initial portfolio to be actively managed, with the balance immunized:

$$Active\ comp. = \frac{immunization\_target\_rate - minimum\_return\_established\_by\_client}{immunization\_target\_rate - expected\_worst\_case\_active\_return} \quad (9)$$

In the formula, it is assumed that the immunization target return is greater than either the minimum return established by the client or the expected worst case return from the actively managed portion of the portfolio.

As an illustration, assume that the available immunization target return is 7 % per year, the minimum return acceptable to the client is 5 %, and the expected worst case return for the actively managed portion of the portfolio is 2 %. Then the percentage in the active portion of the portfolio would be:

$$Active\_component = \frac{0.07 - 0.05}{0.07 - 0.02} = 0.40 \text{ or } 40\% \quad (10)$$

Notice from the formula for determining the active component that for any given immunization target return, the smaller the minimum acceptable return to the client and the larger the expected worst case active return, the larger the percentage allocated to active management. Since the return values in the formula change over time, the money manager must monitor these values constantly, adjusting and rebalancing the allocation between the immunized and active components as appropriate. As long as the worst case scenario is not violated – that is, as long as the actual return experienced does not drop below the expected worst case active return – the minimum return for the portfolio established by the client will be achieved.

This article has demonstrated liability funding strategies that involve designing a portfolio to produce sufficient funds to satisfy liabilities whether or not interest rates change. When only one future liability is to be funded, an immunization strategy can be used. An immunization strategy is designed so that as interest rates change, interest rate risk and reinvestment risk will offset each other in such a way that the minimum accumulated value (or minimum rate of return) becomes the target accumulated value (or target yield). An immunization strategy requires that a money manager create a bond portfolio with duration equal to the investment horizon. Because immunization theory is based on parallel shifts in the yield curve, the risk is that a portfolio will not be immunized even if the duration-matching condition is satisfied. Immunization risk can be quantified so that a portfolio that minimizes this risk can be constructed.

When multiple liabilities are to be satisfied, either multiperiod immunization or cash flow matching can be used. Multiperiod immunization is a duration-matching strategy that exposes the portfolio to immunization risk. The cash flow-matching strategy does not impose any duration requirement. While the only risk that the liabilities will not be satisfied is that issues will be called or will default, the dollar cost of a cash flow-matched portfolio may be higher than that of a portfolio constructed using a multiperiod immunization strategy.

Liability funding strategies where the liability payments and the asset cash flows are known with certainty are deterministic models. In a stochastic model, either the liability payments or the asset cash flows, or both, are uncertain. Stochastic models require specification of a probability distribution for the process that generates interest rates.

A combination of active and immunization strategies can be pursued. Allocation of the portion of the portfolio to be actively managed is based on the immunization target rate, the minimum return acceptable to the client, and the expected worst case return from the actively managed portfolio. In a contingent immunization strategy, a money manager is either actively managing the portfolio or immunizing it. Since both strategies are not pursued at the same time, contingent immunization is not a combination or mixture strategy.

## 7 RESULTS

Practical aspects of this work are concerned with study of investment sector of enterprises in Odessa region. In this regard, statistical data concerning investment potential and enterprise activity on the market are examined below. Table 4 presents data on dynamics of capital investment amount in Odessa during 2002-2017. Generally speaking, amount of direct investments is constantly increasing over the years. As a reminder, financing of innovation activity was affected mostly at the expense of enterprises (see Table 4).

Table 4: Capital Investment in Odessa Region (2002-2017)

Year	<i>The amount of capital in actual prices, mln. UAH</i>	<i>Chain indices dynamics</i>		<i>Capital investments for 1 person in the region (in actual prices, UAH)</i>	<i>Chain indices dynamics</i>	
		<i>absolute growth, mln. UAH</i>	<i>growth rate, %</i>		<i>absolute growth, mln. UAH</i>	<i>growth rate, %</i>
2002	3062	...	...	543,2	...	...
2005	6112	3050	99,6	2149,4	1606,2	295,7
2008	14666	8554	140	5240,2	3090,8	143,8
2009	12772	-1894	-12,9	4183,7	-1056,5	-20,2
2010	9724	-3048	-23,9	4087,7	-96	-2,3
2011	9347,3	-376,7	-3,9	3931,7	-156	-3,8
2012	14631	5283,7	56,5	6145,7	2214	56,3
2013	11872	-2759	-18,9	4978,3	-1167,4	-19
2014	9361	-2511	-21,2	3924,4	-1053,9	-21,2
2015	11872	-2759	-18,9	4978,3	-1167,4	-19,0
2016	14256,2	2384,2	20,1	5993,4	1015,1	20,4
2017	20022,7	5766,5	40,4	8402,0	2408,6	40,2

Source: calculated by author.

The economic and statistical analysis of investment activity in the regional context acts as a practical side of the work. Total investment (equity and debt instruments) from foreign direct investors on December 31, 2017 amounted to 1,843.6 million USD. United States, including the level of investment in the authorized capital (equity) amounted to 1,629.5 million USD (Statistical yearbook of Odessa area in 2015, 2016). Consideration should also be given to *investment relations of enterprises* in Odessa region with the countries of the world.

In addition to this, calculations show that only in 2012 a real increase of the level of capital investments is observed to region economy (increasing by 56,5 % according to data in Table 2) in 2009-2011 and the similar growth situation can be traced for the last 2016-2017; in 2013-2015 is observed decrease of the level of the rating in view of deflationary function. In general, unstable dynamics can be traced.

## 8 CONCLUSION

Integration of knowledge from strategic, innovative and investment management, as well as the obligatory availability of the ability to put you in different positions according to the “consultant-theoretician-expert-client” scheme, is the most important new competence of the managerial staff that will carry out the strategy. It is

actualized as the ability: a) to develop the theory, to participate in the theoretical search, which is responsible for: scientific substantiation of innovation-investment development and its components, methods, tools, etc., and the introduction of theoretical innovations in the strategic development of experts and consultants through seminars and resolving problem crises; b) to combine the positions of the theorist, expert, analyst, organizer and develop a certain strategy of strategy. He discusses theoretical approaches, promotes new knowledge, new approaches, new strategic steps – both publicly and publicly – for their use as effective solutions. Consultants using the products of analysts and experts directly communicate with the client, deal with his old knowledge, and promote new knowledge in direct communication and in the form of applied strategic steps for the client's activities. The consultant activity has a public and non-public client component; c) to obtain new knowledge from the real object on the results of the analysis of the experience of other enterprises and provide recommendations. In the strategic area of innovation and investment development, experts study the reality, the goals of competitors, the consistency of different goals; offer their variants of strategy of activating innovation-investment development in general or its components, own tools and methods; d) to search and justify the connection of the trends and processes of the object, to build models, to develop scenarios and to make forecasts; e) to organize client-service activity of analysts, experts and consultants within the framework of separate innovation-investment projects and in general. Main task consist of the organization of round tables, internal seminars, PR-actions, etc.; f) to establish means of communication, to check the state of administration techniques. Integration of these positions takes place at the level of professional tasks and corresponding competencies.

Investment Controlling is a system of methods and tools with main vector for supporting investment management, covering information provision, planning, coordination, control and internal consulting. Accordingly, the main objective of investment control is to ensure the development of management decisions in the area of investment activity of the enterprise in order to achieve the best strategic goals. In the framework of this goal, tasks that can be grouped according to the phases of the investment process must be solved.

Thus, creating an investment control system in international business, we should first of all look for structure of any company. The studies conducted suggest that the economic transformations taking place in the Ukrainian economy create conditions for the development of enterprises on an international scale on the basis of investment control.

The process of planning is a very important component management, since it is the planning that is the fundamental basis for the future development of both the enterprise as a whole, and the sphere of foreign economic activity in particular. The

first concern in the implementation of business strategy is to translate that strategy into action throughout the organization. Short-term objectives are derived from long-term objectives, which are then translated into current actions and targets. They differ from long-term objectives in time frame, specificity, and measurement. To be effective in strategy implementation, they must be integrated and coordinated. They also must be consistent, measurable, and prioritized. Functional tactics are derived from the business strategy. They identify the specific, immediate actions that must be taken in key functional areas to implement the business strategy. Implementation of the strategic planning process requires the availability of qualified and competent specialists who will be engaged in its implementation, that is, it is necessary: to create an appropriate management structure; to develop rules for its functioning; to select and motivate staff; organize information support.

Impact investing is a new concept and paradigm of the world economy, effectively operating today, supported by most developed countries of the world. In pursuit of profit, it was decided not to pay much attention to the value categories. However, life put everything in its place. When the infinite growth is impossible, and the crisis follows the crisis, it's time to reconsider the foundations that existed more than 300 years, towards helping humanity and the value ideals of social justice. No matter how pathetic this may sound, the concept works and bears fruit. Thus, transforming investment or Impact-investing is, in fact, an investment whose main task is not to extract profit, but to achieve a certain effect of social impact. That is, the business plan, which is part of the investment declaration, should clearly reflect the social goals that are planned to be achieved. Impact-investment is closely correlated with the notion of social business itself. And if social business is a business with social goals, then the obvious question arises: what do people who finance it achieve? They just want to get a small income or to support the achievement of the goals for which the social business is working? (Karpenko 2018).

Author believes that impact investing is an actual tool of investment in the future. This raises the question of whether such investments should remain a special case of traditional investment or it is necessary that impact-investment becomes a kind of global trend into which, as a particular case, ordinary commercial investments enter. That is, the process of investment is transformed through a social mission and contributes to the creation of a "social capitalism" formation. Impact investment is quite popular in the world today. In West countries this field is rather well developed (Switzerland, Italy, Austria). In Russia and in Ukraine, this story exists rather as an assumption than a fact. We will single out the main direction of stimulating the development of the sphere of impact-investment – the formation of a standard of transforming investments that will determine the content of the social investment

agreement. The norm of the standard is the primacy of the social impact objectives before the income that the investor receives.

Social entrepreneurs prefer grants without debt. World practice shows that a business that can only live on grants is not business. And he has no long-term impact. The role of social business is growing. It is necessary to form an understanding that it is necessary to focus not on grants. At the starting point certain grants have an advantages, however, generate dependence on particular type of grant. At the end, this study provides the analytical basis of the integrated management analysis of investment activities of domestic enterprises in a competitive environment, to determine the investment potential of the industry by means of using predictive validity.

This article has demonstrated liability funding strategies that involve designing a portfolio to produce sufficient funds to satisfy liabilities whether or not interest rates change. When only one future liability is to be funded, an immunization strategy can be used. An immunization strategy is designed so that as interest rates change, interest rate risk and reinvestment risk will offset each other in such a way that the minimum accumulated value (or minimum rate of return) becomes the target accumulated value (or target yield). An immunization strategy requires that a money manager create a bond portfolio with duration equal to the investment horizon. Because immunization theory is based on parallel shifts in the yield curve, the risk is that a portfolio will not be immunized even if the duration-matching condition is satisfied. Immunization risk can be quantified so that a portfolio that minimizes this risk can be constructed.

When multiple liabilities are to be satisfied, either multiperiod immunization or cash flow matching can be used. Multiperiod immunization is a duration-matching strategy that exposes the portfolio to immunization risk. The cash flow-matching strategy does not impose any duration requirement. While the only risk that the liabilities will not be satisfied is that issues will be called or will default, the dollar cost of a cash flow-matched portfolio may be higher than that of a portfolio constructed using a multiperiod immunization strategy.

Liability funding strategies where the liability payments and the asset cash flows are known with certainty are deterministic models. In a stochastic model, either the liability payments or the asset cash flows, or both, are uncertain. Stochastic models require specification of a probability distribution for the process that generates interest rates.

A combination of active and immunization strategies can be pursued. Allocation of the portion of the portfolio to be actively managed is based on the immunization target rate, the minimum return acceptable to the client, and the expected worst case return from the actively managed portfolio. In a contingent

immunization strategy, a money manager is either actively managing the portfolio or immunizing it. Since both strategies are not pursued at the same time, contingent immunization is not a combination or mix of strategy.

## REFERENCES:

1. CASIDY R. (2014): Linking Brand Orientation with Service Quality, Satisfaction, and Positive Word-of-Mouth: Evidence from the Higher Education Sector In: *Journal of Nonprofit and Public Sector Marketing*, 2014, 26, 2, pp. 142–161.
2. DOBROWOLSKIY, E. – KARABANOV, B. – BOROVKOV, P. (2011): *Budgeting: step by step*. 2nd ed. St. Petersburg: Optionalp, 2011. 480 p.
3. ELTON, E.J. – GRUBER, M.J. (2014): *Modern Portfolio Theory and Investment Analysis*. 7-th ed. New York: New York University, 2014. 728 p.
4. FABOZZI, F.J. (2008): *Investment management*. New Jersey: Prentice Hall, 2008. 837 p.
5. HILORME, T. (2018): Innovative methods of performance evaluation of energy efficiency projects. In: *Academy of Strategic Management Journal*, 2018, 17, 2.
6. HILORME, T. et al. (2018). Innovative model of enterprises personnel incentives evaluation. In: *Academy of Strategic Management Journal*, 2018, 17, 3, pp. 1-6.
7. ILYSHEVA, N. – KRYLOVA, S. (2014): *Accounting, Analysis and Strategic Management of Innovation Activity*. Moscow: Finances & Statistics, 2014. 216 p.
8. KARPENKO, L.(2018): Base alternatives and the paradigm of impact investing development in the coordinates of globalization changes and euro integration. In: *Proceedings of the 4th International Conference on European Integration 2018*. Ostrava: VSB Technical University of Ostrava, 2018, pp.659-668. ISBN 978-80-248-4169-4.
9. KARPENKO, L.M. (2016): Strategic competitive analysis of innovative enterprises development: predictive validity. In: *Actual problems of the economy*, 2016, 180, 6, pp. 392-404.
10. KARPENKO, L.N. (2015): Multi-index models and methodological base for innovative and investment analysis of enterprises. In: *Institutional framework for the functioning of the economy in the context of transformation: Collection of scientific articles*. Montreal, 2015. pp. 287-292. ISBN 978-1-926711-20-8.
11. KOVAROVA, E. (2016): Value and Commodity Structure of the West Africa's Exports to the European Union. In *Proceeding of the 3rd International Conference on European Intergration 2016*. Ostrava: VSB-

- Technical University of Ostrava, 2016, pp. 480-488. ISBN 978-80-248-3911-0.
12. LIPKOVA, L. (2012): Innovation Policy of the European Union. In: *Proceeding of the 1<sup>st</sup> International Conference on European Integration 2012*. Ostrava: VSB-Technical University of Ostrava, 2012, pp. 171-178. ISBN 978-80-248-2685-1.
  13. MAMUT, M.V. (2018): Impact-investment as a new pattern: [Online.]. [Cited 28.02.2018]. Available at: <[http://www.nbs-forum.ru/social/social\\_investing/impact-investirovanie-patern.html](http://www.nbs-forum.ru/social/social_investing/impact-investirovanie-patern.html)>.
  14. PEARCE, J.A. (2013): *Strategic management: formulation, implementation and control*. 8th ed. Publications Office of the McGraw-Hill Companies. ISBN 0-07-248846-8.
  15. STANICKOVA, M. (2012): Assessment of Efficiency in Selected EU Member States by Data Envelopment Analysis Models. In: *Proceeding of the 1<sup>st</sup> International Conference on European Integration 2012*. Ostrava: VSB-Technical University of Ostrava, 2012, pp. 303-314. ISBN 978-80-248-2685-1.