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Methods of optimization and case frame by cash flows at the enterprise

Annotation. There are certain conceptual approaches in relation to strategic development of investment activity of enterprises at regional level in article, considered methods of optimization of money streams, analyzed case frames by money facilities of foreign authors with the purpose of application of them in practice domestic enterprises, their failings and advantages are exposed, that gives possibility to estimate the investment attractiveness of projects, and also make financial decisions on the management by the current cycle of enterprise.

Keywords: method, model, enterprise, investment decisions, cash flow, investment sector, optimization, budget, effective budgeting system, model of optimal order size.

I. Introduction. Efficient activity of the companies is one of the main conditions of high rates of economic growth. From this point of view the analysis of financial and investment decisions of enterprises is particularly important because the value and dynamics of industrial production and GDP depends on the choice of areas of investments and their effectiveness. Also, the effectiveness of businesses in a market economy is determined by the state of their finances, which leads to the need to examine the problems of financial management, financial interdependence and investment strategies of enterprises [1, p.58].

Foreign investment is a form of foreign economic activity, which contributes to macroeconomic policies. Attracting foreign investment is essential benefits and impact on improving economic stability and development of the region. Economic growth depends on the level of the investment policy, which consists of system measures, which predetermine volumes and investment patterns in economic

development of region. The attractiveness of investors depends on an investment climate, political and economic stability, state guarantees, developed fund market and system of insurance, presence of the developed national banking system of country.

Need to learn the methodological bases of investment activities of enterprises, the practical application of the specific application guidelines to optimize cash flow and efficiency of selected investment decisions led to range of problems of research and the relevance of this work.

Theoretical and practical aspects of investments with varying degrees of completeness considered in the works of many local and foreign economists Abalkyna L., R. Alexander, I.Anykina, V.Bocharova, I.Blanka, I.Boyarko, V. Hriniov, L.Hrytsenko , A.Hukova, L. Igonin, V. Kovalev, M. Limitovskoho, L. Kruszwica, O.Suhareva, S.Shmanova, O.Redkina, N. Khrushch, A. Peresada, J. Bailey, W. Sharpe and others. The authors unanimously claim that implementation of investment stimulates qualitative transformation in production, which in turn is the impetus for these changes to achieve perfection.

Highlighting of before unsolved aspects of general problem. Thus, issues of investment flows at the enterprise, financial and credit provision of innovation and investment activities are carried on by leading economists. It should be noted that much attention is paid to the problems of investment processes at the level of the economy and individual industries. But at the present stage of development of Ukraine's economy there is a need for continuous improvement of strategic directions of the investment sector at the regional and interregional levels. The international experience accumulated many methods and techniques of innovation and investment analysis, but their use in domestic terms is a problem, because they themselves are in need of further improvement. The author believes that attention should be paid to the analysis of optimization methods and models of cash management at the enterprise; to research of strategic directions of development of investment activity and forming of mechanisms of management at the level of concrete enterprises, taking into account their characteristics, which should be based on large-scale involved and most-effective use of financial resources from diverse sources of income. The

improvement of the policy of attraction of foreign investors is related with the solution of certain problems.

II. Raising of task. The aim of the work is the systematization of the theoretical and methodological foundations of financial management and investment companies, the practical aspects of their application in the enterprise. In the article the methods for optimizing cash flows is examined, models of the cash flow management of foreign authors are analyzed concerning the domestic economy, revealed their advantages and disadvantages, which allows us to evaluate the investment attractiveness of enterprises and adopt a financial management solution to the current cycle management of the company.

Object of research is optimization methods and models for cash management and investment banking, depending on the type of investment.

III. Results. Choosing the most rational forms of governance and regulation of the amount of time and space (for branches and business units - TSFV), based on the conditions and characteristics of economic activity of the enterprise, contributes to cash flow optimization. The basic tasks of cash flow optimization are:

- to ensure a balance of receipts and payments during the year;
- to achieve synchrony of income and expenditure in time and space;
- to ensure increase in net cash flow of the enterprise (reserve money personality) during the forecast period [2, p.164].

The key optimization objects are: a positive (negative) cash flow, cash balance at the end of the estimated (forecast) period, the net cash flow (reserve money).

The results of economic activity negatively affect both deficient and excess cash flows. The negative consequences of deficit cash flow show up in reducing the overall solvency and liquidity of the balance sheet. Its characteristics are the growth of overdue payables on trade and financial transactions:

- increase of duration of operating and financial cycles;
- decrease in profitability of assets and equity;
- forced sale of fixed assets;
- missed opportunity of profit earning.

The negative consequences of excess cash flow are expressed in:

- loss of real value of temporarily free funds through the influence of the inflationary factor;
- loss of potential income from the unused part of funds in the short-term investment;
- reduce ultimately of profitability of assets and equity.

How to optimize scarce (negative) cash flow depend on time of its occurrence - short or long term period [3, p. 38-41].

Deficit cash flow balance in the short time interval is achieved by acceleration of raising funds and slowing their spending (payments). Thus, the speed of raising funds in the short term period is possible at the expense of:

- full prepayment for sold products which are in high demand among consumers;
- reduction of the period of commercial loan to buyers of goods;
- use of modern forms of refinancing of debts receivables (bill discounting and security of bills, factoring, forfeiting) etc.

The deceleration of payments funds in the short term period is achieved through:

- increase in terms of the manufacturer commercial loan in coordination with suppliers;
- purchase of fixed assets that require renewals on their financial lease (leasing);
- restructuring of loan portfolio companies through transfer of short-term loans into long-term ones and so on.

The increase in positive cash flow in the long run can be achieved through:

- attracting long-term bank loans;
- sale of part or all of the financial assets included in investment (stock) portfolio;
- sale (or lease) of uncommitted fixed assets;
- sale of unfinished objects that appear in the incomplete construction to potential investors;
- additional share issue for joint stock companies;

- attracting of strategic investors to increase share capital.

The decrease amount of deficit cash flow in the long run can be achieved through:

- rejection of the implementation of new projects included in the investment program of the company;
- preservation of assets of the incomplete construction;
- rejection of the long-term financial investments;
- reduction in the value of the fixed costs..

The means of excess cash flow optimization are connected with ensuring the growth of investment activity of the enterprise. These methods include:

- growth in capital investments allocated for the renewal of fixed capital;
- acceleration period of design and construction of productive facilities;
- taking measures on diversify of its products and target markets;
- expansion of investment portfolio;
- advanced repayment of long-term loans (but with coordination with banks).

The balance of the cash flows of the company in time and space (with its business units - TSFV) occupies an important place in the system of measures for their improvement. The discrepancy between the costs and funds receipts in certain periods of the year creates for the company additional financial difficulties. Because of sufficiently high duration of such periods there is a real threat of losing financial stability and even bankruptcy of the enterprise.

The final stage of optimization is to create conditions to maximize the net cash flow (cash reserve), which provides increase of rates of economic development of the enterprise, primarily from domestic sources of financing (net profit and amortization).

The increase in net cash flow can be achieved by the following measures:

- reduction of the proportion of variable costs in the price of the goods;
- reduction of absolute amount of fixed costs;
- carrying out a rational tax policy that reduces the value of total tax payments;
- implementation of flexible pricing policy focused on price leader;

- use of the ways of accelerated depreciation of fixed assets;
- strengthening of claims work with contractors to ensure the full and timely collection of fines [4, p.77].

The results of optimization of cash flows are reflected in the cash flow budget, which is composed over the coming period (month, quarter).

The consideration models of models of cash management by American economists and their application in practice of domestic enterprises appears as the next step of the research. For the cash management Baumol's model and Miller-Orr's model are used [5, p.81-87].

The initial type of Baumol's model (model of optimal order size) is demonstrated in Fig. 1.

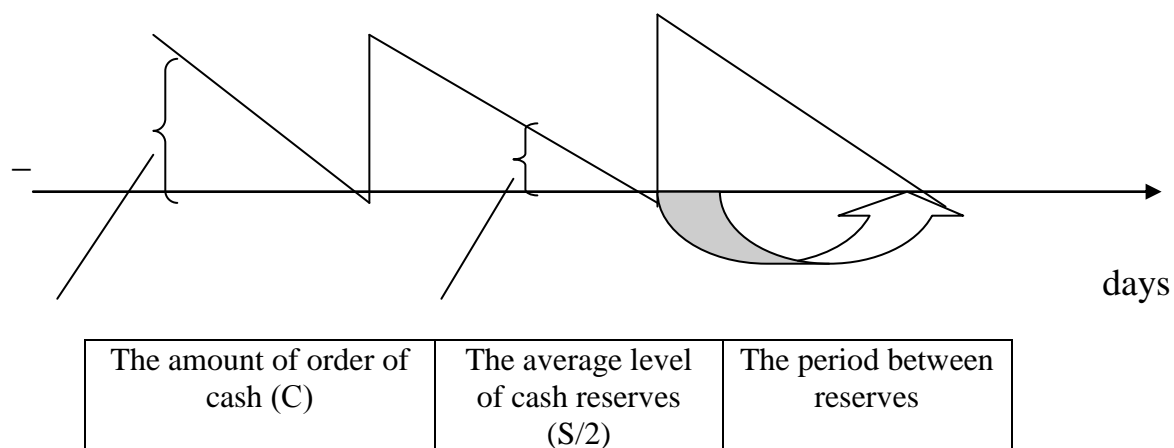


Figure 1. Baumol's model (model of optimal order size)

The initial assumptions of the model:

1. The cost of funds (T , natural units) - the total amount of funds needed to support current operations within the scheduled period. It is stable and constant during the scheduled period.

2. Costs related to transfer of funds from securities in money form (b), - a constant that does not depend on the size of the transfer.

3. The interest rate on marketable securities (i) - insufficient revenue related to the sale of the securities and to transfer them into cash.

4. Average amount of available cash funds ($C / 2$).

Baumol's model (Fig. 2) allows to find the optimal volume of the order of cash (C^*). This volume, which provides the minimum value of the total costs related to transfer of funds in cash and unused opportunities (income, which the company refuses in favor of storing cash). The total costs related to cash:

$$i * C / 2 + b * T / 2 > \min \quad (1)$$

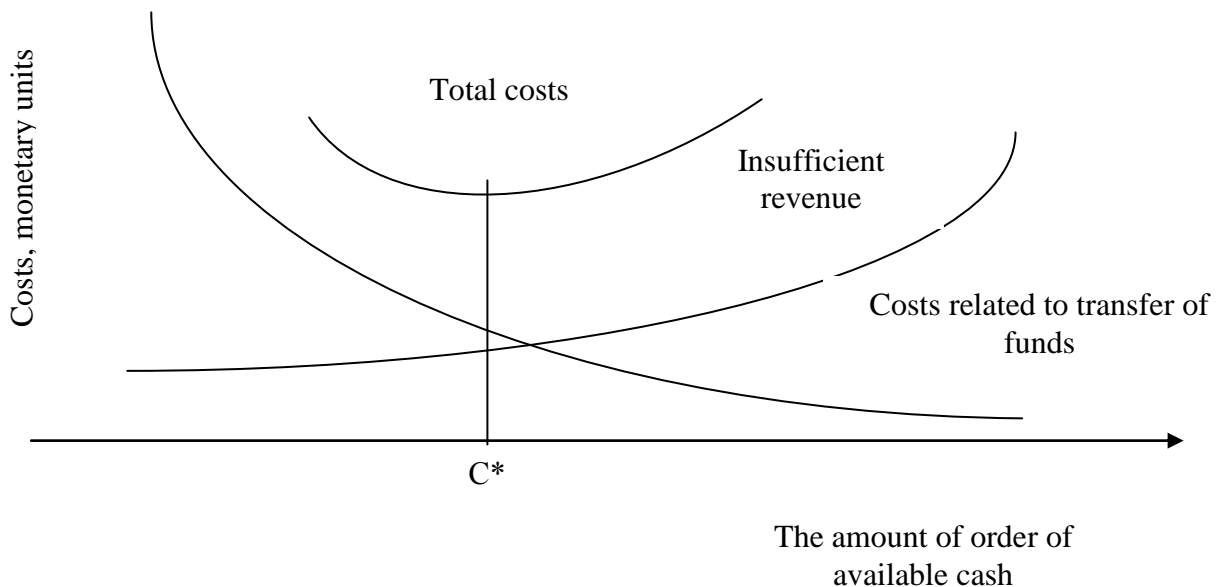


Figure 2. Baumol's model (model of optimal order size)

Then the optimal order size of cash:

$$C^* = \sqrt{2 * b * T / i} \quad (2)$$

The disadvantages of Baumol's model include the following.

- provided stability and predictability of cash flows;
- seasonal prevalence and cyclic character of cash receipts are not considered.

American economists Miller and Orr developed a model for determining the target cash balance, taking into account the uncertainties of cash payments and receipts (Fig. 3).

The basic assumptions of the model:

- distribution of daily cash balance is approximately normal;
- actual cash balance varies from day to day randomly.

When the cash balance reaches size N (at point A), the company buys securities in the amount of $(N-Z)$. When the cash balance reaches L (at point B) the company sells securities in the amount of $(Z-L)$.

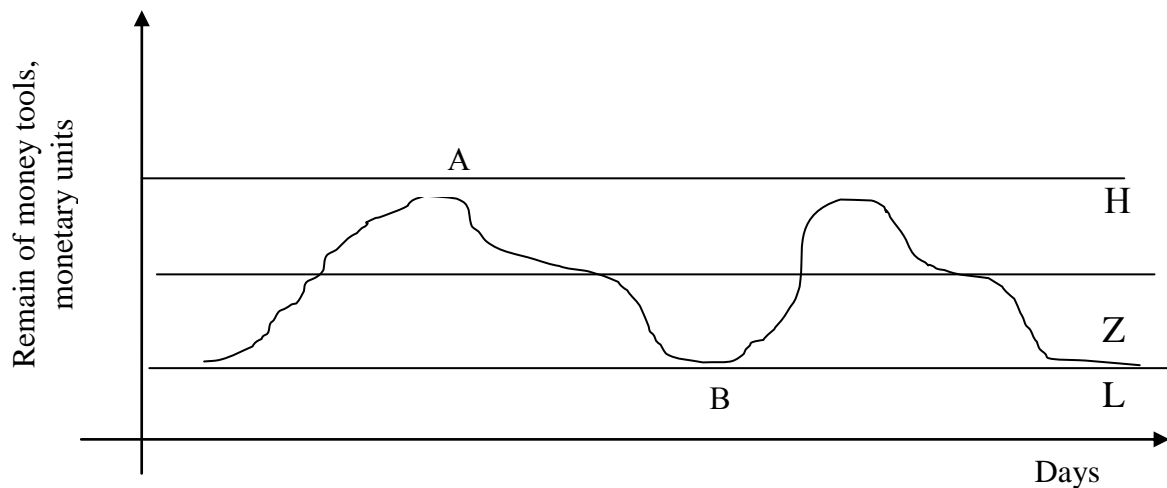


Figure 3. Miller-Orr's model

Legend:

H - upper limit of fluctuations in cash balance;

L - lower limit of fluctuations in cash balance;

Z-target cash balance.

The implementation of this model in practice involves the following stages:

1. The company determines the the lower limit of L cash balance. It depends on the acceptable level of costs due to lack of funds, the availability of loans and the likelihood of shortages of funds.
2. Next, calculate the value of the target cash balance Z and the upper limit of H by the following formulas:

$$Z = (3b * \sigma^2 / i)^{1/3} + L \quad (3)$$

$$H = 3 * (3b * \sigma^2 / 4i)^{1/3} + L \quad (4)$$

$$H = 3Z - 2L \quad (5)$$

$$H \text{ max} = 3Z \quad (6)$$

where b - the fixed costs related to the transfer of the securities;

σ^2 - dispersion of daily net cash flow;

and i - daily interest rate on marketable securities.

Next, we consider the issue of cash flows forecasting. Cash flow forecast is closely related to strategic development of company (corporation) and its current

financial planning (quarter, year). It includes the calculation of possible sources and directions of expenditure of funds.

Cash flows forecast is carried out in several stages:

- calculation of cash flows for the period;
- identification of possible outflows (payments) in cash;
- calculation of net cash flow (surplus or shortfall of funds);
- calculation of the overall demand of the short-term financing.

The cash flow forecast is to analyze possible sources of income and cash outflow. Since most of the required parameters are difficult to predict, cash flow forecast is reduced to the construction of funds budget, taking into account only the main components of the forecast. Key indicators necessary for budgeting funds:

- volume of sales;
- share of revenues that obtained for cash;
- prediction of payables.

Some difficulty forecasting cash flow in the early stages occurs if the proceeds from sales are divided into cash receipts from customers and from sales on credit (with deferred payment). If the value of revenues covers only a part of the proceeds from the sale, the proceeds from the sales are accepted to the revenue forecast from ordinary activities as the sum of cash receipts and debts receivable (in the part not covered by revenues).

When selling products under trade credit granted in the form of deferred (installment) payments, sales revenue is included into the forecast calculation in the full amount of debts receivable.

In practice, an enterprise has to consider the medium term that is necessary for buyers to pay for items. Therefore, you can set the share of sales proceeds coming in this period, and one that will go in the next period. Next, using the balance sheet method (chain method) cash flow is calculated and debts receivable are measured:

$$SR + DZ_{pp} = DP + DZ_{cp}. \quad (7)$$

Then:

$$DZ_{cp} = DZ_{pp} + SR - DP \quad (8)$$

where VR - revenue (net) from sales for the period (quarter);

DZpp and DZkp – debts receivable for goods (works, services) at the beginning and end of the billing period (quarter);

GP - cash receipts from customers in a given period.

We distinguish the following stages of cash flow forecasting:

1. Cash flows forecasting for the period. For this purpose, the balance equation is applied (8)

2. Cash outflows forecasting by periods. The basic element - the settlement of payables, wage payment, administrative and other expenses, the payment of taxes, dividends, etc.

3. Calculation of net cash flow (Section 1 - Section 2).

4. Calculation of the total demand for short-term loans.

IV. The practical side of the work. The next step of the research of selected range of problems is an economic and statistical evaluation of investment relations between enterprises of Ukraine and Odessa region on the foreign market investments.

The attention to problem of improving the investment at the national level is paid since 1991. Today in Ukraine the legal framework to improve investment is created. Meanwhile, despite significant efforts in forming appropriate organizational, economic and legal framework to strengthen the investment climate, international experts mentioned a decline of investment attractiveness of Ukraine. The global economic crisis has shaken Ukrainian macroeconomic stability, exposing weaknesses in its competitiveness.

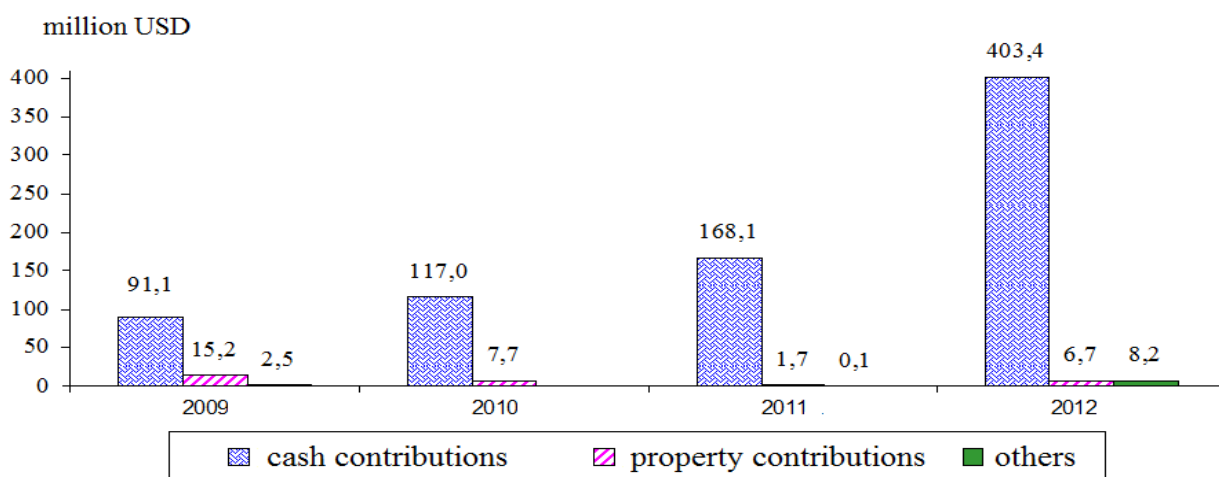
Total investment (equity and debt) from foreign direct investors, as of January 1, 2013 amounted to 1843.6 million USD, including investments directed to the charter capital (equity) amounted to 1629.5 million USD [6].

The peculiarity of foreign investment in the region is unequal regional distribution of foreign direct investments. Majority of them (70.7% of total foreign investments in the region) is concentrated in the cities of the region. As at 31 December 2012, 46.0% of foreign investment (equity capital) made to the economy of Odessa, the total of which amounted to 748.9 million USD, 17.9% or 291.5 million

USD - aimed at Illichivs'k, 10.0% or 162.3 million USD - Ovidiopolskij district, 5.4% or 88.5 million USD - Kominternovskiy district, 4.9% or 80.4 million USD - Yuzhny, 4.5% or 73.9 million USD - Belgorod-Dniestrovskiy district.

As of October 1, 2012 the amount of foreign direct investment (FDI) in the world economy to the Odessa area is 1543.4 million USD. The growth rate of FDI for 2012 was 26.5%, which allowed the Odessa region to take 4th place among the regions of Ukraine on this indicator (for comparison, on 1 October 2011 Odessa region occupied 17 place).

The dynamics of foreign direct investment to the economy of Odessa region is shown in Figure 4.



In 2009 – 108,8 mln. USD

2010 – 124,7 mln. USD

In 2011 – 169,9 mln. USD

2012 – 418,3 mln. USD

Figure. 4. The dynamics of foreign direct investment to the economy of Odessa region

The growth rates in foreign direct investment in the economy of Odessa region are represented graphically in a diagram in Fig. 5.

The bulk of FDI is concentrated in industrial enterprises (31.4%), transport and communications (25.3%), which are engaged in real estate operations, leasing, engineering (15.2%), finance (9.7%), commerce (7.4%), construction (6.4%).

The main investor countries, which account for 75.5% of total foreign direct investments include: Cyprus - 625.5 mln. USD, United Kingdom - 201,8 mln. USD,

Netherlands - 165.7 mln. USD , USA - 66.2 mln. USD, Switzerland - 54,2 mln., Germany - 51.3 mln. USD.

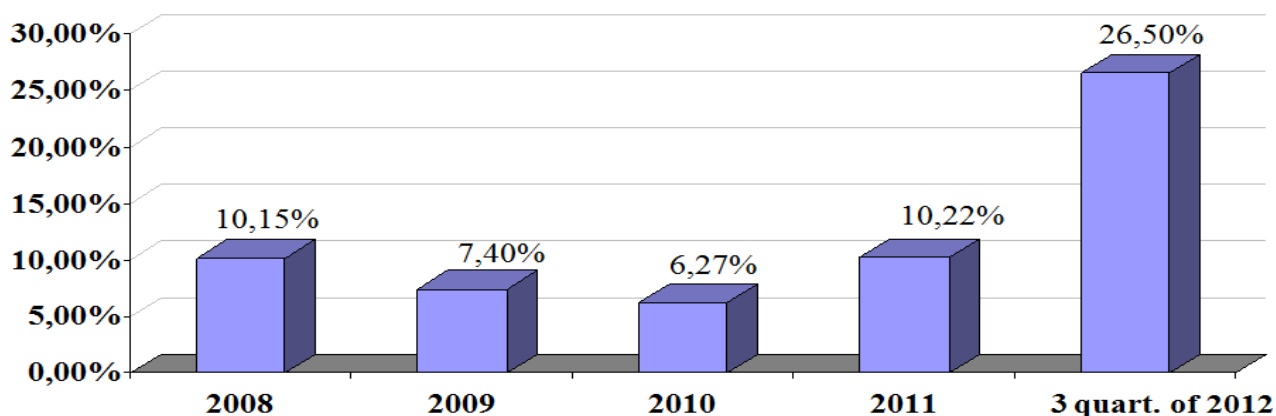


Figure. 5. The growth rate in foreign direct investment in the economy of the Odessa Oblast (Central Statistical Office data in Odessa region)

The achieved growth rates in foreign investment, especially in 2012, are quite significant. Despite the ongoing crisis in the global economy, foreign investors are constantly, in one form or another, show interest in the prospects of starting a business in Odessa region.

The economic potential of the country has a direct relationship with internal and external investments. Revitalization of activity in this area contributes to the implementation of economic reforms of region and country.

From January to December 2013 enterprises and organizations from all sources of financing drew 13,230.3 million UAH of capital investment, which is 1.5 times higher than in the corresponding period last year. The main source of funding for capital investments are bank loans and foreign investments, which amounted to 42.8%; at his own expense businesses and organizations have drawn 36.9% of the total. Due to state and local budgets developed 4.7% of capital investment. In Fig. 6 the structure of capital investments in January-December 2013 is demonstrated.

The priority areas for investment remained activities such as industry - 5243.7 mln. UAH (39.6% of the total), transport and communication - 3368.8 mln. UAH (25.5%) and construction - 2252.1 mln. UAH (17,0%).

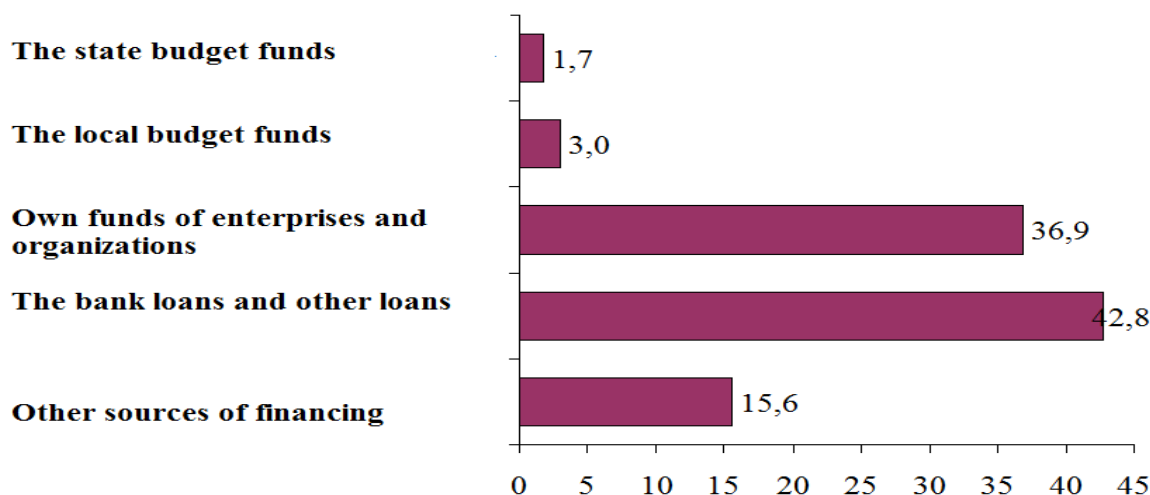


Figure. 6. Structure of capital investments in January-December 2013
financing sources (% of total)

On January 1, 2012 loans and borrowings, obligations under trade credits and other obligations to the direct investors (debt instruments) had 97 companies in the region amounting to 214.1 million USD. From the investors from Cyprus is received 43.3% of these funds, Switzerland - 27.9%, Italy - 4.9%, Virgin Islands (GB) - 4.7%, Germany - 3.7% and the Netherlands - 3.5 % [7].

V. Conclusions. The process of attracting foreign investment and realization of export potential is competitive. Taking into consideration a single legal framework in all regions of Ukraine, Odessa region can compete with other areas of a geographical location, availability of natural resources and the quality of administrative services. Also, the advantages of the investment climate of the region include business climate, the image of the region and the availability of sufficient high-quality information that allows you to make a decision about investing. Of course, for successful competition is not only necessary to have reasoned advantages, but also to prove to potential foreign investors.

Since the early 2000s, Odessa region was and remains the leader among the regions of Ukraine in quantity and quality measures at international level, participation in international organizations, cooperation with international financial institutions and investment funds. But in recent years, intensification of international activity is observed in almost all regions of Ukraine, in some regions, such activities are activated even at the district level. With the support of international organizations

(e. g. USAID, the EU Delegation to Ukraine, etc.) investment forums are held and presentations of the regions are made abroad.

Thus, Odessa region loses some exclusivity of the region of Ukraine with developed international links and famous internationally. The region faces the tasks of strengthening position of prospective sites for foreign investment and revitalization in overseas markets, which requires the establishment and implementation of the conditions and arrangements for regional cooperation in these areas.

The decision of the Regional Council of Odessa region of 26 December 2012 № 682-VI approved the Programme of attracting foreign investment and the development of foreign economic activity of Odessa region for 2013-2014.

The expected result of the program is:

- intensification of investment activity by expanding the sources, mechanisms and instruments to attract investment;
- strengthening of the regional exporters in foreign markets;
- saving index of growth of foreign direct investment by the estimated level of 20% per year;
- improvement foreign trade turnover of the region with the world;
- ensuring of growth rate of exports at a level of 13% per year;
- increase of foreign currency earnings to the country from the sale of goods in foreign markets;
- increase of positive investment image of Odessa region and the competitiveness of producers in the country's integration into international institutions;
- establishing of new business contacts with potential foreign investors and foreign importers;
- raising of awareness about international economic community and foreign investment potential of Odessa region;
- increase of business activity of the region;
- increase of production volumes and range of products which, in turn, promote the development of enterprises, increase of the number of jobs, payments to

budgets of all levels, and promoting sustainable development, raising living standards, fighting unemployment.

In the conditions of transformational changes in the state economy for the formation and growth of the economic potential of the region, investment plays the leading role in encouraging its development by creating additional financial sources that can provide positive economic change at the regional and national levels that will provide synergetic dynamics of the economy in general.

Thus, an increase of the investment attractiveness of Odessa region, identifying key trends and prospects in the region, accumulation and activation of investment resources investment market is a priority ways of sustainable regional development.

Literature:

1. Investing: Textbook / V.M. Grinova, V.O. Coyoda, T.I. Lepeyko, O.P. Coyoda. – K.: Znannya, 2008. – 452 p.
2. Boyarko I.M., Gritsenko L.L. Investment analysis: tutorial. – K.: Center of educational literature, 2011. – 400 p.
3. Osetska J.E. The investing peculiarities of enterprises of Ukraine in the conditions of economic renewal // Scientific and practical magazine "Investments: Practice and Experience." - 2012. - № 9. - P. 38-41.
4. Corporate Finances: textbook / [Poddyerohin AM Bilyk MD, LD Boriak etc. ..] group of authors and scient. editor prof. AM Poddyerohin. - Eighth ed. revised. and add. - Kyiv: Kyiv National Economic University, 2013. - 519 p.
5. Gukova A.V., Anikina I.D., Bekov R.S. Management of the enterprise: financial and investment decisions: tutorial / A.V. Gukova, ID Anikin, R.S. Bekov. - Moscow: Finance and Statistics; INFRA - M, 2012. - 184 p..
6. Official website of the State Committee for Statistics Ukraine [electronic resource]. - Access mode: - [http:// www.ukrstat.gov.ua](http://www.ukrstat.gov.ua)
7. Statistical Bulletin: Investment Relations of Odessa region with world countries as of January 1, 2012 / the Bulletin prepared by: Kolomyychuk T. M., Shubtsova I. M., Prysuha S. A., Romanova L. I. Responsible for the release Kaprytsya G. M. - Odessa, Main Statistic Department in Odessa region. - 2012 - 63 p.