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## IDENTIFICATION OF RISKS OF FINANCIAL SECURITY LOSS AT UKRAINIAN INDUSTRIAL ENTERPRISES

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**Abstract.** Considering the industrial enterprise as a multilevel system, the grouping of functional activities was performed in the study in order to identify the risks of financial security loss. The feasibility of identifying the risks' impacts on financial security by evaluating individual situations occurring at macro and micro levels is substantiated. It has been proved that risk of financial security loss is a destructive phenomenon in the financial equilibrium of an enterprise, which is generated by the cyclical development of interrelated and interdependent crisis phenomena; it leads to depreciation of equity capital in the systematic absence of adequate identification and anti-crisis measures.

The objectivity of the fact that the shutdown of enterprises leads to higher unemployment and loss of highly qualified personnel has been proved; for a certain period of time the industry will be left without financial and labor resources, which is unacceptable for the state security; the presence of interbranch links and cooperation in the event of individual industrial production loss increases the dependence of the state on the import of goods and products, which together leads to the loss of national security positions.

It is substantiated that one of the key signs of systemic risk of financial security loss is a steady increase in the volume of short-term liabilities, together with a decrease in sales volumes, especially if there is a loss-making activity. It is suggested to identify the structure and volume of accounts payable as a potential threat of financial risk on the basis of certain signs of movement of income and expenses of the enterprise.

The use of situational analysis made it possible to develop control indicators of risks of financial security loss by functional types of activities and business processes that can be used for the enterprise of any branch of entrepreneurial activity, form of ownership, organizational-legal form of functioning.

**Keywords:** identification of risks, financial security, entrepreneurial risks, functional activities.



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## **1. Statement of the problem.**

Entrepreneurial activity of domestic industrial enterprises, in particular machine-building enterprises, remains vulnerable to the negative impact of external and internal imbalances, and in the conditions of political crisis the weight of certain factors of vulnerability has increased significantly. The steady fall in demand for products of domestic machine-building enterprises, the forced reduction of prices for products of enterprises of machine-building industry leads to a decrease in the presence of domestic enterprises in the market. Achieving an adequate level of financial security for any enterprise requires the need to increase the effectiveness of risk management as a risk management system that includes management strategies and tactics aimed at achieving business goals. Effective risk management consists of a management system, identification and measurement system, maintenance system (monitoring and control). Efficiency of the functioning of the entire economic system of the country depends on the efficiency of the functioning of industrial enterprise, so the identification and management of risks that can cause loss of financial security is an objectively necessary task, the solution of which requires new scientific approaches to improve the theoretical and methodological foundations and to expand the practice of application.

**The purpose of the study** is to identify the risks of entrepreneurial activity, the impact of which can lead to loss of financial security of industrial enterprises and the development of preventive measures in the enterprise management system.

## **2. Analysis of recent research and publications.**

Scientific developments on risk management issues are significant and include the scientific works of such famous Ukrainian and foreign scientists as V. Vitlinsky, V. Granaturov, O. Ustenko, A. Stefanych, I. Balabanov, A. Fomichev, N. Khokhlov, P. Bernstein and others. Significant contribution to the development of the theory and practice of financial security of enterprises has been made by such scientists as B. Andrushkiv, O. Baranovsky, Z. Varnaliy, O. Vasilik, Ya. Zhalilo, M. Voinarenko, V. Nizhnik, T. Vlasyuk, T. Vasyltsev, G. Sytnik, V. Muntian, B. Gubsky, V. Arefev, V. Mikhailenko, I. Blank and others. Consideration of the problem of financial crisis at enterprises has received considerable attention in the work of such researchers as V. Vasilenko, A. Poddyerohin, M. Chumachenko, E. Arens, E. Brigham, D. Stone and others.

## **3. Unsolved aspects of the problem..**

The need for further scientific research in these areas is caused by the loss of market positions by most domestic industrial enterprises, in particular, machine-building enterprises of Zaporizhzhya region. In order to achieve the goal of maintaining market positions and development of the enterprise, which means the growth of the aggregate well-being of owners, the growth of profits, the maintenance of an adequate level of competitiveness, the acquisition of new qualities in the commodity market, the fulfillment of public functions and governmental tasks, the enterprise must undertake a set of measures aimed at ensuring the maintenance of their basic functions at the proper level. This set of measures includes the identification of risks that could lead to loss of financial security and termination of entrepreneurial activities.

The analysis of publications and scientific developments on the outlined problem showed that the issues of risk identification accompanying functional activities, individual functions and operations did not receive sufficient and adequate coverage. Moreover, the dynamism of the environment and its constant challenges in the face of uncertainty and

conflict create new risks of entrepreneurial activity, and the nature of these threats and their magnitude are quite diverse and require constant identification in order to develop preventive measures without stopping the entrepreneurial activity.

Problems of developing key indicators that signal the development of crisis phenomena at the enterprise remain unresolved.

#### **4. Main material exposition.**

Generally, scientific schools consider the risk management system as a process of identifying, analyzing and reducing risk through controls or other measures that minimize the negative effects associated with risk in production [15, p. 64], that is, from a systemic position. Any system is a set of elements that are interconnected and form a definite integrity. That is, the risk management of an industrial enterprise is a management system, which, in our opinion, consists of functional activities. Each activity is also a lower level system and consists of processes, while processes – of operations. In order to further investigate the industrial enterprise as a multilevel system, it is advisable to group functional activities and identify the risks of loss of financial security across the following groups:

- production activity (technical – technological and design - technological components);
- commercial activity (market and material - providing component);
- financial activity (resource component by the following types of resources: financial resources, material resources in the form of property values, intangible resources in the form of intangible assets, labor resources, information resources);
- prospective activity (innovation - investment component);
- management activities (enterprise development).

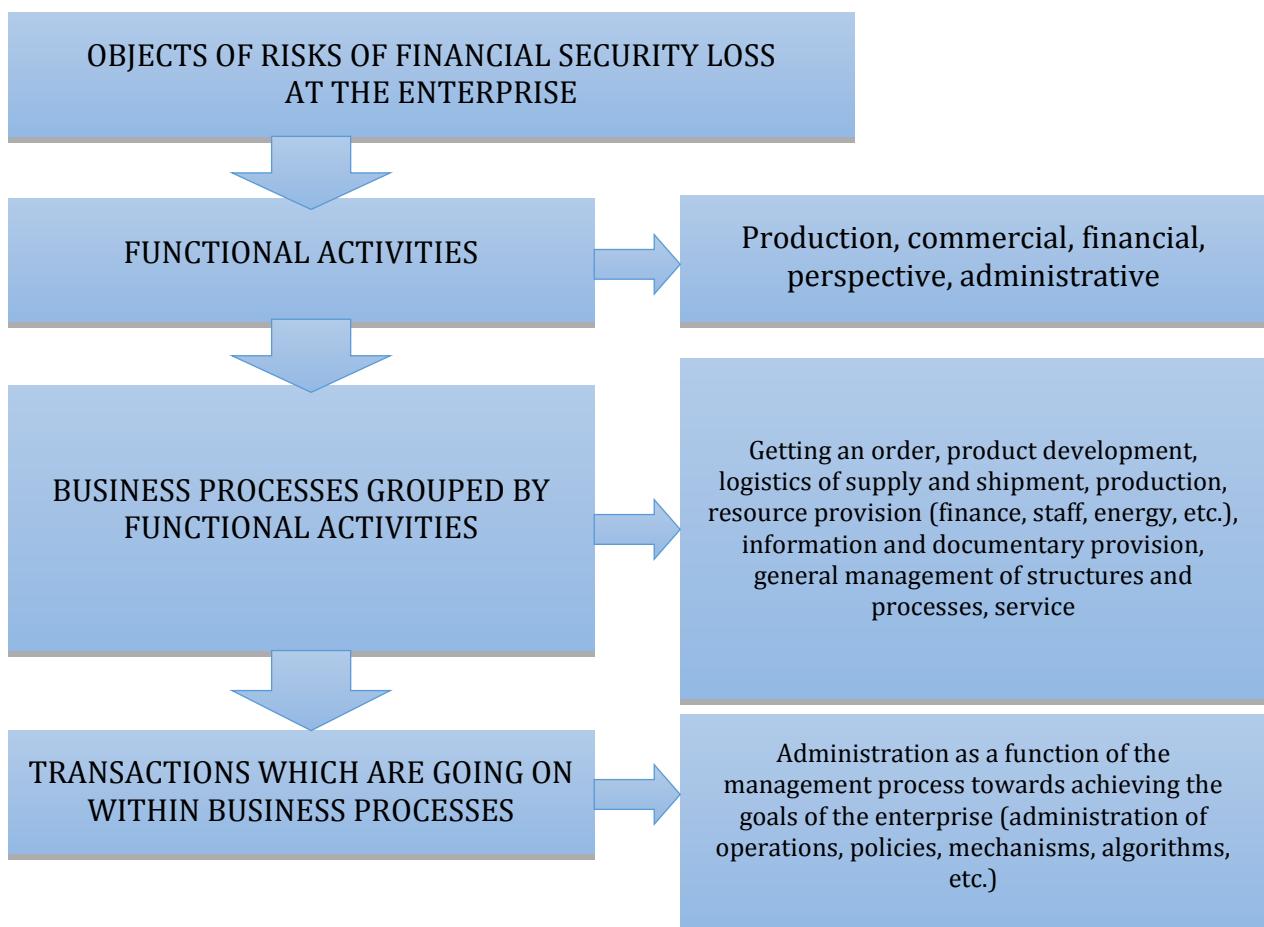
As T. Vasyltsiv points out in his monograph [3], the presence of finances is an integral part of the functioning of the enterprise, since it ensures the process of production, economic activity, they act simultaneously as the cause and effect of its functioning. That is, finance accompanies all components of economic activity as a whole, and in the event of financial risks in any functional activity there is a threat to the financial security of the enterprise. Thus, the risks of loss of financial security are a prerequisite for reducing the effectiveness of all functional activities in the enterprise, so timely identification of risks is one of the components of the overall management system of the enterprise. The objects of identification of risks of loss of financial security are presented in Fig. 1.

Please note that all operations that take place at the enterprise require their administration. The founder of the classic (administrative) school of management A. Fayol [17, p. 6-8] considered the management process as a function of administration designed to assist administrative staff in achieving the organization's goals. Formalizing actions that take place in the framework of functional activities, business processes, operations is also a necessary prerequisite for the effectiveness of the enterprise's activities aimed at identifying and neutralizing the negative impact of risks of loss of financial security. Such formalization is possible due to the presence at the enterprise of a management system, which looks like a complex quality management system.

It is advisable to identify the risks of loss of financial security of an enterprise by comparing risks at the macro and micro levels.

During 2011-2018, most domestic industrial enterprises faced the problem of the critical impact of entrepreneurial risks, including risks of loss of financial security, on business efficiency, possibilities for modernization and expansion of economic activity. The risk of loss of financial security by an enterprise is a destructive phenomenon in the financial equilibrium of an enterprise, which is generated by the cyclical development of interrelated and

interdependent crisis phenomena at both macro and micro levels; it leads to depreciation of equity capital in the systematic absence of adequate identification and anti-crisis measures.



**Fig. 1. Objects of identification of risks of enterprise's financial security loss**

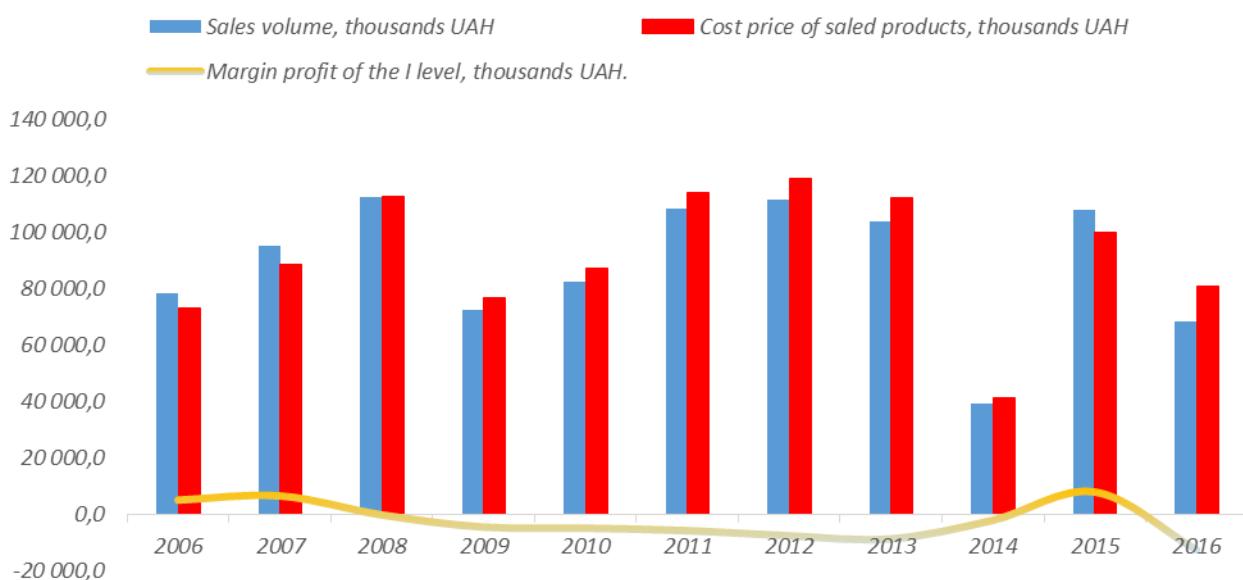
It is known that the end result of an enterprise of any form of ownership and legal form is net profit, which remains at its disposal and is directed to the development of entrepreneurial activity, financing social programs, meeting the needs of owners and investors, etc.

The analysis of statistical information [16] on the financial results of the activity of industrial enterprises shows that in 2012 the net profit of industrial enterprises was almost equal to the net loss (Fig. 2), and since 2013 the losses exceeded the net profits for five years, i.e. this sector of the country's economy did not fully ensure the formation of budget revenues, in particular, in terms of payment of income tax. Also, loss-making businesses do not generate financial resources for their own economic development, which puts them at risk of losing their financial security. Systematic signs of risk of loss of financial security at the industrial enterprise of the Zaporozhye machine-building enterprise (the Limited Partnership «Zaporizhzhya High Voltage Equipment Plant» - hereinafter referred to as LP «ZZVA») are presented in Fig. 3.

The volume of sold products during 2006 – 2016 has an unstable character, that is, the tendency to increase the volume of production was observed only in 2006 – 2008, in subsequent periods there was a fall in production and its partial recovery.



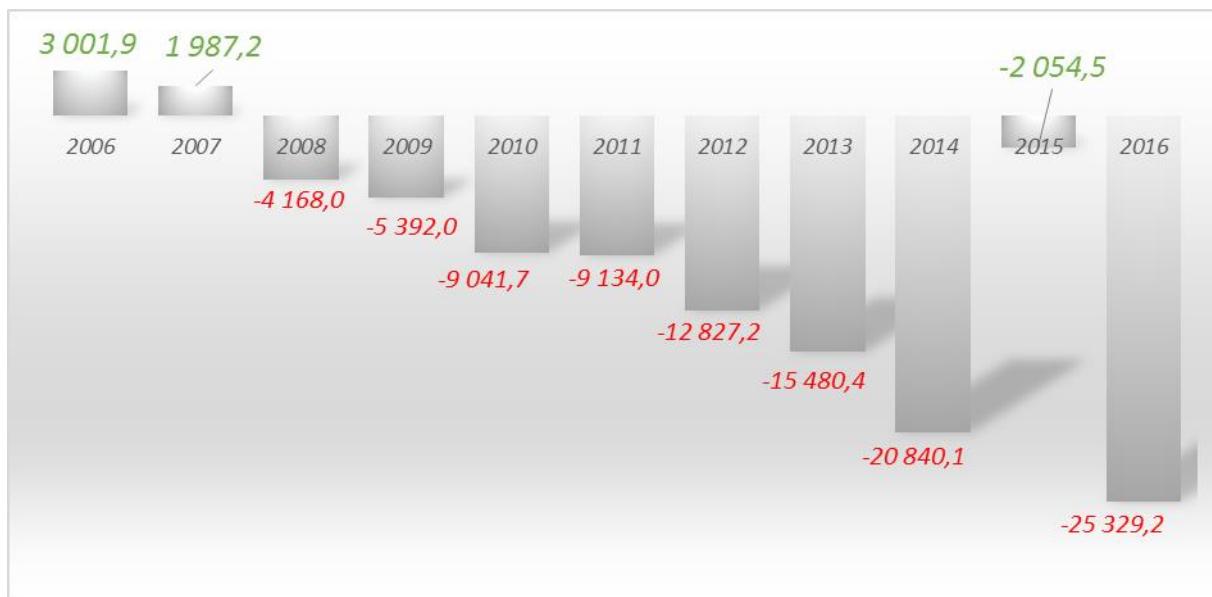
**Fig. 2. Dynamics of change in net profit (loss) during 2011 - first half of 2019 in Ukrainian industry, mln.**



**Fig. 3. Dynamics of cost indicators of financial and commercial activity of LP «ZZVA»**

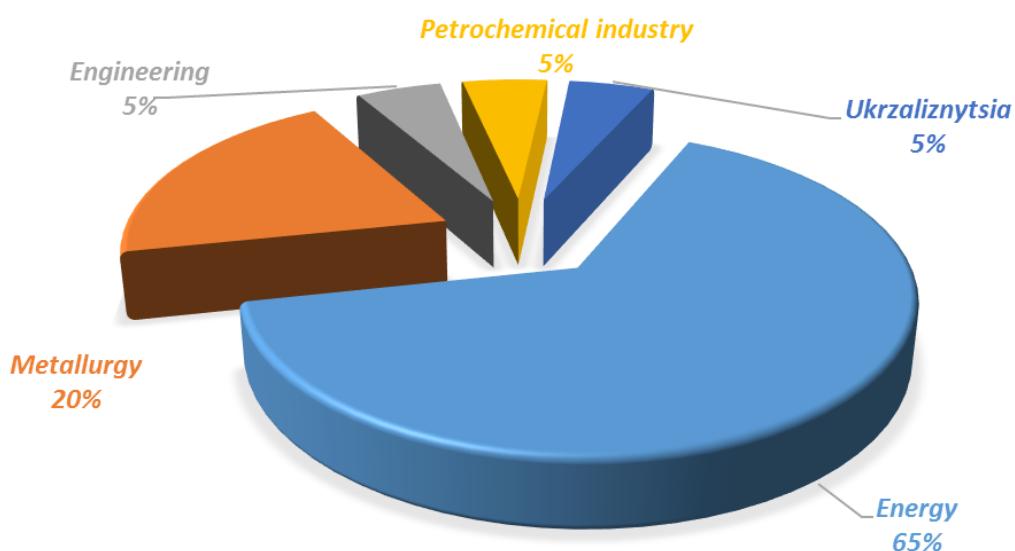
Since 2008, the company is a loss-making business, with losses already generated at the level of gross profit (loss). The signs of risk of loss of financial security in 2006 – 2008 are a decrease in the value of gross profit and a rapid increase in cost (costs per 1 UAH of commodity products increased from 95.5 kopecks per 1 UAH to 103.89 kopecks per 1 UAH.). Identification actions under the conditions of occurrence of such risks should focus on thorough study not only the expenses included in cost of sales, but also all expenses of operating activity as well as all activities before taxation. But functional managers and general management of the enterprise did not apply anti-crisis measures, which led to a further process of loss of financial security. Unfair activities during 2008-2016 led to bankruptcy, which began in 2017 and ended in 2018. Systematic accumulation of losses is the risk of irreversible loss of financial security. Thus, even the gross profit, which in 2015 amounted to

7977.7 thousand UAH and was the largest in all these years, could not hold the negative processes, because in every functional area of the enterprise risks were generated and spread, whose identification and neutralization were neglected. At the level of operating activity, the following processes occurred throughout the whole period: systematic stable growth of other operating expenses and decrease in revenues; the share of other operating expenses in 2006 was 2.7 % in the structure of total operating expenses, and in 2016 it was already 18.8 %. Certainly, this process was influenced by the negative phenomena that occurred not only in the commercial and financial activity of the enterprise, but also the loss of markets due to the «aging» of products, reducing its quality level, etc., however, the key problem with financial security loss is the lack of a systematic approach to risk identification and management. Net losses of LP «ZZVA» are presented in Fig. 4.



**Fig. 4. Dynamics of net losses of LP «ZZVA» in the absence of identification and management of risks of loss of financial security**

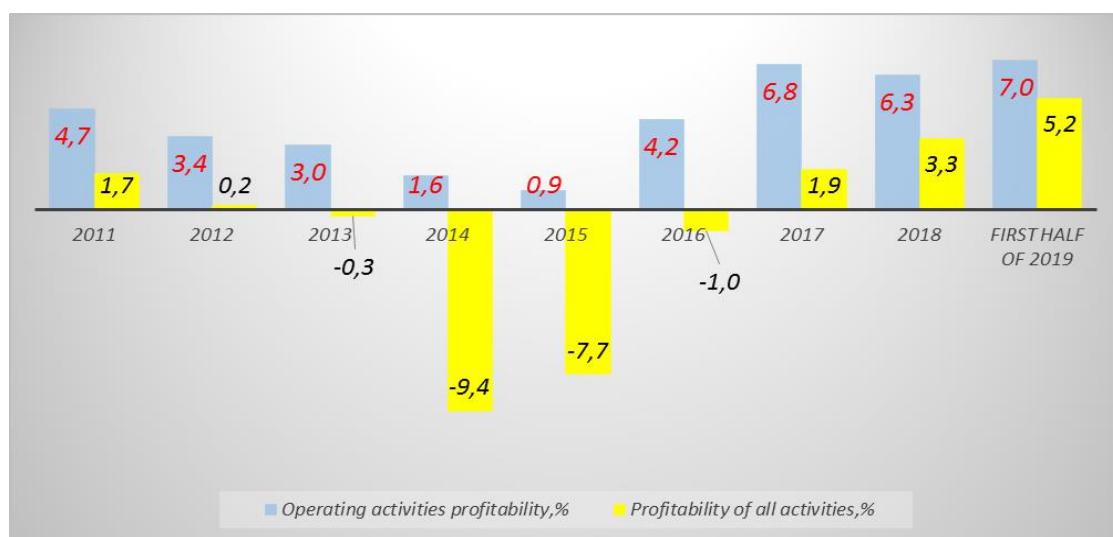
It should be noted that the profitability of operating activities in Ukrainian industry during 2013 – 2016 is a negative value, that is, in our opinion, the loss-making activity of industrial enterprises is not a problem of an individual enterprise, it is a problem of enterprises of a certain industry, that is, a nationwide problem. The matter is that we are talking about domestic power companies that are manufacturers of equipment that is installed at the majority of energy facilities of the National Atomic Energy Company, the National Energy Company, the Ukrzaliznytsia energy facilities, the energy generating companies facilities, the coal-mining substations, and some Oblenergo facilities. The shutdown of similar strategic enterprises causes the complete re-equipment of Ukrainian electricity facilities, that is, the import substitution of the domestic producer's products takes place. We understand that the manufacturing systems of many strategic industries are «outdated» and require significant investment to ensure the production meets international quality standards. On the other hand, we need to be aware that the shutdowns of businesses lead to increased unemployment and the loss of highly skilled staff, which will require both time and money to acquire knowledge and experience. That is, for a certain period of time the industry is left without financial and labor resources, for the security of the state it is extremely negative development of events. Cross-sectoral links (Fig. 5) and cooperation in case of loss of individual industrial production only increase the dependence of the state on the import of goods and products; increase currency requirements, which will negatively affect the national currency.



**Fig. 5. Structure of consumers of products of LP "ZZVA" in Ukraine**

Generally, industry concentration is an advantage that LP «ZZVA» was able to use by regulating its presence on the domestic market. But then the leadership of profile ministry, as well as the leadership of other ministries and agencies that are consumers of LP «ZZVA» products, should be interested in this. Unfortunately, state support for the domestic producer is periodic. In our opinion, it is necessary to systematically carry out a nationwide audit of the risks of loss of domestic industrial production in order to prevent and neutralize them, since a high-tech state must have competitive industrial production.

The analysis of the level of profitability of operating activity and all activity in industry (Fig. 6) also shows the insufficient level of available resources, at the expense of which the industrial enterprises form their own financial sources for economic development.



**Fig. 6. Dynamics of profitability indicators at the level of operating activity and all activity in Ukrainian industry**

Crisis periods are 2013 - 2016, but throughout the period 2011 - 2018 and the first half of 2019, the level of operating profitability and profitability of all activities is low and indicates inefficient operating activities in terms of the commercial component.

The analysis of the profitability of the sold products of LP «ZZVA», calculated on the net

profit, shows that the signs of loss of financial security in the areas of commercial activity, financial and production activity have already been observed since 2002, when the profitability fell by 2 times, and since 2004, it has been necessary to carry out a comprehensive audit in all areas of entrepreneurial activity and to develop measures aimed at neutralizing the negative impact of factors of loss of financial security. Also, since 2004, it would be advisable for the company to start systematic work in all areas of entrepreneurial activities in order to establish priority directions for developing a mechanism for identifying the risks of loss of financial security, neutralizing them and preventing them from occurring in future periods. In the absence of such measures, the consequences for the enterprise became irreversible.



**Fig. 7. Dynamics of profitability indicators of the sold products of LP «ZZVA», calculated on net profit**

One of the key signs of having a systemic risk of loss of financial security is a steady increase in short-term liabilities, along with a decline in sales, especially when there is a loss of activity. Identification of the structure and volume of accounts payable, as a potential threat of financial risk, should be carried out on the following signs of movement of income and expenses of the enterprise:

- net income from sales should exceed the amount of credit resources involved to temporarily cover the need for current financial resources of the enterprise; this is a sign of the ability to service credit resources;
- if within several years of borrowing (to replenish working capital) an enterprise is unable to pay off the principal amount of debt, it should be understood that such debt is a threat of loss of financial autonomy due to the obligation to the bank in the form of «collateral»;
- the arrears of tax payments accompanying wages should not exceed a monthly payment; in other circumstances - we state that there is a wage arrears, that is, a net amount of income is not enough to cover the costs of wages; lack of financial resources to cover direct costs (costs of materials, wages), which account for about 50% of the cost and above, indicates a high risk of loss of financial security;
- if payment of the Single Social Contribution for the benefit of the state is observed in full, but at the same time the arrears of wages are increasing - we state the efforts of the management of the enterprise to avoid administrative and criminal liability, but at the same time - there is social irresponsibility in relation to the employees of the enterprise, which eventually will lead to lawsuits and enforcement for management and business owners to fulfill their responsibilities to staff;

– the gradual increase in accounts payable for goods, works, services is the result of lack of financial resources to support ongoing activities; if such a situation is observed simultaneously with a decrease in net income from sales, an increase in arrears of wages, the need to service credit resources of previous periods, unprofitable activities - we state the financial failure to cover the costs of production and maintenance, and as a consequence - a high likelihood of loss of corporate image and financial independence;

– the insignificant amounts of receivables in comparison with the significant amounts of short-term liabilities (by comparative items) are the result of a dumping commercial policy that inevitably leads to bankruptcy; if short-term receivables for goods, works, services are not returned for more than one financial year - there is a risk of loss of its real value, which may exceed 50%;

– if for a long period of time the net income from sales is less than the operating expenses - there is an accumulation of uncovered losses and loss of the market value of the enterprise.

A vivid example of the loss of the real value of receivables is the example of the LP «ZZVA». In January 2013, the enterprise received a state order for production with a prepayment of 30%, therefore, without free working capital, as well as to ensure timely execution of supply contracts, it was decided to make loans in the amount of 20 million UAH at 21 % per annum. The mortgaged property consisted of equipment and a complete property complex. During 2013 LP «ZZVA» fulfilled the terms of the supply contracts and in December 2013 completed production and shipment of products under these contracts; the cost of servicing credit resources during this period amounted to 4.4 million UAH. However, the political crisis of 2013 and the events in the East of Ukraine caused the participants of the Ukrainian energy market to owe the enterprise 16.4 million UAH. (Which at the time was 2.05 million US dollars). The repayment of the receivables for the shipped products was repaid as early as 2015. According to the US dollar exchange rate at that time, the receivables were already 1 million US dollars, that is, the financial losses of the company from the increase in the US dollar exchange rate – 50 % of the total debt. Also, due to the non-repayment of funds in the economic turnover of the enterprise in the amount of 16.4 million UAH, it was not able to repay the loan on schedule, but only to carry out its servicing. Thus, the cost of servicing credit resources in 2014 - 2015 amounted to 8.6 million UAH. The forced mechanism of servicing credit resources during 2014 - 2015 led to an increase in net losses and «promotion» of the enterprise to bankruptcy. Thus, the unproductive capital losses of LP «ZZVA» are due to the influence of the following external factors: non-repayment of receivables within 18 months; the political crisis in the country 2013-2014; change in US dollar currency rate, namely from 8 UAH per 1 US dollar in 2013 to 22 UAH per 1 US dollar in 2015. It should be noted that these are capital losses caused by an exceptionally ineffective state policy towards the domestic producer and a political crisis in the country.

Considering Valentina Khrapkina's opinion on a set of internal threats (risks of loss of financial security), to which she attributes the caused or accidental errors of management of the enterprise in the area of its financial management, connected with the choice of strategy, management and optimization of assets and liabilities, that is predominantly subjective component of threats [18, p. 360] it is clear that, along with other external risks, the lack of a systematic approach to the management of the enterprise and neglect of obvious signs of financial risks led to the termination of the activity of LP «ZZVA» in the Ukrainian electricity market.

According to the results of the examination of the activity of LP «ZZVA» and an assessment of the general state of the economy in Ukraine, we propose to identify the risks of loss of industrial enterprise's financial security by means of control indicators of risks of loss of financial security by functional types of activity (Table 1).

**Table 1. Control indicators of risks of financial security loss by functional activities and business processes**

| Nº  | Name of control indicator   | Calculation algorithm, recommended level or dynamics                | Characteristic of the indicator for making managerial decisions in the presence of risks of loss of financial security   |
|---|---|---|--|
| 1   | 2   | 3   | 4  |
| <b>PROSPECTIVE (INNOVATIVE - INVESTMENT) ACTIVITIES</b> |   |   |  |
| 1   | Share of innovative products ( $V_{inn}$ ) in total enterprise output ( $V_z$ )   | $PV_{inn} = \frac{V_{inn}}{V_z} \approx 10\%$                       | It is important to have stable positive dynamics of share of innovative products. The risk is diagnosed in the case of an annual decrease in the volume of innovative products against the background of a decrease in the total volume of production, or the absence of innovative products, which is evidence of the "aging" of products |
| 2   | Growth rate of total production (sales) amount ( $TRv$ )  | $TRv = \frac{TRv(1)}{TRv(0)} > 1$                                   | An annual decline (within three to five years) of the growth rate of production indicates loss of markets, low competitiveness, low capacity utilization, which are prerequisites for loss of financial independence and solvency  |
| 3   | Growth rate of costs for upgrading product design and technology of production ( $TRZokt$ )   | $TRZokt = \frac{TRZokt(1)}{TRZokt(0)} > 1$                          | An annual reduction of expenses for upgrading design and technology indicates the "aging" of products and production systems   |
| 4   | Growth rate of investment ( $TRZi$ ) in fixed assets (equipment, construction) in comparison with the growth rate of net income ( $TRchp$ ) | $TRZi < TRchp$  | Exceeding the growth rate of capital (investment) expenditures over the rate of growth of net income is the risk of capitalization of own financial resources, which in the future threatens to lose the required amount of net income for efficient economic activity   |
| <b>FINANCIAL ACTIVITIES</b>                             |   |   |  |
| 5   | Growth rate ( $TR$ ) of net profit $CHp$  | $TRchp = \frac{CHp(1)}{CHp(0)} > 1$                                 | A steady decline in the dynamics (over three years and over) of net profit is a pre-emptive signal to financial decisions to counteract the threat of loss. Growth of losses in dynamics is a threat of bankruptcy   |
| 6   | Growth rate ( $TR$ ) of equity ( $VK$ )   | $TRvk = \frac{VK(1)}{VK(0)} > 1$                                    | A steady decline in equity in the dynamics indicates the presence (in a certain period) of uncovered losses, which is a sign of gradual loss of business   |
| 7   | Share ( $PV$ ) of exports ( $E$ ) in total sales revenue ( $V$ )  | $PVe = \frac{E}{V} > 50\%$  | A decrease in the share of export operations (under the current legislation) indicates an increase in VAT payable to the budget and, therefore, cash outflows in each reporting period, i.e. there is a likelihood of a lack of financial resources in the current turnover  |
| 8   | Amount (share) of accounts receivable ( $DZ$ ) with a maturity of more than 30 days.  | $\frac{DZ(>30)}{DZ} \approx 10\%$                                   | An increase in receivables with a maturity of more than 30 days indicates the likelihood of risks of shortage of cash in circulation, the need to attract credit and the loss of the real value of receivable  |
| 9   | Dynamics of short-term loan balance decline ( $KK$ )  | $\frac{KK_{beginning\ of\ the\ year}}{KK_{end\ of\ the\ year}} < 1$ | If the volume of short-term credit is not reduced during the fiscal year in which the loan is borrowed, there is a risk of losing additional working capital   |

**Continuation of Table 1**

| 1                            | 2  | 3                                 | 4  |
|------------------------------|--|-----------------------------------|--|
| 10                           | Share of short-term liabilities ( $KZ$ ) in the capital of the enterprise ( $K$ )  | $PV_{kz} = \frac{KZ}{K} \uparrow$ | An increase in the share of short-term liabilities in the capital of the enterprise is an indicator of the risk of loss of financial independence; the occurrence of arrears of wages and taxes; the presence of debt with suppliers, etc  |
| 11                           | Share of prepayment ( $PP$ ) in the total amount of funds under the supply contract ( $SD$ )   | $\frac{PP}{SD} > 50\%$            | Lowering the amount of prepayment below 50% for industrial enterprises is a risk of possible breach of contract conditions within a fixed time and penalties.  |
| <b>COMMERCIAL ACTIVITY</b>   |  |                                   |  |
| 12                           | Ratio of executed ( $VD$ ) and concluded contracts ( $UD$ ) for the supply of products   | $\frac{VD}{UD} \approx 1$         | Drop of this ratio below 50 % indicates a decline in product competitiveness and a threat of not receiving the planned amount of funds to ensure continuous business activity  |
| 13                           | Share contracts with prepayment over 50%   | $\frac{PP(>50\%)}{PP} > 0,5$      | If the share of prepaid contracts dropped below 50 %, there is a risk of shortage of funds to secure purchases of inventory for production purposes  |
| 14                           | Share of contracts without prepayment ( $Do$ )   | $\frac{Do}{UD} < 10\%$            | An increase in the number of contracts without prepayment above 10% is a potential risk of failure of other supply contracts   |
| 15                           | Commercial capacity utilization (order portfolio dynamics - $PZ$ )   | $\frac{PZ(1)}{PZ(0)} > 1$         | Reducing the cost of filling an order portfolio (over several years) synthesizes the real risk of losing a sufficient level (up to 80%) of capacity utilization, prompting an enterprise to raise its price level  |
| 16                           | Dynamics of costs for advertising activities   | $\frac{ZR(1)}{ZR(0)} \approx 1$   | Reduced advertising expenses may indicate a lack of financial resources to support entrepreneurial activities in terms of product promotion  |
| 17                           | Prices ( $C$ ) for the purchase of strategic TMCs  | $\frac{C(1)}{C(0)} < 1$           | Increased expenses for the purchase of strategic TMCs adversely affect the cost of production and has a risk of loss of price competitiveness of products  |
| 18                           | Quality of the procurement activity (share of contracts for supply of TMC - $DZ$ , under which the defective TMC - $ntmc$ came back) | $\frac{Dntmc}{DZ} < 10\%$         | An increase in the number of contracts for the purchase of TMCs, under which TMCs were returned due to a quality mismatch above 10%, leads to the risk of late execution of orders for the supply of products, penalties, which leads to financial damages and losses, as well as to the deterioration of the company's reputation in the market |
| 19                           | Quality of logistics operations for transportation of finished product (dynamics of increase of costs - $VL$ )                       | $\frac{VL(1)}{VL(0)} \approx 1$   | Given the dynamics of increase in logistics costs of transportation, especially with the unstable volume of sales, there is a risk of rising cost prices, loss of profitability and profit   |
| <b>PRODUCTION ACTIVITIES</b> |  |                                   |  |
| 20                           | Growth rate of energy expenditures ( $Zer$ ) and other resources (water, fuel, etc.) providing economic activity                     | $\frac{Zer(1)}{Zer(0)} \approx 1$ | The dynamics of increase in costs of energy and other types of resources is a significant risk of loss of financial security due to rising cost prices, especially in the case of industrial enterprises, which in most cases are resource intensive   |

**Continuation of Table 1**

| 1  | 2   | 3                                 | 4   |
|----|---|-----------------------------------|---|
| 21 | Expenses for unplanned warranty repair ( $Zgr$ ) and their dynamics                         | $\frac{Zgr(1)}{Zgr(0)} \approx 1$ | An increase in the expenses for unscheduled warranty repairs indicates a decrease in product quality and is a risk of rising cost prices, loss of profit margins (in some cases, losses).                     |
| 22 | Growth rate ( $TRpp$ ) of labor productivity (production)                                   | $\frac{TRpp(1)}{TRpp(0)} > 1$     | Decline in labor productivity integrates the risk of exceeding the growth rate of labor costs over the growth rate of product sales revenue   |
| 23 | Return on fixed assets ( $Fv$ )   | $\frac{Fv(1)}{Fv(0)} \geq 1$      | Declining returns over several years integrates risks of inefficient production capacity and inability to cover fixed production costs  |
| 24 | Losses from production rejects ( $Zb$ ) per Production Worker ( $P$ )                       | $\frac{Zb}{P} \downarrow$         | An increase in losses from production rejects per worker indicates the risk of loss of the required level of product quality, its failure to meet quality standards   |
| 25 | Losses from failing the production plan ( $Sn$ ) compared to global production plan ( $S$ ) | $\frac{Sn}{S} < 5\%$              | According to the quality management system, the number of orders not executed on time should not exceed 5 % (these risks must be calculated), otherwise there is a risk of penalties and loss of profit share |

## 5. Conclusions and recommendations for further researches.

The study of financial and economic trends in the functioning of the Ukrainian industry during 2011-2018 and the first half of 2019, as well as the expert evaluation of the activity of a separate electricity enterprise during 2000 - 2016, allowed to highlight the dependencies and regularities that substantiate the state of the Ukrainian industry in the macro and micro levels. Today, domestic industry is gradually losing, along with individual enterprises, sub-sectors of industry due to the systematic impact of risk factors, the identification of which has been neglected over a long period of time both by the management of individual enterprises and by the state. In the future, to neutralize and prevent the emergence of new signs of risk situations at the macro and micro levels, it is proposed to carry out systematic nationwide, industry, corporate audit aimed at forming a risk management system focused on an innovative approach to understanding the role of industry in Ukraine's development strategy. As a methodological approach to the identification of crisis situations that generate the risks of loss of industrial enterprise's financial security, it is advisable to use the proposed risk indicators of risks of loss of financial security, which are grouped by functional activities and business processes.

Summarizing the above, let us note that today, given the depressed state of the Ukrainian industry, the use of methods of expert identification and assessment of the impact of risks on the financial security of enterprises is one of the most effective ways of developing further adapted methods that will allow to form a new industry development trajectory oriented on the European level of quality management.

### Author details (in Russian)

**ИДЕНТИФИКАЦИЯ РИСКОВ ПОТЕРИ ФИНАНСОВОЙ  
БЕЗОПАСНОСТИ НА ПРЕДПРИЯТИЯХ ПРОМЫШЛЕННОСТИ  
УКРАИНЫ**

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**Аннотация.** В проведенном исследовании, рассматривая промышленное предприятие как многоуровневую систему, выполнена группировка функциональных видов деятельности с целью идентификации рисков потери финансовой безопасности. Обоснована целесообразность идентификации влияния рисков на финансовую безопасность путем оценки отдельных ситуаций, происходящих на макро- и микроуровнях. Доказано, что риск потери финансовой безопасности – это деструктивные явления в финансовом равновесии предприятия, которые порождены циклическим развитием взаимосвязанных и взаимообусловленных кризисных явлений; он ведет к обесцениванию собственного капитала в условиях системного отсутствия адекватных идентификационных и антикризисных мер.

Доказана объективность того, что остановка предприятий ведет к росту безработицы и потере высококвалифицированного персонала; на определенный период времени отрасль остается без финансовых и трудовых ресурсов, что для безопасности государства является недопустимым; наличие межотраслевых связей и кооперации в случае потери отдельного отраслевого производства усиливает зависимость государства от импорта товаров и продукции, что в совокупности ведет к потере позиций государственной безопасности.

Обосновано, что одним из ключевых признаков наличия системного риска потери финансовой безопасности предприятием является устойчивый рост объема краткосрочных обязательств наряду со снижением объемов реализации продукции, особенно если имеет место убыточная деятельность. Идентификацию структуры и объема кредиторской задолженности, как потенциальной угрозы возникновения финансового риска, предложено осуществлять по определенным признакам движения доходов и расходов предприятия.

Использование ситуационного анализа позволило разработать контрольные индикаторы рисков потери финансовой безопасности по функциональным видам деятельности и бизнес-процессам, которые могут быть использованы для предприятия любой отрасли предпринимательской деятельности, формы собственности, организационно-правовой формы функционирования.

**Ключевые слова:** идентификация рисков, финансовая безопасность, предпринимательские риски, функциональные виды деятельности.

#### Author details (in Ukrainian)

### ІДЕНТИФІКАЦІЯ РИЗИКІВ ВТРАТИ ФІНАНСОВОЇ БЕЗПЕКИ НА ПІДПРИЄМСТВАХ ПРОМИСЛОВОСТІ УКРАЇНИ

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**Анотація.** В проведенному дослідженні, розглядаючи промислове підприємство як багаторівневу систему, здійснено групування функціональних видів діяльності з метою ідентифікації ризиків втрати фінансової безпеки. Обґрунтовано доцільність ідентифікації впливу ризиків на фінансову безпеку шляхом оцінювання окремих ситуацій, що відбуваються на макро- та мікрорівнях. Доведено, що ризик втрати фінансової безпеки – це деструктивні явища у фінансової рівновазі підприємства, які породжені циклічним розвитком взаємопов'язаних та взаємообумовлених кризових явищ; він веде

до знецінення власного капіталу за умов системної відсутності адекватних ідентифікаційних та антикризових заходів.

Доведено об'єктивність того, що зупинка підприємств призводить до зростання безробіття та втрати висококваліфікованого персоналу; на певний період часу галузь залишиться без фінансових та трудових ресурсів, що для безпеки держави є неприпустимим; наявність міжгалузевих зв'язків та кооперації у випадку втрати окремого галузевого виробництва підсилює залежність держави від імпорту товарів та продукції, що у суккупності веде до втрати позицій державної безпеки.

Обґрунтовано, що однією з ключових ознак наявності системного ризику втрати фінансової безпеки підприємством є стійке зростання обсягу короткострокових зобов'язань поряд зі зниженням обсягів реалізації продукції, особливо якщо має місце збиткова діяльність. Ідентифікацію структури та обсягу кредиторської заборгованості, як потенційної загрози виникнення фінансового ризику, запропоновано здійснювати за визначеними ознаками руху доходів та витрат підприємства.

Використання ситуаційного аналізу дозволило розробити контрольні індикатори ризиків втрати фінансової безпеки за функціональними видами діяльності та бізнес-процесами, які можуть бути використані для підприємства будь-якої галузі підприємницької діяльності, форми власності, організаційно-правової форми функціонування.

**Ключові слова:** ідентифікація ризиків, фінансова безпека, підприємницькі ризики, функціональні види діяльності.

## Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at  
<http://sepd.tntu.edu.ua/images/stories/pdf/2019/19mngppu.pdf>

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