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THE EFFECTIVENESS OF FINANCIAL MANAGEMENT IN THE SYSTEM OF ENSURING THE SECURITY OF TRADING ENTERPRISES IN THE DOMESTIC MARKET IN WARTIME CONDITIONS

ABSTRACT

The purpose of the study was to substantiate the effectiveness of financial management in the system of ensuring the security of trading enterprises and to assess the effectiveness of such decisions in wartime. The paper examines the role of financial management in ensuring the security of enterprises in the domestic market of Ukraine during the war. To achieve this goal, a database of financial indicators of three Ukrainian trading companies for 2020–2023 was formed. The integral indicator of financial management effectiveness (IFE) was calculated by normalizing key financial ratios. To identify the causal impact of the war and the growth of the "security budget" on IFE, a panel regression model with fixed effects and the "difference-in-differences" methodology was used. It was found that, provided that a sufficient level of liquidity was maintained and the debt burden was controlled, individual enterprises were able to maintain (or even improve) their financial efficiency, despite the increase in security costs. This emphasizes the importance of balanced financial management for business sustainability in wartime. Based on the results of the analysis, practical recommendations were developed regarding the minimum liquidity reserve and the optimal level of security costs, compliance with which will help minimize the negative impact of risk factors on the financial performance of enterprises.

Keywords: financial management, security development, trading enterprises, management, efficiency assessment, domestic market, martial law

JEL Classification: G01, G32, C23, M21, D81

INTRODUCTION

Trading enterprises that develop networks of large-format retail outlets make a significant contribution to the socio-economic progress of the national economy of Ukraine. First of all, it is about the implementation of functions and tasks to promote goods from the sphere of production to consumption, the formation of GDP and the growth of business activity, including in less economically developed territories, the development of the domestic market infrastructure, ensuring employment, creating new jobs and stimulating the development of related types of economic activity, meeting the needs of the population and business in goods and services. At the same time, their stable functioning, strengthening competitive positions, increasing economic efficiency and introducing new impulses into the system of the national economy under modern conditions depends on a proper financial management system. The market economic system is constantly evolving due to the emergence of new conditions for doing business, the introduction into practice of new market instruments, innovative technical and technological means, and management technologies. Numerous dynamic changes in the socio-economic environment permanently require adaptation to new conditions for any business entity. They primarily require the implementation of forms and methods of financial management adequate for specific conditions, as well as the selection of reasonable management guidelines, based on the specifics and environment of the business entity's functioning and the basic efficiency criteria declared by the market.

Today, the financial sector of Ukraine is in a state of constant turbulence, which is caused by a number of foreign policies, and economic and security challenges. Most trade enterprises, the sphere of operation of which is most active in our country, found themselves in difficult business conditions. Such difficult conditions are caused by the limited purchasing power of consumers, unpredictability and complexity of logistics, as well as a high level of business risk. This situation only actualizes the need for the integration of new scientific and practical approaches to financial management, making the security component one of the key ones. Creation of integrated assessment methods, in the context of which a combination of financial and risk-oriented indicators is possible. This is critically important today since prompt and optimized financial activity is a direct indicator of the ability of an enterprise to maintain its own position in the domestic market and ensure financial stability even in difficult military conditions.

Trade intensity is one of the important indicators characterizing socio-economic processes in the country and compliance with global development trends. At the same time, the activities of trading enterprises are determined by a number of typical and new challenges in the form of high competition due to the relatively low barrier to entry of new market participants, dependence on the dynamics of political, social and economic processes, the effectiveness of the work of national producers and the purchasing power of the population, which requires constant focus on solving all current, tactical and strategic tasks from the standpoint of maintaining the required level of business. In general, financial management activities within each trading enterprise are relevant for conducting business and achieving set goals despite the significant impact of external and internal factors. The key is that the parameters of such activities are different compared to industry and other sectors of the national economy.

LITERATURE REVIEW

Trade, as a type of economic activity, characterized by high dynamics in relations with external entities, requires taking into account not only the current situation but also a vision of short-term and more distant changes in consumer demand and competitor activity, requires a response to customer needs and their formation on the basis of reasoned proof of satisfaction options, avoiding intrusive advertising. The strengthening of digitalization trends, which ensures the rapid progress of e-commerce, destroys geographical boundaries in interaction with suppliers and consumers, but also intensifies competition by lowering the threshold for entry into the market for all new participants, given the significant impact of factors such as COVID-19 and military operations.

The competitive environment of a trading enterprise has its own structure. The elements of this structure are a proper financial management system. As Elvik (2019) rightly notes, in modern conditions of a market economy, financial management is an important attribute of the market, which reflects the struggle between producers for more favourable conditions for the production and sale of goods. This is the force that forces production and the market to move towards equilibrium. This should be agreed with, but the question arises of how to assess its feasibility and effectiveness.

Against this background, the statement of Agasty, et.al. (2023) and Cherevko, (2014) that the changes taking place in the country's economy will require enterprise managers to reconsider the functions of financial management is logical. In a market economy, the focus of attention is gradually changing from purely production management to financial management, since to assess the effectiveness of any enterprise, it can compare certain financial results and calculate the corresponding indicators. The lack of a systematic approach to assessing the effectiveness of the financial management of enterprises leads to a deterioration of the already difficult situation and dispersion of the availability of financial resources of commercial enterprises.

In general, we can agree with the statement of Mishra, A., Dubey, A. (2022) and Bhargava, (2022), that modern financial management is a complex system of principles and methods of development and implementation of management decisions aimed at the formation, distribution and use of financial resources of the enterprise and the organization of its cash flows in order to achieve operational-tactical and strategic goals. Therefore, financial management is considered the management of the finances of a trading enterprise. That is, we can generalize the ideas of Bos, et. al. (2020) and Ruda (2014), that financial management, based on the latest achievements in the field of management, all progressive transformations in the practice of the business of trading enterprises, is capable of changing the system of values, priorities and development trends of economic entities. It is associated with the introduction of fundamentally new forms and methods of organizing financial work, and the use of modern financial market mechanisms.

Kuznyetsova et al. (2023) study the development of an international marketing strategy for domestic trade enterprises under martial law and the specifics of the organization of financial management within the framework of this strategy. Particular attention is paid to security tools for the implementation of the strategy in the context of hostilities and post-war reconstruction of the country. In addition, the work by Kryshanovych et al. (2021) models the process of rapid risk

management response to the impact of negative factors. According to the authors, it is precisely such mechanisms that can form the basis for ensuring economic security. This approach emphasizes the importance of reactive response mechanisms for rapid response to destructive environmental factors.

The outbreak of a full-scale military invasion has resulted in unprecedented costs and challenges for the business sector in Ukraine. Analyzing the latest research, it can be determined that Ukrainian authors agree with the thesis that the war has radically changed the financial and regulatory conditions for doing business. Along with them, a number of management practices have also been identified that can help an enterprise maintain sustainability. Therefore, Hetman O. (2023) resorts to an analysis of how the state can reduce the level of regulatory pressure on micro and small businesses in wartime. While Melnyk T. (2023) tried to generalize all aspects of the functioning of enterprises in the trade sector in the period 2022 and 2023, while systemic ways to overcome the greatest risks. Summarizing, it can be determined that the focus of these two scientific works is the process of increasing the resilience of enterprises in wartime. Particular attention is paid to the role of the state and its support mechanisms, which can provide Ukrainian businesses with the opportunity for flexibility, adaptability and innovation. The issue of deregulation and support for small businesses in the trade sector during the crisis period is particularly relevant.

AIMS AND OBJECTIVES

The purpose of the study is to assess the effectiveness of financial management in the system of ensuring the security of trading enterprises in the domestic market in wartime conditions. To achieve this goal, the following main tasks were set:

- to calculate the integral indicator of financial management effectiveness (IFE) based on normalized coefficients and other relevant financial indicators;
- to apply an econometric model of panel data with fixed effects and the difference-in-differences (DiD) approach to assess the impact of the war period and the volume of security spending on the IFE indicator.

METHODS

The article combines quantitative methods (database construction, indicator calculations, econometric modelling) and qualitative methods (expert interviews). One of the key stages is the direct calculation of the integral indicator IFE (an integral indicator of financial management efficiency). Its calculation is carried out according to formula (1):

$$IFE_{it} = (CR_{it}^{norm} + QR_{it}^{norm} + AR_{it}^{norm} + DR_{it}^{norm}) / 4 \quad (1)$$

where, *CR*, *QR*, and *AR* are normalized values of liquidity ratios (current, quick, absolute); *DR* is the normalized inverted debt ratio.

Normalization is carried out according to formula (2):

$$x_{it}^{norm} = (x_{it} - \min(x)) / (\max(x) - \min(x)) \Rightarrow x_{it}^{norm} \in [0;1] \quad (2)$$

all four normalized components are taken with the same weights $w_k=1/4$. Thus, formula (1) integrates the liquidity and debt aspects into a single generalized indicator suitable for comparison, as well as for further econometric analysis.

To assess the impact of war and changes in security spending on the IFE indicator, a panel model with fixed effects was used. The model uses the difference-in-differences (DiD) approach. Let us denote for each observation: $Y_{it}=IFE_{it}$ – the value of the integral indicator for enterprise i in period t ; D_i – the indicator of the «control» or «experimental» group; T_t – the indicator of the period after the start of the war. We took the enterprise "Yusk Ukraine" ($D_i=1$) as the «treatment» object due to its sharp increase in security costs, and the others as controls.

The basic DiD model with fixed effects for companies i and years t has the form (3):

$$IFE_{it} = \alpha + \beta_1 D_i + \beta_2 T_t + \beta_3 (D_i \times T_t) + \mu_i + \varepsilon_{it} \quad (3)$$

where μ_i – is the individual fixed effect of the enterprise, ε_{it} – is the random error.

In the framework of the econometric analysis using the Difference-in-Differences model, the enterprise "Yusk Ukraine" was selected as the object of the "treatment" group (i.e. with the indicator $D_i = 1$) due to the most dramatic increase in security costs after the start of the war. Methodologically, this makes it possible to assess the impact of a significant increase in security costs on the effectiveness of the company's financial management compared to others. Two other companies, in which the dynamics of security costs were more moderate, serve as a control group ($D_i = 0$). Thus, "Yusk Ukraine" acts in the model as an "experimental" enterprise that was affected by the factor of a sharp increase in security costs, while the control enterprises serve as a basis for comparing the impact of this factor.

In order to clarify the volume of security costs and understand the organizational realities of wartime, we conducted a series of interviews with experts, who this time acted as heads of the companies under study. Accordingly, the method of interviewing experts is a type of survey, during which specialists with theoretical knowledge and practical experience in the area under study are involved. During the interviews, all participants in the area under study (including investors and managers) were questioned. Accordingly, information was obtained on what types of security are currently a priority, what changes have occurred in the state's financial policy due to the deployment of a full-scale military invasion, and how budget expenditures are planned. In this context, the experts explained that the "safe" component of the budget includes hired security for facilities (physical security), support for IT systems (cybersecurity), insurance and economic guarantees, as well as financial stabilization mechanisms (reserve funds), etc.

RESULTS

In 2019–2023, several waves of changes in the number of trade enterprises were observed. The first wave can be distinguished in the period 2019–2022 when the number of enterprises continued to decrease (State Statistics Service of Ukraine, 2023). The reduction in the number of enterprises in the first wave is explained by the influence of a wide range of factors. A characteristic trend in the development of wholesale trade in recent years in Ukraine is a gradual reduction in the number of wholesale enterprises due to consolidation, mergers, unification of small and medium-sized wholesale structures, and the development of the wholesale and retail network. We believe that during 2019–2022, that is, the second downward wave, these same processes were intensified by the impact of COVID-19 and the high activity of military operations. The actual processes of consolidation of wholesale trade enterprises allow them to compete on more favourable terms with foreign networks that are actively entering the domestic market of our country, but the nature of the cumulative impact of all factors indicates more of a deterioration in the security situation, with a negative impact on the functioning of retail trade enterprises due to a decrease in the alternative channels of receipt of goods. The unsatisfactory financial results of trading enterprises can be partially explained by the results of tracking changes in the value of such an indicator as the profitability of all activities. The level of the indicator, compared to the situation in the economy as a whole, is significantly affected by a change in the share of food and non-food products of Ukrainian production, i.e., due to the devaluation of the national currency and an increase or decrease in production as a result of military operations. These points prove the need to form a holistic vision of the significance of the influence of both each individual indicator and the total effect, which determines the security situation in the industry as a whole, and therefore the corresponding activity of financial management entities. After the full-scale armed invasion of Russia into Ukraine, the state of trade enterprises underwent significant transformations, which affected their economic stability, logistical connections and business opportunities. A significant part of the enterprises lost access to sales markets, production facilities and warehouses in combat zones or occupations. The relocation process turned out to be extremely difficult due to limited resources, infrastructure difficulties in safer regions and the loss of some personnel. At the same time, despite all these circumstances, in our opinion, trade enterprises demonstrate adaptability and gradually resume work in safer regions, open new service formats and try to adapt to new economic and security conditions (Figure 1).

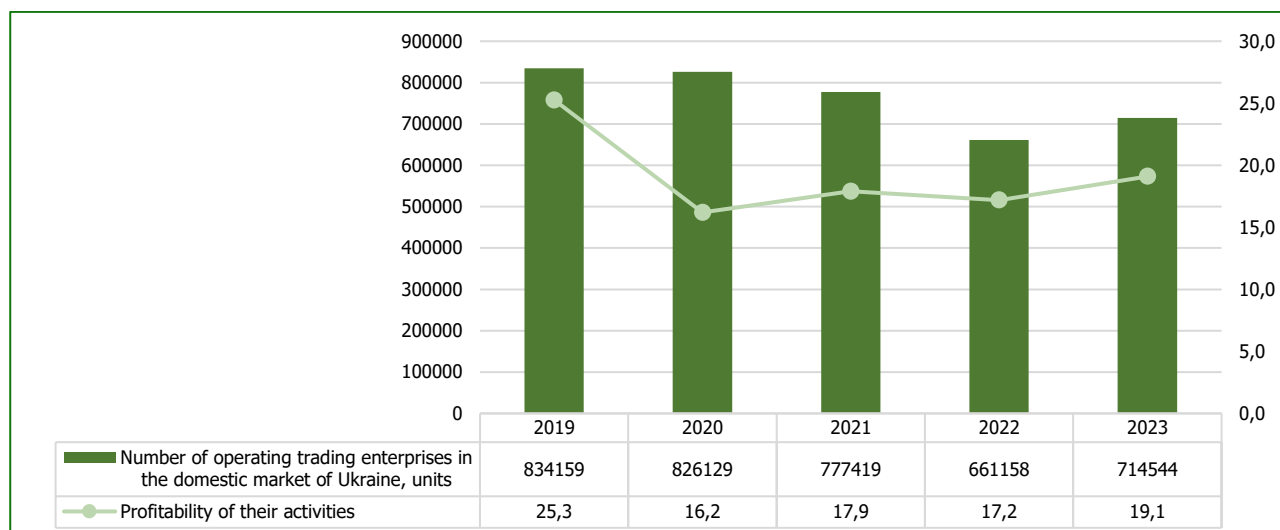


Figure 1. Trend analysis of changes in the number of trading enterprises operating in the domestic market and their profitability for 2019-2023.

It should be noted that for our study, we selected three operating Ukrainian trading enterprises: LLC "Eso-Avtotechniks"; LLC "Lvivkholod"; LLC "Yusk Ukraine". In the context of our study, we will consider several key indicators: revenue, liquidity, debt. Revenue for all selected trading enterprises is growing gradually. Of course, inflationary processes influenced this, but at the same time, such a "smooth" growth trajectory indicates stable demand for daily consumption products even during the war period, but without sharp jumps, since the company is oriented towards a regional format and maintains a moderate pricing policy. Liquidity indicators are different for everyone. For example, for LLC "Lvivkholod" it remains low, for LLC "Yusk Ukraine" it is improving, but in 2023 there is a decline. It is worth noting that it was precisely after the start of the war (2022-2023, which we covered at the time of the study), that security costs increased for all the enterprises we selected (Table 1).

Table 1. Input data for modelling for each enterprise.

Years	LLC "Lvivkholod"	LLC "Yusk Ukraine"	LLC "Eso-Avtotechniks"
Revenue, UAH billion			
2020	4.1	2.6	4.7
2021	4.4	3.4	5.7
2022	5.2	4.6	5.4
2023	5.8	6.3	8.3
Debt obligations, UAH billion			
2020	1.2	0.3	1.3
2021	1.3	0.39	1.4
2022	1.6	0.91	1.5
2023	1.8	2.2	1.4
Security costs, UAH million			
2020	43	63	49
2021	55	80	59
2022	110	230	90
2023	130	290	115

Separately, in the form of a graph, we present the results of calculating liquidity indicators for selected trading enterprises (Figure 2).

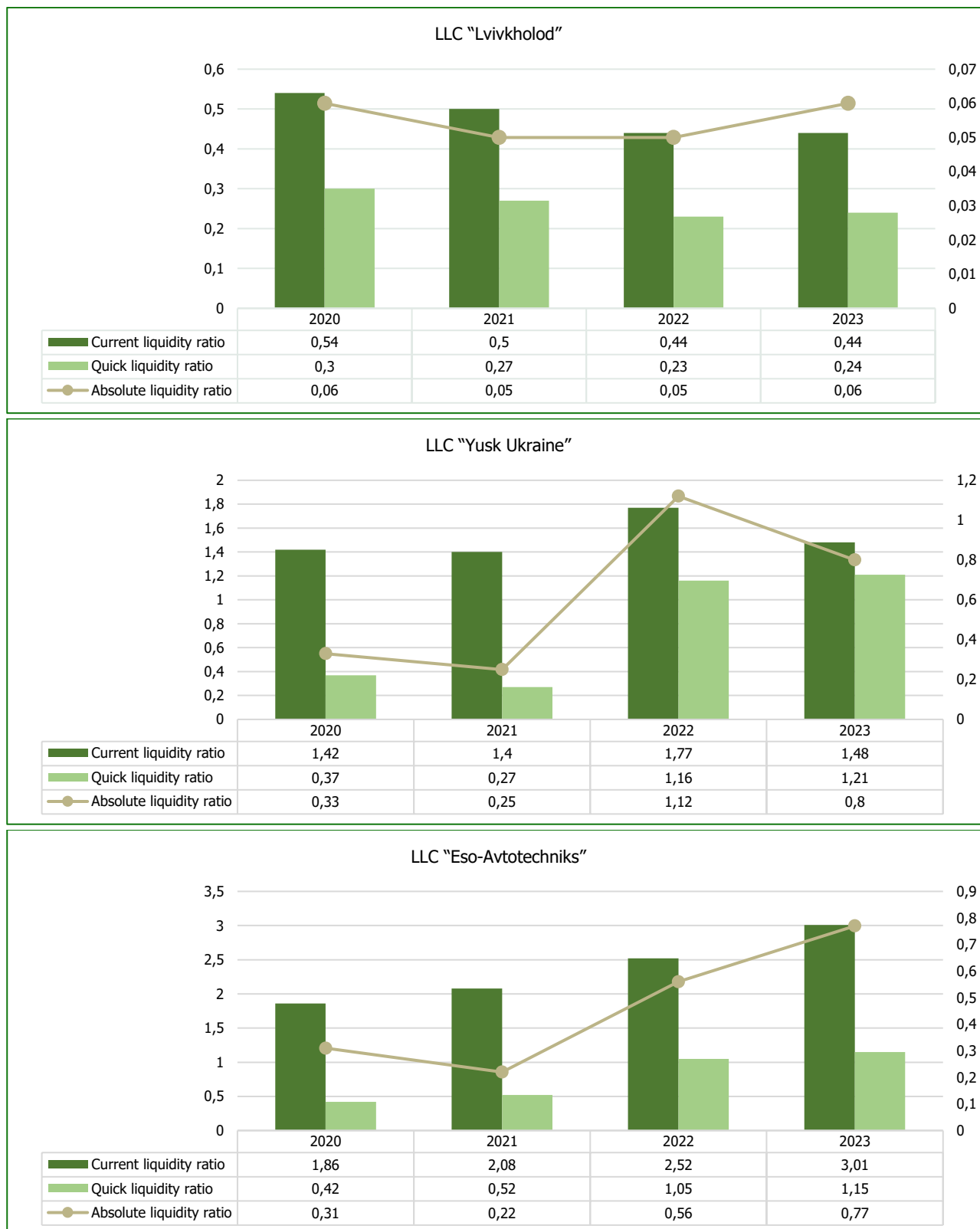


Figure 2. Results of calculating liquidity indicators for selected trading enterprises for the period 2020-2023.

To begin with, we calculated the financial management efficiency (IFE) indicator of enterprises (2020–2023). According to the calculation results, we see that liquidity indicators according to formula (1) play a significant role and, therefore, this affected its results. For example, in 2022, LLC "Yusk Ukraine" sharply increased liquidity and increased its cash reserves (hence the jump in IFE ≈ 0.81). At the same time, due to the debt load and a decrease in absolute liquidity, it decreased in 2023 (Figure 3).



Figure 3. Integrated financial management efficiency indicator (IFE) of enterprises for the period 2020-2023.

Next, we present the results of the regression analysis and their interpretation. The model was estimated using the least squares method with fixed effects of enterprises. The results are presented in Table 2. The constant (Intercept) ≈ 0.619 ($p < 0.001$) means that before the war (2020–2021) the control group (all except LLC «Yusk Ukraine») had an average IFE value ≈ 0.62 . The coefficient «Post-war period» $\beta_2 \approx 0.272$ ($p = 0.089$) reflects the overall effect of the war on the IFE of the control group. A positive value means that in 2022–2023 The IFE of the control enterprises increased on average by 0.272 (this is significant at the 10% level). In other words, even without taking into account "Yusk", after the war the financial indicators did not significantly increase. The interaction coefficient $Di \times Tt$ $\beta_3 \approx 0.512$ ($p = 0.068$) is the key DiD-effect. It means that the additional decrease in IFE for "Yusk Ukraine" after the war is 0.512 (compared to the others). The high coefficient β_3 in absolute value (0.512) and its plus sign indicate: that after the war "Yusk Ukraine" demonstrates much better financial management efficiency than expected, the difference-in-differences idea confirms that this particular enterprise did not suffer the greatest blow.

Table 2. Panel regression results (DiD model).

Indicators	β	Std. error	t-statistic	p-value
Indicator	0.6190	0.099	6.234	<0.001
Constant (IFE before the war, control)	0.3079	0.172	1.790	0.111 (H/3)
Group "Yusk" (Di)	0.2719	0.140	1.937	0.089*
Period after the war (Tt)	0.5121	0.243	2.105	0.068*

The indicator "Group "Yusk" (Di)" in Table 2 of the panel regression corresponds to the coefficient on the dummy variable Di , which denotes the company's membership in the "Yusk Ukraine" group. In other words, $Di = 1$ for "Yusk Ukraine" and $Di = 0$ for the other two companies under study. This coefficient reflects the difference in the baseline level of the integral indicator of financial management efficiency (IFE) between the "Yusk Ukraine" company and the average value for the control group before the impact of the military factor.

LLC «Yusk Ukraine» gave a positive dynamic effect in 2022 due to a sharp increase in liquidity, but gradually "ate up" part of the advantage with debt in 2023 - this explains the slippage of IFE to 0.66. LLC «Eso-Avtotechniks» consistently improves both liquidity and relative debt, therefore it received the highest index in 2023. At the same time, we can see that there is a certain interdependence between financial management and security development. Therefore, enterprises that can simultaneously increase liquidity and control their debt obligations are able to increase their integral efficiency, even if they need to increase security costs. At the same time, we believe that financial management should balance:

- a minimum liquidity reserve $\geq 25\%$ of current assets;
- dynamic adjustment of the "security" budget according to risk;
- search for external sources (insurance, grants) for security financing.

The choice of the threshold value of the minimum liquidity reserve at the level of not less than 25% of current assets is due to the desire to provide the enterprise with a sufficient financial buffer in crisis conditions, in particular during the war. Such a reserve is equivalent to approximately a quarter of the enterprise's working capital, which, in essence, corresponds to covering the costs of about one-quarter of operations without additional revenues. We believe that a threshold of, for example, 20% would be too low.

At the same time, it should be noted that security development does not necessarily have to lead to a decrease in efficiency. This is possible if liquidity and debt control are carried out in parallel. A striking example of this is the activity of Eso-Avtotekhniks. With an increase in security costs (from UAH 90 to UAH 115 thousand), this enterprise had a positive IFE dynamic. Therefore, we believe that the optimal "safe budget" should be 3% of revenue for the average retail. While exceeding the 5% threshold without compensatory measures leads to a reduction in IFE.

DISCUSSION

In the work of Kuznetsova et al. (2022) and Shkolnyk et al. (2021) the issue of financial inclusion and sustainability at the macro level of the financial system (in particular, at the sectoral and national levels) is considered. While Mackevičius & Valkauskas (2010) and Sylkin et al. (2019) focus on the formation of a toolkit for the general assessment of the financial condition of an enterprise both in a stable environment and in times of crisis. Comparing our study with the above, it should be noted that our work for the first time combines the use of micro-level panels in the context of a crisis state of a full-scale war. Thus, we investigated how individual trading enterprises can ensure their own financial efficiency under the condition of increasing security costs. In addition, we introduced a categorical distribution (physical/cyber/economic/financial security). This aspect is missing in other works and forms a significant scientific novelty of the study.

In contrast to the static approaches found in the study by Mackevičius & Valkauskas (2010) and the formation of single-factor models of the credit market by Parubets et al. (2023), we used fference-in-differences on the 2020–2023 panel with fixed effects. This allowed us to clearly identify the causal relationship between the influence of the war period and security budgets on fluctuations in the integral indicator IFE. As a result of applying this approach, we found that an increase in the level of security expenses does not necessarily provoke a decrease in the efficiency of the enterprise. This is possible if measures to increase liquidity are carried out in parallel. Consequently, the greatest increase in IFE is seen in the enterprise that has implemented anti-crisis practices (to form liquid reserves) in a complex of security projects. This is somewhat different from the conclusion of Sylkin et al. (2019), who believe that only anti-crisis management is key. In addition, comparing our work with Kuznetsova et al. (2022), which focuses on expanding access to financial services, we note that an equally powerful tool for ensuring sustainability can be the intra-firm redistribution of resources, during which liquidity security parity will be achieved.

Thus, our study is distinguished by: military context, a microeconomic level of observation, the use of DiD tools, and the introduction of a multi-component security budget as a key factor in the effectiveness of financial management.

CONCLUSIONS

The obtained composite indicator IFE gives a clear understanding of its high sensitivity to a number of factors. Consequently, those enterprises that had the so-called "cushion" of liquid assets, but simultaneously increased their security costs (like Eso-Avtotekhniks LLC), had the opportunity to increase the integral efficiency even in the most critical periods, when the efficiency of military operations or shelling was the highest. At the same time, those companies that adhered to conservative principles of a budget organization in their activities and had weak liquidity demonstrated minimal fluctuations in IFE and remained in the low-efficiency zone. In a practical context, this will mean the need for a prompt reorientation of financial management from short-term measures to obtain profit to the formation and implementation of long-term mechanisms for ensuring sustainability, where security will act as an equilibrium element along with capital productivity. Thus, we recommend forming liquidity reserves of at least 25% from current assets, while maintaining debt at a level that will not exceed 40% of revenue. It is also important to direct 2-4% of income to a multi-level "safe portfolio". To summarize, we have confirmed that rational integration of the financial and safe concept will not only minimize the risks of suspension of operations but will also create conditions for the growth of the enterprise value in the post-war period.

Further work should be directed at expanding the sample to at least 30 enterprises from different trade sub-industries, which will allow to increase the statistical power of DiD estimates and compare the "net" effect of security investments in FMCG stores, DIY retail and the auto service segment. Also promising is the combination of panel econometrics with Monte Carlo simulation modelling for scenario testing. The inclusion of non-financial KPIs (store downtime, inventory losses, cyber

incident scoring) will allow us to build a multidimensional model of the cost of security that addresses both direct and indirect benefits.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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ЕФЕКТИВНІСТЬ ФІНАНСОВОГО МЕНЕДЖМЕНТУ В СИСТЕМІ ЗАБЕЗПЕЧЕННЯ БЕЗПЕКИ ТОРГОВЕЛЬНИХ ПІДПРИЄМСТВ НА ВНУТРІШНЬОМУ РИНКУ В УМОВАХ ВОЄННОГО ЧАСУ

Метою проведеного дослідження було обґрунтувати ефективність фінансового менеджменту в системі забезпечення безпеки торговельних підприємств та оцінити ефективність таких рішень у воєнний час. У роботі розглянута роль фінансового менеджменту в забезпеченні безпеки підприємств внутрішнього ринку України під час війни. Для реалізації мети було сформовано базу фінансових показників трьох українських торговельних компаній за 2020–2023 роки. Розраховано інтегральний показник ефективності фінансового управління (IFE) шляхом нормалізації ключових фінансових коефіцієнтів. Для виявлення причинно-наслідкового впливу війни та зростання «бюджету безпеки» на IFE застосовано панельну регресійну модель із фіксованими ефектами й методологію «різниця-в-різницях». Виявлено, що за умови підтримання достатнього рівня ліквідності та контролю боргового навантаження окремі підприємства спромоглися зберегти (або навіть поліпшити) свою фінансову ефективність, незважаючи на зростання витрат на безпеку. Це підкреслює важливість збалансованого фінансового менеджменту для стійкості бізнесу в умовах воєнного часу. За підсумками аналізу розроблено практичні рекомендації щодо мінімального резерву ліквідності та оптимального рівня витрат на безпеку, дотримання яких допоможе мінімізувати негативний вплив факторів ризику на фінансову результативність підприємств.

Ключові слова: фінансовий менеджмент, безпековий розвиток, торговельні підприємства, управління, оцінювання ефективності, внутрішній ринок, воєнний стан

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