

UDC 658:65.012.8

**ANTI-CRISIS MANAGEMENT OF FINANCIAL SECURITY OF MACHINE-BUILDING ENTERPRISES: METHODOLOGICAL BASIS**

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*In conditions of constant and difficultly predicted changes in the external environment and internal conditions of economic activity by domestic enterprises, there is a high probability of occurrence of threats, the implementation of which can lead to the appearance the signs of a crisis state, and in the future — bankruptcy. Based on the results of the theoretical and analytical study, sets of external and internal threats to the financial security of machine-building enterprises in Ukraine have been determined. Based on the application of the method of graph theory, threats are hierarchically ordered, which made it possible to construct appropriate models of hierarchical influence. An anti-crisis mechanism has been developed to counter the impact of external and internal threats to the financial security of machine-building enterprises, the application of which provides for the implementation of appropriate anti-crisis plans.*

**Keywords:** *financial security of the enterprise, internal threats, external threats, anti-crisis management; anti-crisis mechanism.*

**Formulation of the problem.** Economic activity of domestic industrial enterprises is characterized by both the aggressiveness of the external environment of functioning and the unpredictability of changes in the state regulation of the development of the national economy, requires, along with traditional management methods, the application of others, including anti-crisis management. Only anti-crisis management can solve problems in conditions of low purchasing power of the population, increase fiscal pressure, open the domestic market, increase labor migration, significant fluctuations in the national currency, political and social tensions and military operations in the country [1, p. 59–61; 5, p. 114–116]. All these problems are typical for the domestic machine-building industry, the modern period for which can not be considered determined by sustainable development, but rather by a certain decline under the influence of external factors due to the inability to counteract and adapt each individual enterprise. The prerequisite for applying the anti-crisis management that is topical in such conditions should be a thorough identification of key problems and the formation of appropriate methodological support.

**Analysis of recent research and publications.** A fairly wide range of views on various aspects of the use of anti-crisis management outlined in the writings of economist scientist, including O. Amosov, O. Arefieva, M. Bilyk, M. Boiko, V. Vasylenko, L. Kalnichenko, A. Kolos, O. Kuzmin, L. Ligonenko, N. Pashuta, M. Pushkar, V. Savchuk, N. Skvortsov, S. Slava, O. Tereschenko, N. Tulenkov, O. Trydid, A. Cherniavskyi,

I. Shkola and others. Theoretical bases of financial management of the enterprise are reflected in the works of domestic and foreign scientists, such as I. Blank, O. Baranovskiy, A. Voronkova, K. Goryacheva, L. Donets, S. Iliashenko, G. Zadorozhnyi, M. Kyzym, T. Klebanov, G. Kozachenko, L. Kostyrko, O. Lyashenko, Y. Oleinykov, V. Ponomarov, R. Saifulin, O. Tereshchenko, A. Sheremet, V. Shlykov and others.. The results of scientific research became the definition of the essence of the concept of financial security, the development of criteria and indicators of its assessment, the definition of individual elements of security and its management as a key component of the economic security of the enterprise. However, a number of issues related to the improvement of the management system of financial security are still insufficiently studied and require attention.

**The purpose of the article** is to form a methodical basis for applying anti-crisis management in the process of ensuring the financial security of enterprises, in particular by identifying and hierarchically regulating key external and internal threats and developing an anti-crisis mechanism to counter the impact of external and internal threats to the financial security of machine-building enterprises.

**Statement of the main material of the study.** According to the results of the theoretical and analytical study, which provided the familiarization with the work of domestic and foreign scientists to ensure the financial security of enterprises [1;3; 5–6] and to assess the financial security of machine-building enterprises, in particular, PJSC «Verkhodniprovskiy mashynobudivnyi zavod»; PJSC «Hrebinkivskiy mashynobudivnyi zavod»; PJSC «Zavod «TEMP»»; PJSC «Konveier»; PJSC «Krasylivskiy mashynobudivnyi zavod»; PJSC «Novohrad-Volynskiy zavod silhospmashyn»; PJSC «Odeskiy mashynobudivnyi zavod»; PJSC «Poltavskiy mashynobudivnyi zavod»; PJSC «Smilianskiy mashynobudivnyi zavod»; PJSC «Kharkivskiy elektrotekhnichniy zavod «Ukrelektromash»», a set of key threats to the financial security of machine-building enterprises was singled out. Conditionally, all threats are divided into external and internal, so their consideration will be carried out consistently.

The external threats that most significantly affect the financial security of machine-building enterprises can be singled out (Table 1):

Table 1

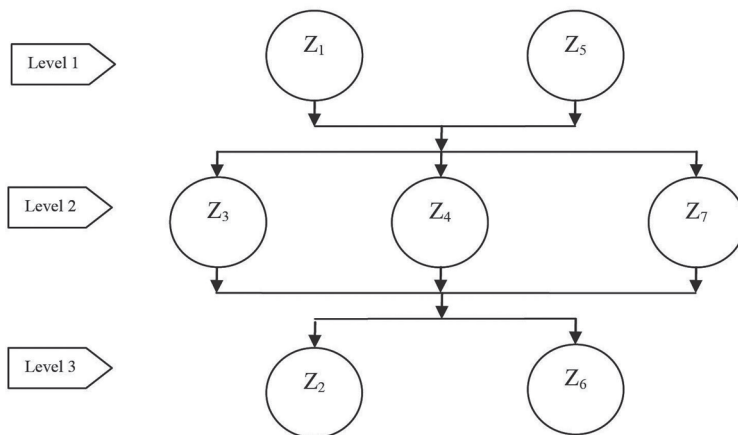
**List of external threats of financial security of machine-building enterprises and their mathematical designation**

Mathematical notation	Name of the threat
1	2
$Z_1$	the instability of the national financial system, the emergence of threatening crisis trends, shortcomings in the use of modern financial instruments (including international ones)
$Z_2$	the volume of the domestic market and the growth of competition from foreign commodity producers
$Z_3$	high loan interest rates on loans from commercial banks

Continued tab. 1

1	2
$Z_4$	insufficiently developed legal system for protecting investors' rights
$Z_5$	illegal activity of criminal structures, competitors, firms and individuals, and corruption in state government agency
$Z_6$	labor potential migration
$Z_7$	inflationary processes

Based on the method of graph theory [2, 4, 6], we have developed a graph of connections between external threats; the binary matrix of dependence and the reach matrix has been constructed, which subsequently allowed the formation of a hierarchical structured model (Graph 1), which simulates the priority of the influence of external threats on the financial security of machine-building enterprises.



Graph 1. Model of the hierarchy of the impact of external threats on the financial security of machine-building enterprises

At the next stage of the study, our attention has been focused on internal threats to the financial security of machine-building enterprises, including (Table 2).

Table 2

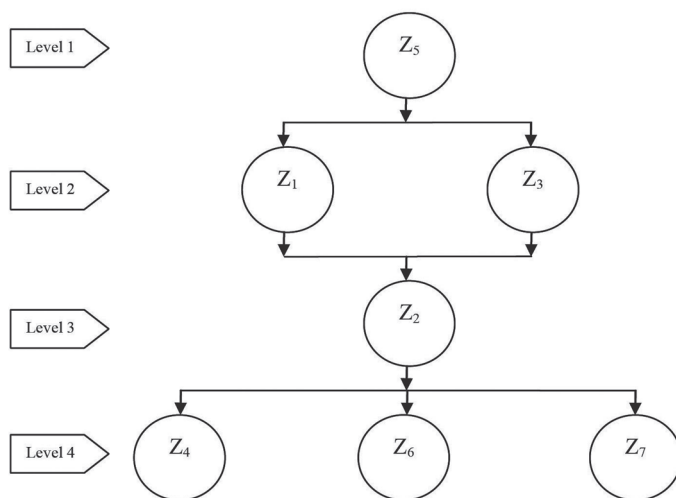
**List of internal threats to financial security of machine-building enterprises and their mathematical designation**

Mathematical notation	Name of the threat
1	2
$Z_1$	insufficient amount of own circulating assets
$Z_2$	growth in volume and a decrease in the quality of receivables and payables

Continued tab. 2

1	2
$Z_3$	use of ineffective instruments for risk management
$Z_4$	lack of an effective system for motivating employees of financial departments
$Z_5$	inefficient accounting and analytical support
$Z_6$	dependence on external sources of financing
$Z_7$	decrease in profitability of financial and economic activity

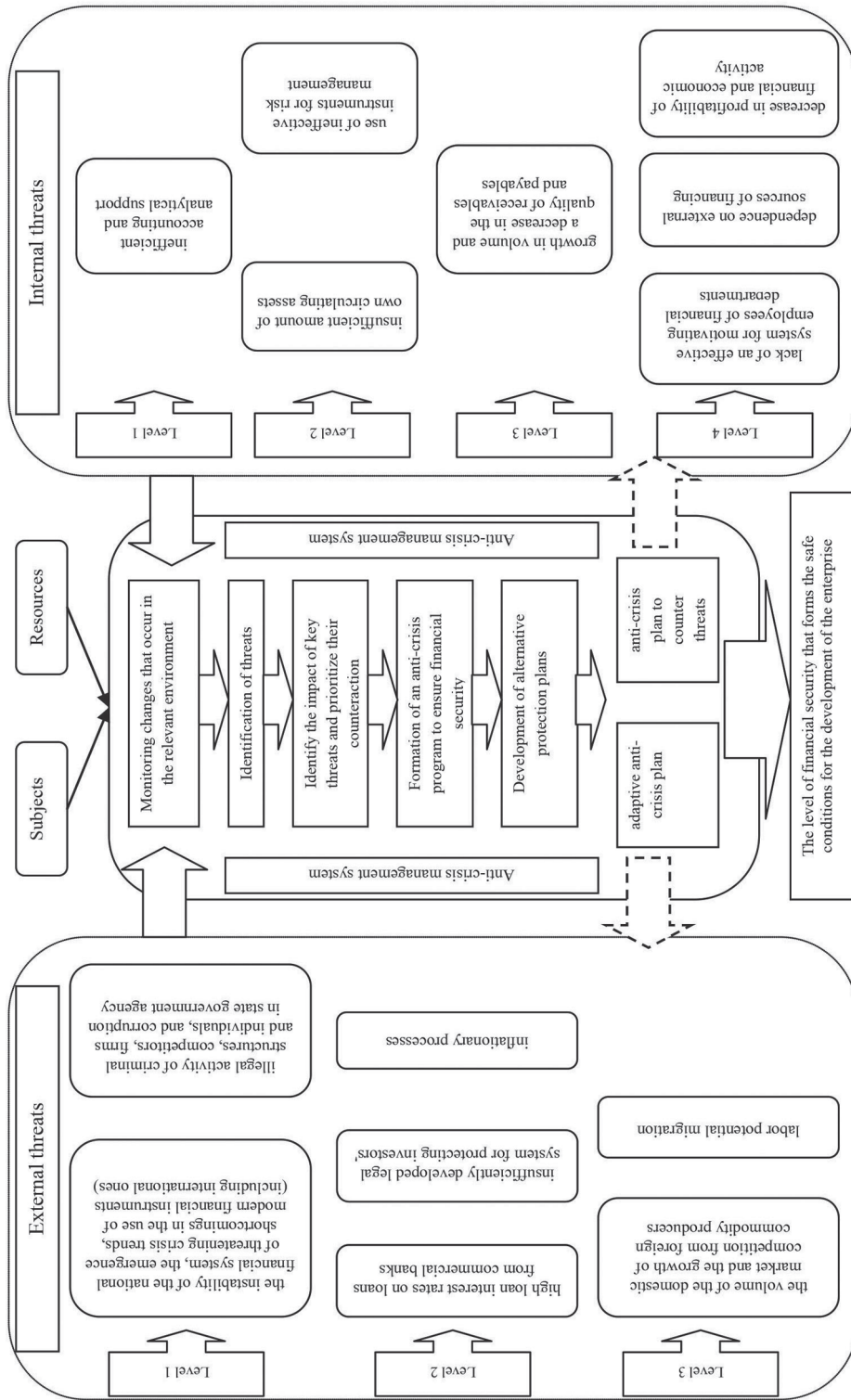
By step-by-step implementation of all calculations, we constructed a structured model (Graph 2), which characterizes the priority of the impact of threats on the financial security of machine-building enterprises.



Graph 2. Model of the hierarchy of the impact of internal threats on the financial security of machine-building enterprises

Summing the intermediate results, it is reasonable to state that by applying the theory of graphs, we were able to order hierarchically the external and internal threats identified by us and determine the priority of each of them influencing the financial security of engineering enterprises. The results of this research make it possible to form a modern mechanism (the threats were formed based on the results of an analysis of the activities of the selected group of machine-building enterprises in the period 2013-2017) to protect against these threats through the use of the system of anti-crisis management (Graph 3).

Anti-crisis measures that can be applied to the enterprise differ in the dependent type of threats at the moment that most affect its financial security. Therefore, we saw two anti-crisis plans that must be applied in the event of an impact of a particular threat:



Graph 3. Anti-crisis mechanism to counter the impact of external and internal threats to the financial security of the machine-building enterprises

1. Adaptive anti-crisis plan, which must be used in case of significant influence from external threats. The problem is that, basically, the enterprise simply can not put up any counteraction to the influence of a large number of external threats. For example, an enterprise can not affect the level of inflation or stop labor migration throughout the country. Therefore, in that case, the only way out is to comply with the adaptation plan, which involves the development of appropriate adaptation programs.

2. An anti-crisis plan to counter threats can be chosen to protect against the impact of internal threats, since this type of threat can be effectively controlled and prevented from internal services of the enterprise.

An important place in the implementation of each anti-crisis plan to protect against the impact of threats on the financial security of machine-building enterprises is the amount of available resources. The main ones that should be used by subjects of anti-crisis management are not only financial but also personnel, information and so on. That is, the effectiveness of the implementation of the anti-crisis mechanism depends on the clarity of the formation of the system of anti-crisis management and the allocated resources for the implementation of anti-crisis plans.

**Conclusions.** The theoretical and analytical study allowed to develop oriented graphic models and corresponding access matrices that reflect the connection between threats and served as the basis for hierarchical ordering of key threats to the financial security of machine-building enterprises in Ukraine.

We consider it expedient to emphasize that out of the entire set of threats we have identified only the most significant ones, which are subsequently hierarchically ordered by applying the theory of graphs. The result obtained is averaged for most domestic machine-building enterprises, because each of them is influenced by the external environment and changes caused by internal processes.

Our anti-crisis mechanism for countering external and internal threats to the financial security of machine-building enterprises provides the formation of the system of anti-crisis management, the result of which is the development of two options for anti-crisis plans, which makes it possible to ensure the level of financial security necessary to create safe conditions for the development of the enterprise.

Further research requires the issue of the formation of effective resource support for the process of applying anti-crisis measures in the system of ensuring the financial security of machine-building enterprises.

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- doi: 10.32403/1998-6912-2018-1-56-169-176

#### **АНТИКРИЗОВЕ УПРАВЛІННЯ ФІНАНСОВОЮ БЕЗПЕКОЮ МАШИНОБУДІВНИХ ПІДПРИЄМСТВ: МЕТОДИЧНІ ЗАСАДИ**

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*В умовах постійної та складно прогнозованої зміни зовнішнього середовища і внутрішніх умов здійснення господарської діяльності вітчизняними підприємствами існує висока ймовірність виникнення загроз, реалізація яких може призвести до виникнення ознак кризового стану, а в подальшому і банкрутства. Зростаюча кількість загроз для стійкого та ефективного функціонування фінансової системи підприємства вимагає удосконалення існуючих та розроблення нових механізмів гарантування його фінансової безпеки, які б сприяли завчасному розпізнаванню*

зростання рівня небезпеки та прийняттю адекватних рішень як важливої умови забезпечення необхідного для розвитку рівня економічної безпеки. За результатами проведеного теоретико-аналітичного дослідження визначено сукупності зовнішніх та внутрішніх загроз фінансовій безпеці машинобудівних підприємств в Україні. Із усієї сукупності загроз були виділені лише найбільш суттєві. На основі застосування методу теорії графів ієрархічно впорядковано загрози, що дозволило побудувати відповідні моделі ієрархічного впливу. Отриманий результат є усередненим для більшості вітчизняних машинобудівних підприємств, адже кожен із них перебуває під впливом зовнішнього середовища та змін, які спричинені внутрішніми процесами. Доведено, що господарська діяльність вітчизняних машинобудівних підприємств вимагає поруч із традиційними методами управління, застосування й інших, зокрема антикризового управління. Розроблено антикризовий механізм протидії впливу зовнішнім і внутрішнім загрозам фінансовій безпеці підприємств машинобудування, застосування якого передбачає формування системи антикризового управління, результатом реалізації якої є розроблення двох варіантів антикризових планів, що уможлиблює забезпечення рівня фінансової безпеки необхідного для формування безпечних умов розвитку підприємства

**Ключові слова:** фінансова безпека підприємства, внутрішні загрози, зовнішні загрози, антикризове управління; антикризовий механізм.

Стаття надійшла до редакції 27.04.2018.

Received 27.04.2018.