Capital and liquidity assessment
in the context of preventing corporate insolvency

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Abstract. The relevance of the study is stipulated by the need for a comprehensive assessment of the financial stability of enterprises through the analysis of the capital structure and liquidity in the conditions of an unstable economic environment. Directions for improving the assessment of the capital structure and liquidity of enterprises in the context of preventing insolvency have been substantiated in accordance with the purpose of the study. The methodological basis of the study included the statistical analysis, correlation research and visualisation of empirical data based on scatter plots and histograms of Equity-to-Assets and Quick Ratio indicators distribution on the example of seven enterprises of Ukraine operating in the field of non-specialised wholesale trade for the period 2021-2024. The obtained results demonstrated a moderate positive correlation between Equity-to-Assets and Quick Ratio indicators, which confirmed the complex multifactorial nature of the solvency formation. It gave grounds to argue that the general trend of increasing the share of equity capital contributes to improving the quick liquidity of the enterprises, which formed the sample under study. The analysis of Equity-to-Assets and Quick Ratio indicators distribution revealed the asymmetry in the distribution, which emphasised the feasibility of using additional research methods, in particular, cluster analysis for enterprise typology. A significant part of enterprises is concentrated in the range of moderate capitalisation (5-30%) and a sufficient level of liquidity (>80%), however, the enterprises with signs of the financial condition deterioration emphasised the need to strengthen financial risk management and restructuring of obligations. The practical value of the study is determined by

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the integration of modern quantitative analysis tools into the processes of insolvency prevention, creating the basis for a well-founded adaptation of management strategies in response to the identified statistical patterns of relationships between key solvency indicators, in particular Equity-to-Assets and Quick Ratio, which is of particular relevance in the conditions of destabilised macroeconomic environment and growing external and internal risks for business entities

Keywords: capital management; capital structure; Equity-to-Assets; financial liabilities; Quick Ratio

● INTRODUCTION

Managing an enterprise's equity capital in the face of insolvency is critically important for ensuring financial stability and preventing bankruptcy. Modern research focuses on the use of financial indicators, risk assessment models and strategic controlling tools for timely identification of problems and making effective management decisions. According to M.A. Kumar & S. Sharma (2024) and Ł. Antos (2025), financial indicators are the key indicators for preventing enterprise insolvency, in particular liquidity ratios, capital turnover, profitability and the ratio of equity to debt capital, which allow identifying potential problems before they become critical. As H. Havrysh & M. Garbuzyuk (2024) believe, presenting discriminant models using Altman models, fuzzy set analysis and others, allow for a comprehensive assessment of the bankruptcy risk and the adaptation of the approach to the specifics of the enterprise and industry.

Scientists T. Conlon *et al.* (2020) have pointed out that the capital structure of an enterprise is closely related to the level of financial stability and therefore to the risk of insolvency, which increases in cases of borrowed capital dominance over own capital. One of the key risks in this context is the risk of financial leverage, which is caused by excessive involvement of debt resources, which, in the absence of effective liquidity management and asset profitability, leads to an increase in the financial burden and a decrease in solvency ratios. Irrational use of equity and borrowed capital can lead to an increase in the risk of insolvency. Insufficient level of capitalisation of enterprises, that is, an underestimated share of equity in the overall financing structure, creates a stable basis for financial vulnerability in the face of external adverse factors.

According to E. Alghifari *et al.* (2022), attention is focused on the relationship between capital structure, profitability, hedging policy, company size and its market value. The authors have emphasised that poor management of these elements can affect the business value. O. Bohdaniuk & O. Bohdaniuk (2021) and Q. Huynh *et al.* (2022) have studied the importance of financial leverage in the relationship between corporate governance and company performance. The findings suggest that corporate governance raises financial costs by increasing the debt ratio in financial leverage. According to M. Kaakeh & K.K. Gokmenoglu (2022), the factors, determining the capital structure of technology companies in China, have been analysed. Empirical results showed that size, financial costs, liquidity, tangibility, profitability and non-debt tax shields have a significant impact on the leverage structure of Chinese technology companies. O. Kruhlova *et al.* (2023) have focused on the impact of economic and non-economic factors on the profitability of enterprises. It has been discovered that insufficient consideration of macroeconomic instability, political factors and internal efficiency of capital management can lead to a decrease in profitability.

Scientists L. Dokiienko *et al.* (2024) have calculated key financial indicators and parameters of their financial security over the past nine years based on the financial statements of Ukrainian enterprises, grouped by types of economic activity. The research has proved that the peculiarities of financing enterprise activities, which directly affect the level of financial risks, are of crucial importance for ensuring the financial security of enterprises. Prevention of insolvency results from preventing the simultaneous impact of both internal financial imbalances associated with capital structure and liquidity and external factors that are not always subject to control by the enterprise, although must be taken into account in the process of strategic financial planning.

One of the key aspects of ensuring the financial balance of an enterprise is the formation of an effective capital structure, providing for achieving an optimal ratio between own and borrowed sources of financing. As S. Achkasova & O. Platukhin (2023) have pointed out, the right balance between the level of debt and the share of equity allows minimising the cost of enterprise capital, while simultaneously reducing the risk of financial instability and increasing the investment attractiveness of the business entity. According to these scientists, a high level of capitalisation creates a strategic financial reserve that serves as a shock absorber in the event of external shocks.

All this prompted the authors of the present article to focus on comprehensive approaches to assessing the financial stability of enterprises, taking into account their capital structure and liquidity level in the conditions of increased insolvency risk. The purpose of the article was to identify areas for improving the assessment of the enterprise capital structure and liquidity, taking into account the need to prevent their insolvency. This goal was achieved through the following objectives: to analyse the financial indicators (Equity-to-Assets and Quick Ratio) of non-specialised wholesale trade enterprises of Ukraine for the period 2021-2024 in order to identify trends in changes in the capital structure and quick liquidity in the conditions of economic instability; to assess the nature and strength of the correlation between Equity-to-Assets and Quick Ratio indicators in order to determine the dependence between the level of financial autonomy and quick liquidity of enterprises in the context of preventing insolvency.

● MATERIALS AND METHODS

The object of this research is the financial performance of seven Ukrainian enterprises, operating in non-specialised wholesale trade (KVED 46.90). The following enterprises have been studied: Subsidiary Enterprise of the State Company "Ukrspetsexport" – State Self-Supporting Foreign Trade Enterprise "Spetstechnoexport", LLC "Enterprise with Foreign Investments 'ASBIS-Ukraine'", LLC "Nestlé

Ukraine", LLC "ERU Trading", LLC "UK Distribution", PJSC "SAV Orbico", LLC "Avtobanservice". The analysis covers the period from 2021 to 2024. The selection of enterprises was carried out based on the availability of complete annual reports and active economic activity during the studied period. Primary data were collected from public financial reporting and aggregated using the YouControl (n.d.) service.

For each enterprise, two financial ratios, characterising the capital structure and the level of liquidity, were selected: Equity-to-Assets (%) – the share of equity in the total asset structure of the enterprise; Quick Ratio – the quick liquidity ratio, which characterises the enterprise's ability to repay short-term liabilities with the most liquid assets. The autonomy ratio (Equity-to-Assets) is an indicator of solvency, which characterises the share of the company's equity in the total amount of funds invested in its activities. The higher this ratio, the more financially independent the company is from creditors. The quick liquidity ratio (Quick Ratio) is an indicator of liquidity, which describes the short-term liquidity position of the enterprise, i.e. the ability to cover short-term liabilities with the most liquid assets.

Data processing and graphing were performed in Jamovi (n.d.) software environment (version 2.6.26), which is based on the R statistical programming language (The comprehensive…, n.d.). The following statistical and economic methods were used in the analysis: descriptive statistics to assess variables in dynamics, construction of distribution graphs (histogram and boxplot), correlation analysis to identify the relationship between Equity-to-Assets and Quick Ratio. The choice to use Jamovi is justified by the possibilities it offers, for example, deeper statistical processing of the R programming language, which is a powerful environment for performing complex calculations, statistical modelling and graphing.

This study used statistical and economic methods to process primary empirical data, characterising the financial condition of enterprises engaged in non-specialised wholesale trade (KVED 46.90), which made it possible to carry out a comparative assessment of the dynamics of changes in the capital structure and liquidity level over time, identify general trends, asymmetry and illustrate the behaviour of indicators in a sample of enterprises. Correlation analysis was used to determine the relationship between the share of equity and the level of liquidity, which made it possible to quantitatively assess the strength and direction of the relationship between variables and analyse the potential impact of capital structure on the current solvency of enterprises.

The graphical method was used to visualise the obtained results on the construction of scatter diagrams, histograms, which made it possible to clearly present the financial profiles of enterprises by key indicators of Equity-to-Assets and Quick Ratio. The abstract-logical method was used to formulate conclusions and develop recommendations for improving financial management in the conditions of insolvency risk, which involves strengthening the requirements for the capital structure. Digital management models offer an integrated vision of insolvency risk, which takes into account the efficiency of resource use and the potential for restoring solvency. The integration of these tools into the research methodology contributed to obtaining objective results.

● RESULTS AND DISCUSSION

Insolvency occurs when a company is unable to meet its debt obligations, which can lead to bankruptcy. The number of enterprises with negative equity and critical liquidity indicators increased by approximately 20% in 2022-2023, especially in the wholesale trade sector (Assets, equity, liabilities…, 2024). A comprehensive assessment of the capital structure and liquidity of enterprises was carried out based on empirical data from seven Ukrainian companies, operating in the non-specialised wholesale trade sector (KVED 46.90) for the period 2021-2024. The analysis covered the values of Equity-to-Assets and Quick Ratio indicators, which are key indicators of financial stability and liquidity. The results are presented in the form of distribution histograms and scatter plots, which allows identifying intra-group differences and general trends. Equity-to-Assets and Quick Ratio indicators of seven Ukrainian enterprises (main KVED 46.90, non-specialised wholesale trade) for the period 2021-2024 as a percentage are presented in Table 1.

Table 1. Equity-to-Assets and Quick Ratio indicators of seven Ukrainian enterprises
(main KVED 46.90, non-specialised wholesale trade) for the period 2021-2024, %

Business entity	Equity-to-Assets				Quick Ratio			
	2021	2022	2023	2024	2021	2022	2023	2024
Subsidiary Enterprise of the State Company "Ukrspetsexport" – State Self-Supporting Foreign Trade Enterprise "Spetstechnoexport"	8.4	3.7	1.8	2.3	97.1	96.8	95.3	90.8
LLC "Enterprise with Foreign Investments 'ASBIS-Ukraine'"	6.7	13.3	14.1	11.3	88.2	78.4	83.6	73.6
LLC "Nestlé Ukraine"	-119.3	-106.6	-65.8	8.7	28.5	34.6	30.7	62.5
LLC "ERU Trading"	11.9	13	14	19.4	131.5	110.8	115.0	119.4
LLC "UK Distribution"	27.8	24.5	20	18.3	90.1	80.2	93.4	81.8
PJSC "SAV Orbico"	9.8	19	36.9	45.5	75.3	75.1	104.2	84.5
LLC "Avtobanservice"	22.5	13.6	14.7	7.7	82.6	83.3	64.6	58.4

Source: created by the authors based on YouControl (n.d.)

As it can be seen from Table 1, the analysis of Equity-to-Assets and Quick Ratio indicators for seven Ukrainian enterprises, operating in non-specialised wholesale trade (KVED 46.90), for the period 2021-2024, allows for a comprehensive assessment of the state of equity management in the face of insolvency. In general, the dynamics of the specified financial ratios indicate significant variability in approaches to financing activities, the efficiency of current assets use, as well as the risks of losing financial stability, which, in turn, determines the need for systematic strategic control over the capital structure.

The most critical situation is at LLC "Nestlé Ukraine", where during 2021-2023 a deeply negative value of Equity-to-Assets ratio is observed (from -119.3% to -65.8%), which indicates an excess of liabilities over assets and an actual loss of equity. Only in 2024 the value of this indicator moved into the positive zone (8.7%), which can be interpreted as the result of additional capitalisation or restructuring measures, however, even with such an improvement, the company remains in the high-risk zone. At the same time, Quick Ratio values demonstrate an increase in liquidity (from 28.5% to 62.5%), which, despite the negative values of equity, can result from a change in the structure of short-term assets, in particular due to the management of receivables or inventories.

The rest of the enterprises demonstrated relatively stable or positive trends in equity management, among which special attention is drawn to LLC "ERU Trading", which during the analysed period consistently increases the equity share in the total asset structure (from 11.9% to 19.4%), while maintaining a high level of quick liquidity ratio (within 110.8-131.5%), which indicates a low probability of insolvency. Similarly, the indicators of LLC "UK Distribution" demonstrated a decreasing trend in a gradual change in the structure of equity (from 27.8% to 18.3%), however, the level of liquidity remains relatively stable and makes it possible to promptly cover current liabilities.

In the case of LLC "ASBIS-Ukraine", there was an increase in Equity-to-Assets from 6.7% in 2021 to a peak value of 14.1% in 2023, with a subsequent somewhat unfavourable decrease to 11.3% in 2024, while Quick Ratio decreased to 73.6%, which may indicate a weakening of operational liquidity due to a decrease in the volume of easily sold assets or an increase in short-term liabilities, which creates additional risks of losing solvency in the event of external shocks. The indicators of PJSC "SAV Orbico" demonstrated a positive trend in increasing the share of equity (up to 36.9% in 2023), with Quick Ratio remaining at a high level (from 75.1% to 104.2%), which indicates effective liquidity management and financial stability.

The least favourable dynamics is demonstrated by LLC "Avtobanservice" with Equity-to-Assets decreased from 22.5% in 2021 to 7.7% in 2024 and Quick Ratio indicator decreased from 82.6% to 58.4%. Thus, the results of the analysis suggest that in the conditions of economic instability, caused by both internal and external factors, maintaining short-term liquidity is not the only challenge for enterprises, whereas ensuring long-term financial stability by optimising the capital structure, reducing dependence on external sources of financing should not be underestimated. All this is a prerequisite for maintaining solvency in the face of growing challenges and an unstable financial environment. The scatter diagram of Equity-to-Assets and Quick Ratio indicators of seven Ukrainian enterprises for the period 2021-2024 is presented in Figure 1.
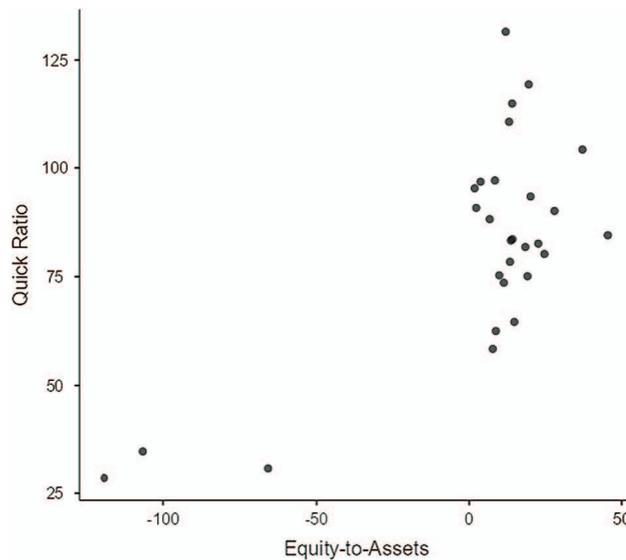
Figure 1. The scatter diagram of Equity-to-Assets and Quick Ratio indicators of seven Ukrainian enterprises (main KVED 46.90, non-specialised wholesale trade) for the period 2021-2024

Source: compiled by the authors

Figure 1 visualises the relationship between Equity-to-Assets and Quick Ratio for a set of observations obtained from a sample of seven Ukrainian enterprises for the period 2021-2024 by constructing a two-dimensional scatter diagram. Each point on the graph corresponds to one enterprise in a particular year (i.e., a total of 28 points: 7 enterprises × 4 years). The absence of a strong trend or correlation structure between the indicated

variables suggests a low level of linear dependence between the equity capital structure of the enterprise (Equity-to-Assets) and its short-term liquidity (Quick Ratio). This emphasises the multifactorial nature of liquidity formation, which is determined by the capital structure, as well as working capital management policy, average receivable collection period, inventory levels and external financial constraints.

The clustering of points in the upper right quadrant of the graph (where Equity-to-Assets > 0, and Quick Ratio > 80%) suggests that some enterprises with an adequate capital structure, combined with high operational solvency, are able to repay their short-term liabilities on time without a significant risk of losing financial equilibrium. At the same time, the points in the lower left quadrant, especially with negative values of Equity-to-Assets (up to -119%), indicate enterprises whose capital is exhausted, which from a mathematical perspective suggests a negative equity share in the balance sheet (liabilities exceed assets) and

meanwhile demonstrate low liquidity, which is a direct indicator of the threat of bankruptcy. The high degree of dispersion along the X-axis confirms the significant heterogeneity in the capital structure among the sample, which makes it difficult to form a single financial strategy without adapting to the specifics of each entity.

The points concentrated in the upper right quadrant of the graph illustrate the enterprises with a stable positive value of Equity-to-Assets and a sufficient level of liquidity (Quick Ratio > 80%), which meets the conditions of financial stability and low risk of insolvency. On the contrary, single observations with negative values of equity (Equity-to-Assets < 0), especially in combination with low or borderline values of Quick Ratio, signal the presence of enterprises with signs of a potential financial crisis. Figure 2 presents the distribution of Equity-to-Assets indicator according to the data from seven Ukrainian enterprises (main KVED 46.90, non-specialised wholesale trade) for the period 2021-2024.
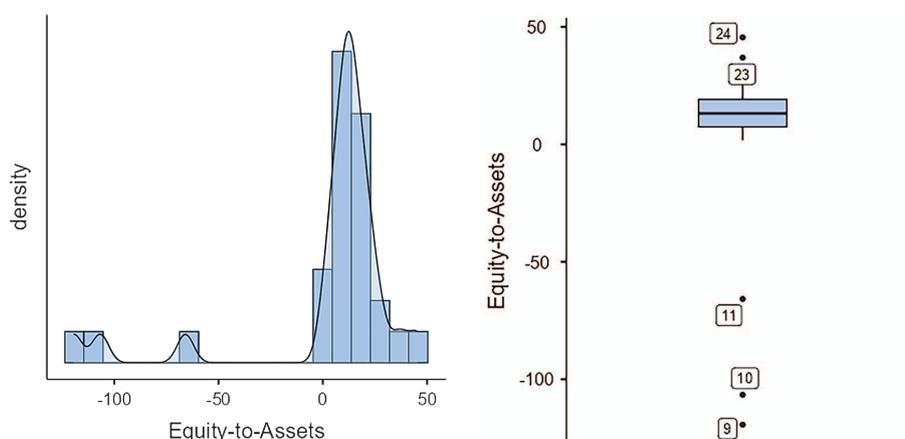
Figure 2. The distribution of Equity-to-Assets indicator according to the data from seven Ukrainian enterprises (main KVED 46.90, non-specialised wholesale trade) for the period 2021-2024
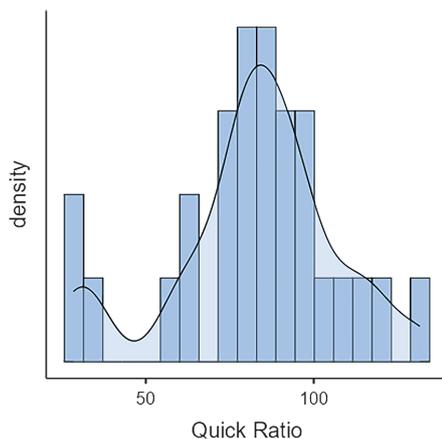
Source: compiled by the authors

Figure 2 presents the distribution of Equity-to-Assets ratio of enterprises, in the form of a combination of a density histogram and a boxplot. The histogram demonstrates that the highest density of the distribution falls on the interval from 0% to 30%, which indicates the dominance in the sample of enterprises with a positive, yet a low share of equity in the asset structure. This group includes: Subsidiary Enterprise of the State Company "Ukrspetsexport" – State Self-Supporting Foreign Trade Enterprise "Spetstechnoexport", LLC "Enterprise with Foreign Investments 'ASBIS-Ukraine'", LLC "ERU Trading", LLC "UK Distribution", PJSC "SAV Orbico" (in 2021-2022), LLC "Avtobanservice" (in 2022-2024). At the same time, the left-sided asymmetry and expressed negative values, reaching -119.3%, are explained by the indicators of LLC "Nestlé Ukraine" in 2021-2023 (-119.3%, -106.6%, -65.8%, respectively). It is this enterprise that forms the "long left tail" of the distribution, which indicates a high variability of the capital structure in the sample. This feature indicates a shift of the arithmetic mean towards lower values, which mathematically reduces its representativeness and requires the use of the median or trimmed-mean as alternative indicators.

From the standpoint of descriptive statistics, the distribution histogram of Equity-to-Assets indicator (Fig. 2) allows for assessing the distribution density over the years and identifying the instances of asymmetry. In particular, it is evident that the majority of enterprises (Subsidiary Enterprise of the State Company "Ukrspetsexport" – State Self-Supporting Foreign Trade Enterprise "Spetstechnoexport", LLC "Enterprise with Foreign Investments 'ASBIS-Ukraine'", LLC "ERU Trading", LLC "UK Distribution", PJSC "SAV Orbico", LLC "Avtobanservice") have indicators ranging from 0% to 30%, which indicates a normal or almost normal concentration of capital in the corresponding range, however, the presence of extreme left values (Nestlé Ukraine, with results up to -119.3%) causes a left-sided asymmetry of the distribution, which can significantly affect the arithmetic mean as a representative indicator.

The boxplot identifies statistical outliers, significantly exceeding the limits of the interquartile range, as well as records a wide spread of Equity-to-Assets values, which formalises the problem of capital base instability in the analysed enterprises. In particular, the boundaries of the boxplot "box" are in the range of 5-20%, which from a

mathematical perspective indicates a relatively weak internal capitalisation of most enterprises, which does not allow creating a depreciation buffer to compensate for potential external shocks. All this requires strengthening strategic equity management, in particular by transforming the passive balance sheet structure, increasing the share of retained earnings and restructuring debt obligations. In particular, in 2021-2023, LLC "Nestlé Ukraine" had a negative value of this indicator (minimum -119.3% in 2021). Out of 28 observation points, 3 were determined to be the lowest, which is shown by the marks 9 (LLC "Nestlé Ukraine", 2021), 10 (LLC "Nestlé Ukraine", 2022), 11 (LLC "Nestlé Ukraine", 2023) in Figure 2. Observations 24 (PJSC "SAV Orbico", 2024 – 45.5%) and 23 (PJSC "SAV Orbico", 2023) demonstrate the highest values. The distribution of Quick Ratio indicator according to the data from seven Ukrainian enterprises (main KVED 46.90, non-specialised wholesale trade) for the period 2021-2024 is presented in Figure 3.
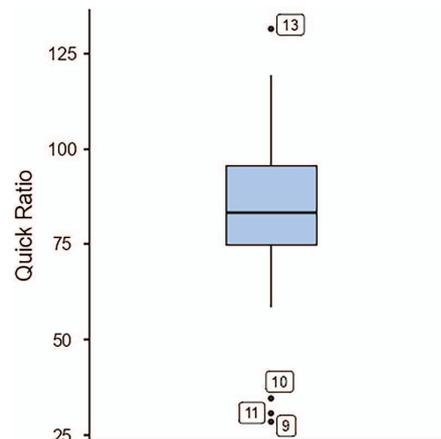
Figure 3. The distribution of Quick Ratio indicator according to the data from seven Ukrainian enterprises (main KVED 46.90, non-specialised wholesale trade) for the period 2021-2024

Source: compiled by the authors

The analysis of the scatterplot and distribution histogram of Equity-to-Assets indicator together with Quick Ratio coefficient, presented in Figure 2 and Figure 3 respectively, makes it possible to both visualise the empirical relationship between the capital structure and liquidity of enterprises and identify the nature of statistical distribution and instances of potential deviations that can significantly affect the overall financial stability in the context of insolvency risk. In particular, the scatterplot suggests that there is no clear linear relationship between Equity-to-Assets and Quick Ratio indicators, which implies a complex, multifactorial nature of the relationship between capital structure and liquidity, in which other latent variables can play a significant role, including the financing model, the duration of the operating cycle, the specifics of working capital and the market conditions of the enterprise operation. The boxplot in the right part of Figure 3 additionally visualises the data scatter, where observation 13 (LLC "ERU Trading", 2021) has the highest value. Also, a significant length of the lower "whiskers" and one or more outliers were determined, which is shown by the marks 9 (LLC "Nestlé Ukraine", 2021), 10 (LLC "Nestlé Ukraine", 2022), 11 (LLC "Nestlé Ukraine", 2023), which indicates an enterprise with a capital structure far from the median value that emphasises a high degree of financial unevenness even within one industry.

Summarising the above-mentioned, it can be argued that from the point of view of applied financial mathematics and statistics, the set of graphs confirms the need for segmented management of capital structure and liquidity, since average industry approaches lose their effectiveness subject to high dispersion, distribution asymmetry and extreme values. Thus, the management of the enterprise equity capital under the threat of insolvency should be based on individual financial profiles, taking into account the distribution of key indicators, built on the basis of adaptive statistics, modelling of risk scenarios and regular monitoring of key financial ratios deviations from regulatory boundaries.

The analysis of the distribution of Quick Ratio indicator, presented in Figure 3 in the form of a density histogram and boxplot, made it possible to carry out a deep mathematical insight of the state of short-term liquidity of enterprises in the non-specialised wholesale trade sector of Ukraine for the period 2021-2024, which is an important component of the overall financial stability management mechanism under insolvency risk conditions. The visualised frequency of Quick Ratio values demonstrated noticeable variability, characterised by the asymmetric distribution, of those aspects, which do not correspond to the norm (according to the Gaussian law). For Quick Ratio indicator, a distribution at the level of approximately 25% and above 130% indicates instances of deviations, since a value below 50% reflects a lack of liquid assets to cover current liabilities, while values above 120% may signal excessive conservatism in asset management, which leads to inefficient use of financial resources. Thus, the analysis of Quick Ratio indicator made it possible to conclude that there are enterprises with sufficient liquidity, which ensures their ability to function in the conditions of external shocks and solvency risk.

Based on data from seven enterprises in the non-specialised wholesale trade sector of Ukraine for the period 2021-2024, the results of the correlation analysis between the indicators of capital structure (Equity-to-Assets) and liquidity (Quick Ratio) are presented in Figure 4, built in Jamovi software environment (version 2.4.26) using a

standard regression analysis tool that visualises a scatter plot with density fields for both variables. The depicted matrix of scatter plots makes it possible to visually assess the nature of the relationships between these variables and identify trends inherent in the sample of enterprises under study. The line plotted on the graph is a linear regression line constructed from the empirical values of the indicators. The grey area around was the 95% confidence interval, which is automatically generated by Jamovi system to visualise the statistical relationship. A scatterplot with marginal distribution densities illustrated the relationship between Equity-to-Assets and Quick Ratio for seven enterprises in 2021-2024. The upper part displayed the distribution of Equity-to-Assets (X-axis – frequency, Y-axis –

corresponding indicator value), the right – the distribution of Quick Ratio (X-axis – frequency, Y-axis – corresponding indicator value).

As it can be seen from Figure 4, the graph in the lower left corner clearly demonstrates a positive correlation: enterprises with a higher level of equity tend to maintain a higher level of quick liquidity. Such a relationship is an important marker of balanced financial performance, in which an increase in the share of equity is accompanied by an increase in quick solvency, which allows enterprises to respond more effectively to external shocks and reduce the risk of default. It is consistent with the theoretical provisions of financial management regarding the role of equity as a stability buffer in conditions of economic turbulence.
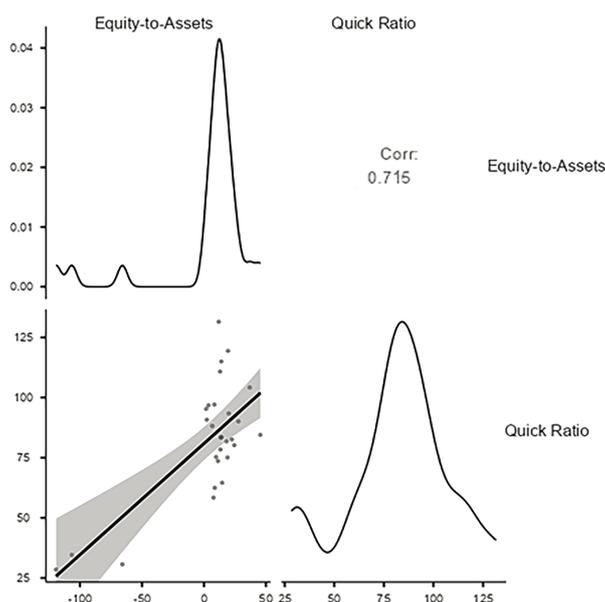
Figure 4. The distribution of correlation values between Equity-to-Assets and Quick Ratio indicators according to the data from seven Ukrainian enterprises (main KVED 46.90, non-specialised wholesale trade) for the period 2021-2024
Source: compiled by the authors

The confidence intervals around the regression line emphasise a statistically significant trend, strengthening the reliability of the observed dependencies. Moreover, the uniformity of the distribution of observations confirms the generalisability of findings for a sample of enterprises, different in size and level of financial autonomy. This result suggests that the relationship between liquidity and capital structure is a systemic characteristic of financial resource management within the industry. In general, the identified dependencies support the hypothesis that in an

unstable economic environment, enterprises try to maintain or even strengthen financial autonomy, which is accompanied by the appropriate optimisation of liquidity indicators. It can serve as the basis for further development of integrated models for assessing insolvency risk, which take into account the interaction between the main financial indicators. The correlation between Equity-to-Assets and Equity-to-Assets indicators according to data from seven Ukrainian enterprises (main KVED 46.90 Non-specialised wholesale trade) for 2021-2024 is presented in Table 2.

Table 2. Correlation between Equity-to-Assets and Quick Ratio indicators according to the data from seven Ukrainian enterprises (main KVED 46.90, non-specialised wholesale trade) for the period 2021-2024

Correlation Matrix		Equity-to-Assets	Quick Ratio
Equity-to-Assets	Pearson's	-	-
	p value	-	-
	N	-	-
Quick Ratio	Pearson's	0.715	-
	p value	<0.001	-
	N	56	

Source: compiled by the authors

As it can be seen from Table 2, a statistically significant, moderate, positive correlation was found between Equity-to-Assets indicator (the share of equity in the enterprise assets) and Quick Ratio (quick liquidity ratio), as the Pearson correlation coefficient suggests $r = 0.715$ at a significance level of $p < 0.001$. This result mathematically confirms the hypothesis that with an increase in the share of equity in the asset structure, the enterprise capability to promptly cover its short-term liabilities without the need to sell inventories increases as well, which is an important factor of solvency. In other words, enterprises that have a higher share of financing from equity also demonstrate higher current liquidity, which suggests a certain financial discipline, stable resource management and a lower probability of insolvency risks in the short term. Thus, the results of the correlation analysis are fully consistent with theoretical expectations in the context of studying capital management strategies of enterprises in difficult economic conditions.

The analysis of the capital structure and liquidity level of an enterprise is traditionally considered an important element in ensuring its financial stability. However, there are still ongoing discussions in the scientific literature about optimal proportions of equity and debt capital, as well as the sufficient level of liquidity in changing market conditions. The obtained results on the relationship between Equity-to-Assets indicator (the share of equity in the enterprise assets) and Quick Ratio are consistent with A. Hajisaaid (2020) findings, who, using the example of eight companies in Saudi Arabia during the period from 2009 to 2018, discovered that profitability has a positive correlation with short-term liabilities and equity, whereas it is negatively related to long-term debt. Thus, the results confirm the thesis that enterprises are able to maintain liquidity at the expense of short-term resources, while losing strategic financial stability in the long-term perspective.

P. Pronoza *et al*. (2022) have identified the correlation-regression method as the basis of the approach to assessing financial security of an enterprise, which is widely applied in economic research and is used to determine the degree and nature of the influence of various factors. Similarly, Z.-M. Zadorozhnyy *et al*. (2024) believe that ensuring financial stability of enterprises provides for a systemic analysis and assessment formalisation within the framework of sustainable development. The algorithm proposed by the authors is built on the balance sheet model and a set of indicators (financial independence ratio (autonomy), the financial dependency ratio (equity multiplier), the loan capital concentration ratio, the financial risk ratio, the financial stability ratio, the long-term debt ratio, and the equity mobility ratio), which allows for timely detection of misbalances in the capital structure and improving the enterprise stability.

According to V. Glonti *et al*. (2024) the lack of conflict identification in business leads to the creation of the wrong strategy and tools, losses and unprofitability. In turn, a high level of liquidity contributes to avoiding short-term financial difficulties and reducing default probability. Effective management of working capital and liquid assets is critical to maintaining solvency (Kamau *et al*., 2024). The obtained results are partially consistent with the findings of A. Akhmadi *et al*. (2022), suggesting the lack of statistically significant evidence of a considerable positive impact

of capital structure on the company value. The obtained results are also consistent with the findings of F.C. Sogomi *et al*. (2024) and Y. Yang *et al*. (2025), who have found out that the increase in debt financing costs significantly reduces the resilience of enterprise real estate, demonstrating a U-shaped dynamic trend. The study has also identified a negative relationship between patient capital and resilience, as well as its moderating effect on the relationship between debt financing costs and resilience, with differences in impact depending on standard and non-standard audit opinions.

The obtained results partially confirm the findings of previous studies on the relationship between capital structure, insolvency risk and solvency of enterprises. According to A. Gennaro (2021) and A. Patel *et al*. (2022), a low value of Equity-to-Assets indicator may suggest a potential financial instability. These considerations are backed by data for LLC "Nestlé Ukraine", where values up to -119.3% were recorded during 2021-2023, suggesting the dominance of liabilities over assets, although in 2024 the indicator increased to 8.7%. This may indicate attempts to restructure the debt portfolio, as predicted in insolvency risk scenarios (Gennaro, 2021).

According to C. Kamau *et al*. (2024), liquidity, rather than profitability, should be the priority of financial policy during economic turbulence. This idea is consistent with the results for LLC "ASBIS-Ukraine", where the Equity-to-Assets indicator is only 11.3%, whereas Quick Ratio amounts to 73.6%, which demonstrates an emphasis o n maintaining solvency, despite a low share of equity. Similar characteristics were found in LLC "UK Distribution" (Equity-to-Assets – 18.3%; Quick Ratio – 37.5%), which indicates a similar way of financial management. Thus, the obtained empirical results are consistent with theoretical provisions on the relationship between capital structure, liquidity and solvency, while simultaneously demonstrating significant heterogeneity of approaches to financial policy among enterprises operating in the field of non-specialised wholesale trade (KVED 46.90).

● CONCLUSIONS

The study results of the financial stability of Ukrainian enterprises engaged in non-specialised wholesale trade for the period 2021-2024 has shown a significant heterogeneity in the structure of equity and liquidity within the studied sample. The analysis of Equity-to-Assets ratios has revealed that positive capitalisation is inherent for some enterprises, which ensures financial autonomy, while in some cases critically low or negative values were detected, which indicates the risks of financial destabilisation and bankruptcy. Scatter plots of Equity-to-Assets and Quick Ratio indicators have been constructed, which suggests a complex, multifactorial nature of the influence of capital structure and liquidity. The results of the correlation analysis have indicated a moderate relationship between these variables ($r = 0.715$; $p < 0.001$), which gives grounds to assert: according to the general trend, an increase in the share of equity contributes to improving the short-term solvency of enterprises.

The analysis of the distribution of Equity-to-Assets and Quick Ratio indicators has revealed extreme values (outliers), as well as a distinct asymmetry, which requires

the use of additional statistical approaches – in particular, a cluster analysis for typology of enterprises by the level of solvency. A significant part of enterprises is concentrated in the range of moderate capitalisation (5-30%) and sufficient level of liquidity (>80%), however, the presence of enterprises with signs of financial condition deterioration emphasises the need to strengthen financial risk management and restructure liabilities. As a result of the analysis, statistically significant data have been obtained, which emphasise the importance of balanced financial management and indicate the need to implement adequate controlling tools to minimise insolvency risks in a dynamic market environment and economic instability.

Further scientific research should be aimed at studying the effectiveness of implementing digital tools in the financial management of enterprises, since effective management of an enterprise under the threat of insolvency is based on the use of financial indicators, modern risk assessment models and strategic controlling tools. It is important to take into account both quantitative and qualitative factors, identify risks in a timely manner and adapt management strategies to ensure a long-term solvency of the enterprise, which indicates the need to improve strategic capital and liquidity management to minimise insolvency risks.

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Оцінювання капіталу та ліквідності в контексті запобігання неплатоспроможності

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Анотація. Актуальність дослідження зумовлена необхідністю комплексного оцінювання фінансової стійкості підприємств через аналіз структури капіталу та ліквідності в умовах нестабільності економічного середовища. Відповідно до мети дослідження обґрунтовано напрями удосконалення оцінювання структури капіталу та ліквідності підприємств у контексті запобігання неплатоспроможності. Методична основа дослідження включала застосування статистичного аналізу, кореляційного дослідження та візуалізації емпіричних даних на основі діаграми розсіювання та гістограм розподілу показників Equity-to-Assets та Quick Ratio на прикладі семи підприємств України, що здійснюють діяльність у сфері неспеціалізованої оптової торгівлі за період 2021-2024 років. Отримані результати продемонстрували помірний позитивний кореляційний зв'язок між показниками Equity-to-Assets та Quick Ratio, що підтвердив складний багатофакторний характер формування платоспроможності. Це надало підстави стверджувати, що за загальною тенденцією зростання частки власного капіталу сприяє покращенню швидкої ліквідності підприємств, що сформували досліджувану вибірку. Аналіз розподілу показників Equity-to-Assets та Quick Ratio виявив наявність асиметрії розподілу, що підкреслило доцільність використання додаткових методів дослідження, зокрема, кластерного аналізу для типологізації підприємств. Значна частина підприємств зосереджена в діапазоні помірної капіталізації (5-30 %) та достатнього рівня ліквідності (>80 %), однак присутність підприємств з ознаками погіршенні фінансового стану наголосило на необхідності посилення управління фінансовими ризиками та реструктуризації зобов'язань. Практична цінність дослідження полягає в інтеграції сучасного інструментарію кількісного аналізу у процеси запобігання неплатоспроможності, формуванням підґрунтя для обґрунтованої адаптації управлінських стратегій у відповідь на виявлені статистичні закономірності взаємозв'язків між ключовими індикаторами платоспроможності, зокрема Equity-to-Assets та Quick Ratio, що має особливу релевантність в умовах дестабілізації макроекономічного середовища та наростання зовнішніх і внутрішніх ризиків для суб'єктів господарювання

Ключові слова: структура капіталу; Equity-to-Assets; Quick Ratio; фінансові зобов'язання; управління капіталом