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FINANCIAL VULNERABILITY OF UKRAINIAN LOGISTICS ENTERPRISES DURING SYSTEMIC CRISES

Systemic crises create overlapping challenges for logistics enterprises by disrupting demand, transport routes, payment schedules and access to finance. In Ukraine, these pressures are intensified by war and uneven territorial exposure to hostilities. Research on financial flexibility shows that cash reserves and lower debt can mitigate the consequences of a sudden decline in revenue [1]. However, favourable aggregate indicators may conceal substantial difficulties among particular groups of enterprises.

International evidence also indicates that logistics companies do not respond uniformly to crises. Studies of firms in G20 countries identify heterogeneous financial outcomes during the pandemic [2]. Research on road freight companies in Central and Eastern Europe likewise documents differences in the consequences of COVID-19 and the Russia–Ukraine war [3]. These findings justify an approach that distinguishes logistics segments and examines the distribution of financial indicators rather than relying exclusively on sector averages. The purpose of this study is to identify changes in financial vulnerability among Ukrainian logistics enterprises and outline their implications for financial management.

The empirical analysis draws on annual financial statements published by the State Statistics Service of Ukraine through the national open data portal [4]. The unbalanced panel contains 63,386 firm-year observations for 18,877 enterprises over 2021–2025. It covers road freight transport, warehousing, cargo handling and other transportation support activities. One observation describes an enterprise in a particular year; it should not be interpreted as a separate enterprise.

Only 6,282 enterprises have observations for all five years. Retaining the unbalanced panel avoids automatically excluding firms with incomplete reporting histories, although it does not eliminate selection bias. Annual changes reflect both movements in financial indicators and changes in the composition of available observations. Consequently, the increase in annual observations from 9,120 in 2021 to 14,226 in 2025 is

not evidence of equivalent growth in the number of operating logistics enterprises.

Financial diagnosis combines profitability, current liquidity, cash holdings, the share of liabilities in assets and net working capital relative to assets. Profitability is assessed using return on average assets. Current liquidity describes the coverage of current liabilities by current assets, while cash holdings capture the most immediately available financial reserve. Total liabilities are used to represent financing dependence because detailed borrowing information is not equally available across reporting forms. This measure must therefore be distinguished from interest-bearing debt. Research on cash flow dynamics during supply chain disruptions supports examining financial resources alongside operational continuity [5].

To reduce the influence of extreme observations, selected financial ratios are bounded at the first and ninety-ninth percentiles separately for each year. Values outside these limits are replaced by the respective boundary values without deleting observations. Financial vulnerability is assessed separately using three conditions: a net loss, current assets below current liabilities, and negative equity. These conditions are identified before the adjustment of extreme ratios.

The pooled results reveal pronounced asymmetry. Mean return on assets is negative at −1.16%, whereas its median is positive at 1.93%. The mean current ratio is 8.699, compared with a median of 1.156. Median cash holdings amount to 3.99% of assets, while the first quartile is only 0.38%. Thus, a substantial part of the observed distribution has a limited cash reserve even where the central values of other indicators appear relatively favourable.

Insufficient current assets to cover current liabilities occur in 35.19% of observations for which this condition can be assessed. Losses are recorded in 28.74%, and negative equity in 18.60%. Among the 56,553 observations with all three indicators available, 47.43% have at least one adverse condition. All three conditions occur simultaneously in 7,007 observations. These percentages describe enterprise-year records, not the proportion of unique firms that remain vulnerable throughout the period. They demonstrate the need to distinguish profitability from the capacity to meet short-term obligations and preserve equity.

Changes over time present a mixed picture. Median return on assets falls from 2.06% in 2021 to 1.24% in 2022 and reaches 2.20% in 2025. Meanwhile, the mean remains negative in four of the five years. Median current liquidity rises from 1.10 to 1.22, and median net working capital

relative to assets increases from 7.66% to 15.22%. The median share of liabilities in assets declines from 71.7% to 59.2%. However, the share of observations with at least one adverse condition is still 45.07% in 2025. Improved central indicators therefore coexist with widespread financial vulnerability.

Comparisons across segments show why financial monitoring should be differentiated. Road freight transport has the highest median return on assets, at 2.58%. Warehousing displays the weakest median current liquidity, at 0.95, cash holdings of 0.72% of assets and negative net working capital relative to assets of −1.13%. At least one adverse condition is present in 67.12% of warehousing observations and 57.76% of cargo handling observations. Other transportation support activities have the lowest corresponding share, at 43.37%. The segments with stronger profitability are not necessarily those with the largest liquidity reserves.

These findings support several priorities for financial management. Warehousing enterprises require particular attention to the coverage of current liabilities and the availability of working capital. For road freight transport, comparatively higher profitability should be assessed alongside liquidity shortages, which affect 36.52% of observations. Across all segments, monitoring should combine earnings, liquid resources and equity rather than treating any one ratio as a comprehensive indicator of resilience. Segment comparisons can guide the focus of financial review, but they cannot establish a universal target for cash or borrowing.

The contribution of the study is the combined assessment of financial distributions, annual changes and segment differences within a large, consistent Ukrainian financial reporting panel. Its principal finding is that improving median liquidity and working capital can coexist with persistent financial difficulties in a substantial part of the sample. The results are descriptive and do not establish the causal effects of war or particular financial decisions. Further research should examine how prior financial conditions interact with crisis exposure and subsequent outcomes, providing an empirical basis for financial optimisation and stress testing.

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