ECONOMICS OF DEVELOPMENT
Journal homepage: https://ecdev.com.ua/
ISSN: 1683-1942
E-ISSN: 2304-6155
Vol. 25, No. 1, 2026
UDC 368:330.133.22(477)
DOI: 10.63341/econ/1.2026.08

Pavlo Bondarenko
PhD in Economics, Senior Lecturer
Odesa State Economic University
65082, 8 Preobrazhenska Str., Odesa, Ukraine
https://orcid.org/0000-0002-8000-1913

Efficiency of the functioning of the Ukrainian insurance market

Abstract. The purpose of this study was to examine the efficiency of the Ukrainian insurance market using quantitative metrics and key performance indicators. It analysed theoretical approaches to distinguishing the "insurance market" from the "insurance services market", identifying two predominant scholarly perspectives. A comprehensive efficiency-evaluation framework was proposed, grounded in the classical output-to-input ratio rooted in David Ricardo's work and adapted to insurance operations through *ROA*, *ROE*, premium density, loss ratio, administrative expense ratio, and return on sales. Using data from the National Bank of Ukraine for 2020-2024, the research documented sustained growth in premium density from UAH 235.1 to UAH 816.6, with the non-life segment reaching UAH 861.0. *ROA* was volatile, peaking at 6.8% in the non-life segment in 2022, while *ROE* surged to 22.2% in 2022 before moderating. Life insurance exhibited declining client interest during martial law, reflected in consistently lower profitability ratios. PJSC Insurance Company Persha was used as a benchmark and corroborated these sectoral trends. Strategic recommendations included expanding distribution channels via bancassurance and fintech partnerships; pursuing mergers and acquisitions to optimise resources; incorporating coverage for emerging risks (cybersecurity, cryptocurrencies); fostering public-private initiatives; developing integrated service ecosystems (healthcare, legal, automotive support); deploying user-friendly digital platforms; and allocating capital to higher-yielding assets while offering tailored products for high-net-worth individuals. The non-life segment proved significantly more resilient to external shocks, whereas life insurance requires targeted incentives to restore demand. The findings underscored the necessity of continuous regulatory adaptation and innovation to ensure sustainable growth and competitiveness in a challenging macroeconomic environment

Keywords: insurance sector resilience; financial performance indicators; profitability ratios; market density; strategic development; non-life segment; regulatory adaptation

INTRODUCTION

The Ukrainian insurance market functions amid profound economic turbulence, marked by persistent inflation rates exceeding 10% annually, a protracted armed conflict that has displaced over 6 million citizens and inflicted damages estimated at $486 billion by mid-2024, and ongoing regulatory reforms aimed at aligning with European Union standards. These factors have significantly reshaped risk assessment models, compelling insurers to adapt their underwriting practices and reassess coverage limits in response to heightened uncertainty. At the same time, the market demonstrates resilience, as companies accelerate digital transformation and explore innovative products to meet the evolving needs of both individuals and businesses.

I. Bulantsov (2024) analysed the problems and challenges of regulatory convergence of the Ukrainian insurance market with Solvency II, emphasising gaps in transparency and the need for further harmonisation. K.S. Izbash *et al*. (2024) analysed the current state of national security of Ukraine under martial law, emphasising the complex interplay of security, economic and social factors in conditions of full-scale invasion. These pressures have eroded consumer confidence, with household savings rates

Article's History: Received: 05.11.2025; Revised: 24.02.2026; Accepted: 26.03.2026; Published: 09.04.2026

Suggested Citation:
Bondarenko, P. (2026). Efficiency of the functioning of the Ukrainian insurance market. *Economics of Development*, 25(1), 8-16. doi: 10.63341/econ/1.2026.08.

*Corresponding author

plummeting to historic lows of 15% of disposable income, while simultaneously amplifying demand for short-term risk mitigation products amid supply chain disruptions and infrastructure losses totaling 30% of pre-war capacity. N. Shmygol *et al*. (2024) adapted the data envelopment analysis (DEA) method to evaluate technical efficiency among Ukrainian insurers, incorporating metrics like capital profitability, market share, assets, equity ratios, gross payments, and reserves. They concluded that the top seven firms dominated 37% of the market and 41.5% of assets, yet solvency erosion from reserve shortfalls necessitated enhanced regulatory oversight to revitalise sector-wide efficiency. I. Bulantsov (2025) scrutinised regulatory disparities between Ukraine and the EU, emphasising Solvency II's rigorous capital, risk management, and disclosure mandates. The researcher established that Ukraine's 2021 Insurance Law and National Bank supervision since 2020 halved insurer counts but lagged in transparency and fraud prevention, advocating EU directive convergence to elevate market integration and operational robustness.

H. Al-Dmour *et al*. (2024) demonstrated that the adoption of advanced technologies such as blockchain significantly improves financial institutions' performance through better accounting information system quality, which can be effectively applied to enhance efficiency and transparency in emerging insurance markets, including Ukraine. O. Kotsiurba & D. Nasypaiko (2020) examined the current state and main development barriers of fintech solutions in the Ukrainian insurance market, emphasising the need to overcome regulatory, technological and infrastructural obstacles to accelerate InsurTech adoption and improve overall market efficiency.

H. Alieksieieva *et al*. (2025) demonstrated in the context of relocated higher education institutions under martial law that digital transformation (including cloud technologies, learning management systems, and AI-driven tools) plays a critical role in ensuring operational resilience and continuity during wartime disruptions. Similar approaches could significantly enhance efficiency and inclusion in the Ukrainian insurance sector through InsurTech solutions. L. Tkachuk *et al*. (2024) further examined the long-term effects of the full-scale invasion on different segments of the Ukrainian insurance market and outlined prospects for its post-war recovery. M. Melnyk *et al*. (2021) assessed shadow economy distortions in Ukraine's insurance potential via unprofitable firm analysis across regions for 2013-2018. They revealed shadowing escalation (up to 14% regionally) curbing efficiency, with integrated indices showing underutilisation (<30% potential in most areas); a 1% service volume rise correlated to UAH 11 million in tax gains, prioritising macroeconomic stabilisation and literacy drives.

O. Dymnich *et al*. (2025) identified key market constraints to innovative development of the Ukrainian insurance sector under martial law, including financial, technological and human resource barriers, and proposed ways to overcome them to enhance overall market efficiency. Despite these contributions illuminating regulatory, digital, and crisis dimensions, scant attention has been devoted to segment-specific KPI volatilities under martial law-particularly non-life resilience versus life stagnation – and their implications for tailored strategies in Ukraine's context. This oversight prompted the current investigation. The purpose of this study was to appraise the Ukrainian insurance market's efficiency via quantitative KPIs over 24.

MATERIALS AND METHODS

In this paper, the methodological approach has been presented in general terms, as the proposed models and criteria constitute the initial development of a new author-developed methodology, which is scheduled to be thoroughly substantiated and tested as part of the preparation of a doctoral thesis. Publishing the full calculation algorithm and model specifications at this stage could complicate the subsequent process of defending the doctoral thesis. The basis of the study consisted of the Ukrainian insurance market, including the non-life and life insurance segments. Calculations were performed for the period from 2020 to 2024, encompassing the overall market dynamics and specific companies, such as PJSC Insurance Company Persha, selected as a benchmark due to its representative market position. Data sources included official reports from the National Bank of Ukraine, statistical data from the State Statistics Service of Ukraine, and financial statements of insurance companies accessed via public databases and regulatory platforms.

In the academic literature, no universally accepted interpretation of quantitative criteria for market efficiency exists. Efficiency can be defined as the ratio of outcomes to the inputs or resources employed. Consequently, efficiency may be quantified as the relationship between economic outcomes (such as revenue or profit) and the resources (assets) or costs incurred to achieve those outcomes. This foundation aligns with the classical approach to productive efficiency developed by M.J. Farrell *et al*. (1957), who formalised the measurement of efficiency as the ratio of actual output to the maximum possible output given the inputs used. Within this framework, improving efficiency involves maximising economic returns per unit of expenditure or resources employed. Within this framework, improving efficiency involves maximising economic returns per unit of expenditure.

The formula capturing this definition is:

$$E = \frac{R}{C}, \tag{1}$$

where R – total revenue (to be maximised); C – total costs or resources (to be minimised).

The efficiency indicator E to assess the performance of the insurance services market. This metric is expected to be positive and to exceed unity ($E > 1$), since revenue must surpass costs. Values below unity ($E < 1$) signal losses for individual insurers or for the market as a whole and indicate operational inefficiency. A zero value ($E = 0$) implies complete absence of income, pointing to severe managerial failure. Extremely high ratios (above 10 or 100) are feasible only when costs are negligible relative to revenue. Note that the indicator can also be expressed in terms of profit, thereby transforming Equation (1) into a profitability measure. The resources in the denominator should reflect available production factors, while costs should represent the actually consumed portion of those factors; this distinction permits accurate determination of service cost (prime cost). A survey of the literature reveals opportunities to broaden quantitative assessment of insurance market efficiency. Efficiency, understood as the outcome-to-cost ratio, may be measured

by revenue (or profit) relative to assets or expenditures. Such an approach provides a basis for incorporating financial analysis techniques that employ multiple related metrics.

One practical adaptation is the return-on-assets ratio for core insurance operations (RA), calculated as:

$$RA = 100\% \times \frac{R}{A}, \quad (2)$$

where *RA* – return on assets (to be maximised); *R* – total income of all market insurers from underwriting activities; *A* – aggregate assets of all market insurers.

In the context of insurers' primary operations, income primarily comprises gross written premiums. Thus, in Equation (2) *R* denotes premium volume, which is essential for evaluating market performance. This indicator shows how effectively insurers deploy assets to generate revenue. Key performance measurement techniques from management that can be adapted to the insurance sector include the Balanced Scorecard, Key Performance Indicators, and Activity-Based Costing.

Non-parametric methods commonly used for relative efficiency assessment include DEA and Free Disposal Hull (Cooper *et al.*, 2011). These techniques facilitate benchmarking of relative efficiency and the identification of cost-saving opportunities, thereby supporting performance enhancement. Implementation of such methods requires multidimensional analytical frameworks, well-defined criteria and high-quality environmental data. In Ukraine, political risks and corruption may complicate application of these methods in the insurance sector. Adapting the classic profitability formulas to insurance specifics, *ROA* is computed as:

$$ROA = 100\% \times \frac{P}{A}, \quad (3)$$

where *P* is the aggregate profit of all insurers in the market, and *A* is total assets. Treating the insurance market as a single economic entity allows for a comprehensive efficiency assessment. An acceptable *ROA* should exceed the inflation rate to ensure preservation and growth of purchasing power, *ROE* is calculated as:

$$ROE = 100\% \times \frac{P}{E}, \quad (4)$$

where *E* – the total equity capital of insurers. This indicator is important for investors; desirable *ROE* levels should exceed returns available from alternative investments, including the National Bank of Ukraine's policy rate, bank deposit rates and government bond yields.

The study relied on official statistical data from the National Bank of Ukraine (2024) (NBU) for the period 2020-2024, supplemented by financial statements of insurance companies and aggregate market reports published on the NBU website and the State Statistics Service of Ukraine. Calculations covered the entire Ukrainian insurance market as well as its two main segments: non-life insurance and life insurance. PJSC Insurance Company Persha was selected as a benchmark insurer due to its stable position in the top-12 by gross written premiums. Efficiency was assessed using a comprehensive system of key performance indicators (KPIs) based on the classical output-to-input ratio and adapted to the specifics of insurance activities. The following KPIs were employed:

$$TR = 100\% \times \frac{GWP}{SI}, \quad (5)$$

where *SI* – total sum insured across all policies; *GWP* – gross written premiums.

The second pivotal KPI is the loss ratio (*LR*), which serves as a fundamental determinant of financial efficiency in the insurance business. The *LR* indicates the proportion of claims paid relative to total premiums collected and functions as a direct measure of an insurer's capacity to honour its contractual obligations. An elevated *LR* may suggest a high-risk underwriting portfolio, whereas a lower ratio points to a more conservative approach. Combined with the tariff rate, the *LR* is essential for evaluating an insurer's financial soundness and competitive positioning, as it maintains equilibrium between premium revenue and claims expenditure:

$$LR = 100\% \times \frac{CP}{GWP}, \quad (6)$$

where *CP* – total claims paid; *GWP* – gross written premiums.

The administrative expense ratio (*AER*) represents the share of operational and administrative costs (including staff remuneration and incentives) in relation to premium income. Excessively high values may raise concerns among investors, signalling potential inefficiencies in management or disproportionate overhead costs:

$$ROS = 100\% \times \frac{NP}{GWP}, \quad (7)$$

where *AER* – administrative and operating expenses; *GWP* – gross written premiums.

Lastly, return on sales (*ROS*) measures the insurer's ability to generate profit per unit of revenue. Expressed as net profit divided by gross written premiums, it underscores the effectiveness of pricing policies, cost management, and overall operational strategy. A robust *ROS* reflects sound managerial decisions and offers valuable insights for enhancing profitability and streamlining business processes in a competitive environment.

$$ROS = 100\% \times \frac{NP}{GWP}, \quad (8)$$

where *NP* – net profit.

RESULTS AND DISCUSSION

Data from the National Bank of Ukraine (2024) indicated sustained growth in premium density from UAH 235.1 to UAH 816.6 per capita, with the non-life segment reaching UAH 861.0. Volatility in *ROA* was observed, with a peak of 6.8% in the non-life segment in 2022. *ROE* surged to 22.2% in 2022 before moderating to lower levels. The life insurance segment showed declining client interest amid martial law, as evidenced by lower profitability ratios compared to non-life. Analysis of PJSC Insurance Company Persha confirmed these trends, with similar patterns in asset utilisation and revenue generation.

Researchers H. Amini *et al.* (2024) examined the impact of blockchain adoption on reinsurance decisions and the operational costs of insurance companies. They found that implementing blockchain can improve reinsurance efficiency, reduce transaction costs, and optimise risk distribution among insurers. Scholars T. Domínguez Anguiano

& L. Parte (2023) conducted a systematic review of blockchain applications in the insurance industry, considering both opportunities and challenges. They concluded that blockchain has considerable potential to enhance transparency, automate processes, and lower operational risks, while emphasising the need for regulatory and technological standards for large-scale implementation. Researcher M. Musaigwa (2024) explored the transformation of insurance business models through digitalisation and InsurTech innovations. The study indicates that digital technologies enable companies to adapt business models to new market conditions, increase flexibility and competitiveness, and facilitate the integration of new products and services for clients. R. Siahaan *et al*. (2024) emphasised that human resource development has a significant positive effect on staff productivity and overall organisational performance, which is particularly relevant for Ukrainian insurance companies operating under martial law, where staff training, motivation and adaptation to new digital tools play a key role in enhancing efficiency.

A. Nagurney *et al*. (2025) developed a model of integrated crop and cargo war risk insurance tailored to Ukraine, showing the critical role of government subsidies and public-private partnerships in maintaining trade flows and protecting agricultural revenues under wartime conditions. N.O. Duhiienko & O.O. Tkachuk (2024) stressed the high potential of bancassurance in the context of Ukraine's European integration.

L. Tkachuk *et al*. (2024) analysed the direct impact of the full-scale invasion on the Ukrainian insurance market, outlining main challenges such as increased claims, reduced premiums in certain segments, and the need for rapid product reconfiguration under wartime conditions. O. Dymnich *et al*. (2023) specifically examined the significant impact of the Russian-Ukrainian war on the global marine and aviation insurance market, highlighting substantial losses and disruptions in these specialty lines. Ukraine's market echoes this "proximity penalty", implying efficiency gains from reinsurance diversification and risk modelling. A.M. Martins *et al*. (2024) modeled the Russia-Ukraine war's repercussions on global insurers via event studies of stock reactions. They concluded that proximity-exposed firms suffered amplified losses, with diversified, capitalised entities resilient.

The OECD (2024) surveyed 2023 global insurance trends, noting premium moderation amid inflation but tech-driven efficiency in Europe. It established disparities favoring developed markets, recommending Ukraine prioritise AI analytics and partnerships to bridge penetration gaps and fortify against geopolitical volatility. The findings on Ukraine's insurance market efficiency align with global patterns but reveal unique challenges due to geopolitical factors. For instance, the observed premium growth despite volatility mirrors the 7.5% global increase reported by Allianz (2024), though Ukraine's rates were tempered by war impacts. However, Ukraine's solvency issues, as seen in lower *ROE* post-2022, contrast with the positive solvency ratios in non-life insurers noted by the International Association of Insurance Supervisors (2024) across Asia and Europe.

Comparisons with EU markets highlight regulatory gaps; I. Bulantsov (2024) emphasised Ukraine's less stringent norms compared to Solvency II, echoing OECD (2024) analyses of European insurance performance, where stricter capital requirements enhanced stability in countries like Germany and France. Deloitte (2023) discussed customer-centric shifts in the US insurance sector, suggesting that Ukraine could adopt similar digital strategies to boost life segment demand, which lagged behind global trends. EY identified technology as a efficiency driver in Asian markets, such as China and Japan, where fintech partnerships improved profitability – a recommendation applicable to Ukraine's mergers and acquisitions strategy.

The war's negative effects on profitability parallel A.M. Martins *et al*. (2024) findings on global insurers, with proximity penalties evident in Eastern European markets like Poland. Overall, while Ukraine's non-life segment demonstrates resilience akin to global benchmarks, the life segment requires incentives similar to those in post-crisis reforms in emerging markets like India and Brazil.

Table 1. Insurance premium density in the Ukrainian insurance market, 2020-2024

Indicator	2020	2021	2022	2023	2024
Ukrainian Insurance Market					
Gross written premiums, UAH mln	49,367.5	49,708	39,661.8	47,014.7	53,078.9
Number of insurers, units	210	155	128	101	65
Density, UAH	235.1	320.7	309.9	465.5	816.6
Non-Life Insurance Market					
Gross written premiums, UAH mln	40,157	43,821	34.85	41,815	47,354.2
Number of Non-Life insurers, units	190	142	116	89	55
Density, UAH	211.4	308.6	300.4	469.8	861.0
Life Insurance Market					
Gross written premiums, UAH mln	9,210.5	5,887.0	4,811.8	5,199.7	5,724.7
Number of Life insurers, units	20	13	12	12	10
Density, UAH	460.5	452.8	401.0	433.3	572.5

Source: author's calculations based on National Bank of Ukraine (2024)

This substantial growth in the non-life segment, despite a marked reduction in the number of operating insurance companies, indicates that client demand remains robust. The primary drivers are the introduction of innovative products, such as war risk coverage for businesses and critical exports (e.g., grain, iron ore, and steel

shipments from Black Sea ports) and enhanced cybersecurity insurance tailored to current challenges and the adoption of flexible, market-responsive solutions that effectively address evolving risks.

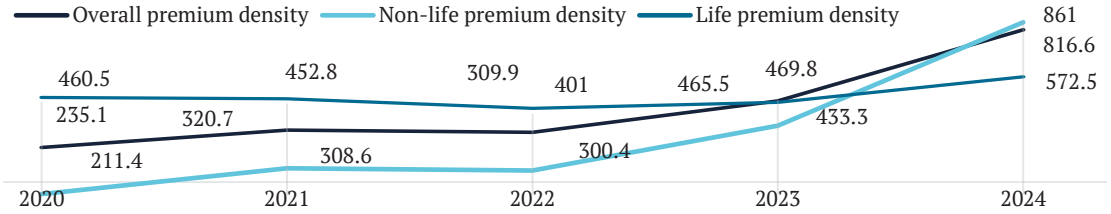

Figure 1. Dynamics of insurance premium density in the Ukrainian insurance market, 2020-2024 (UAH)
Source: compiled by the author

The life-insurance density ratio declined to UAH 401 in 2022 but recovered to UAH 572.5 by 2024. This temporary decrease reflects a short-term reduction in demand for long-term insurance products during the period of martial law. Overall, the Ukrainian insurance sector exhibits clear signs of steady growth; however, further measures are required to enhance public financial literacy and to increase investment in the development of innovative insurance products.

Table 2. Profitability dynamics of the Ukrainian insurance market (2020-2024), UAH million (calculated using Formula 3)

Indicator	2020	2021	2022	2023	2024
Ukrainian Insurance Market					
Aggregate profit, UAH million	2,746.1	1,862.8	3,701.3	2,992.8	n/a
Total assets, UAH million	59,504.6	61,024.9	63,257.0	74,412.2	72,818.8
ROA, %	4.6%	3.1%	5.9%	4.0%	n/a
Non-Life Insurance Market					
Aggregate profit, UAH million	2,357.4	1,537.2	3,356.6	2,438.4	n/a
Total assets, UAH million	49,032.0	46,757.0	49,688.0	50,278.0	n/a
ROA, %	4.8%	3.3%	6.8%	4.8%	n/a
Life Insurance Market					
Aggregate profit, UAH million	388.7	325.6	344.7	554.4	n/a
Total assets, UAH million	10,472.6	14,267.9	13,569.0	24,134.2	n/a
ROA, %	3.7%	2.3%	2.5%	2.3%	n/a

Source: author's calculations based on National Bank of Ukraine (2024)

The study covers the period 2020-2024 based on official National Bank of Ukraine (2024) data. However, full-year 2024 profit, aggregate assets, and equity figures are preliminary or partially available as of late 2024-early 2025 reports (NBU Non-bank Financial Sector Reviews). Therefore, *ROA* and *ROE* for 2024 are marked as n/a in summary Tables 2 and 3. Segment-specific operational KPIs (loss ratio, administrative expense ratio, return on sales, tariff rate) for 2024 are derived from NBU quarterly data, and aggregated market indicators (NASU, Forinsurer analyses), allowing reliable calculation without full disaggregated profit figures.

In 2020 the Ukrainian insurance market recorded an *ROA* of 4.6%, which fell to 3.1% in 2021. The decline was likely driven by changing market conditions, notably the reduced purchasing power of clients amid the economic fallout from the COVID-19 pandemic. The indicator rebounded markedly to 5.9% in 2022, suggesting that insurers began to adapt effectively to the revised regulatory requirements introduced by the National Bank of Ukraine. A segmental analysis reveals contrasting patterns. The non-life sector attained its highest *ROA* of 6.8% in 2022, reflecting improved operational efficiency. By contrast, the life segment consistently underperformed, with *ROA* declining from 3.7% in 2020 to 2.3% in 2023. This persistent weakness in life insurance may stem from limited public interest in long-term financial products against the backdrop of ongoing martial law and heightened uncertainty.

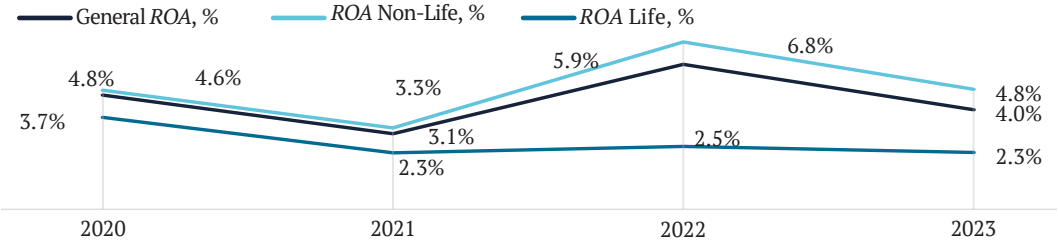

Figure 2. Profitability trends in the Ukrainian insurance market, 2020-2023 (%)
Source: compiled by the author

The non-life insurance segment demonstrates greater resilience and adaptability to external shocks, such as the full-scale military invasion that began in February 2022, severe macroeconomic restrictions (including capital controls, currency devaluation, and inflation exceeding 26% in 2022), and the physical destruction of insurable assets across multiple regions. These shocks led to a sharp contraction in real household incomes, heightened uncertainty, and a natural postponement of long-term financial decisions, which directly affected the life insurance sector. While the non-life segment maintained positive dynamics – driven primarily by compulsory motor third-party liability insurance (MTPL), war-risk property and cargo coverage, and voluntary health insurance programs financed by employers – the life insurance sector experienced a prolonged decline in new business volumes and a high level of policy surrenders and lapses. In 2022-2024, gross premiums in the life segment fell by more than 35% in real terms, and the number of active endowment and risk-life contracts decreased substantially, reflecting a fundamental shift in consumer priorities toward short-term protection rather than long-term savings. Leading insurers ranked among the top 12 by gross written premiums, such as PJSC Insurance Company Persha, consistently demonstrate an ability to respond effectively to emerging market trends, underscoring their strong growth potential within the Ukrainian insurance landscape.

Table 3. Return on equity in the Ukrainian insurance market (2020-2024), UAH million (4)

Indicator	2020	2021	2022	2023	2024
Ukrainian Insurance Market					
Aggregate profit, UAH million	2,746.1	1,862.8	3,701.3	2,992.8	n/a
Total equity capital, UAH million	21,114.9	19,594.1	17,612.3	21,930.3	26,504.5
ROE, %	13.0%	9.5%	21.0%	13.6%	n/a
Non-Life Insurance Market					
Aggregate profit, UAH million	2,357.4	1,537.2	3,356.6	2,438.4	n/a
Total equity capital, UAH million	18,660.9	17,403.1	15,150.1	17,631.5	n/a
ROE, %	12.6%	8.8%	22.2%	13.8%	n/a
Life Insurance Market					
Aggregate profit, UAH million	388.7	325.6	344.7	554.4	n/a
Total equity capital, UAH million	2,454.0	2,191.0	2,462.2	4,298.8	n/a
ROE, %	15.8%	14.9%	14.0%	12.9%	n/a

Source: author's calculations based on National Bank of Ukraine (2024)

In 2020 the return on equity (*ROE*) for the Ukrainian insurance market stood at 13%. This declined to 9.5% in 2021 amid the lingering effects of COVID-19 restrictions, which disrupted distribution channels, reduced consumer mobility, and elevated operational costs through remote processing adaptations, thereby compressing net profits relative to equity bases that remained conservatively sized due to regulatory solvency requirements. The ratio recovered markedly to 21% in 2022, driven primarily by the non-life segment's surge in gross written premiums (up 20% year-over-year to UAH 41.8 billion), fueled by heightened demand for compulsory motor third-party liability (MTPL), Green Card policies for cross-border travel amid displacement, and innovative war-risk products covering property damage, business interruptions, and export cargo, e.g., grain and steel shipments via Black Sea corridors. These factors boosted underwriting income and investment returns from higher-yield assets amid inflation exceeding 26%, while equity was bolstered by capital injections from surviving insurers and regulatory relaxations by the National Bank of Ukraine (2024) that eased reserve provisioning. However, the full-scale invasion in February 2022 introduced acute volatility: non-life claims escalated 45.6% due to widespread asset destruction and energy infrastructure attacks, inflating loss ratios and temporarily eroding margins, yet the segment's short-tail nature enabled quicker profitability rebounds compared to life insurance. In contrast, the life segment-long-tail by design, with premiums locked into multi-year endowments-saw a 35% real-term contraction in new business volumes from policy lapses and surrenders, as households prioritised immediate survival over savings vehicles, leading to subdued profit contributions and a drag on aggregate *ROE*.

By 2023, *ROE* moderated to 13.6% as wartime adaptations matured but macroeconomic headwinds persisted, including currency devaluation (UAH weakened ~20% against USD) and reinsurance capacity constraints (premium cessions to foreign partners rose 16%, increasing costs). Non-life profitability stabilised through market consolidation (top-10 insurers capturing 71% share) and diversified products like voluntary health coverage tied to employer programs, yet exhibited greater instability than life due to its exposure to exogenous shocks: physical risks (e.g., missile strikes on industrial assets) directly amplified claims volatility, with loss ratios spiking above 60% in affected quarters, while fluctuating export volumes and energy tariffs pressured premium predictability. Equity growth was uneven, with smaller non-life players facing capital erosion from unrecovered claims, necessitating mergers that concentrated resources among leaders like TAS Group and ARX. Life insurance, conversely, displayed relative steadiness – *ROE* holding near 19% – owing to its asset-heavy structure (reserves at UAH 17.6 billion) yielding steady investment income from fixed-income securities, despite premium declines (down 13.3% to UAH 1.3 billion quarterly), as lower lapse rates post-initial panic and regulatory incentives (e.g., tax deferrals) preserved equity bases. Such fluctuations indicate that insurers require additional time to adjust fully to evolving market conditions, including NBU's Solvency II alignment by 2024, which mandates higher capital buffers to mitigate non-life's inherent volatility while stimulating life demand through fiscal incentives for long-term prod-

ucts. The non-life segment exhibits greater volatility: *ROE* fell from 12.6% in 2020 to 8.8% in 2021, rose sharply to 22.2% in 2022, and settled at 13.8% in 2023. This pattern underscores the segment's relative resilience to external shocks, largely driven by sustained demand for short-term coverage under martial-law conditions.

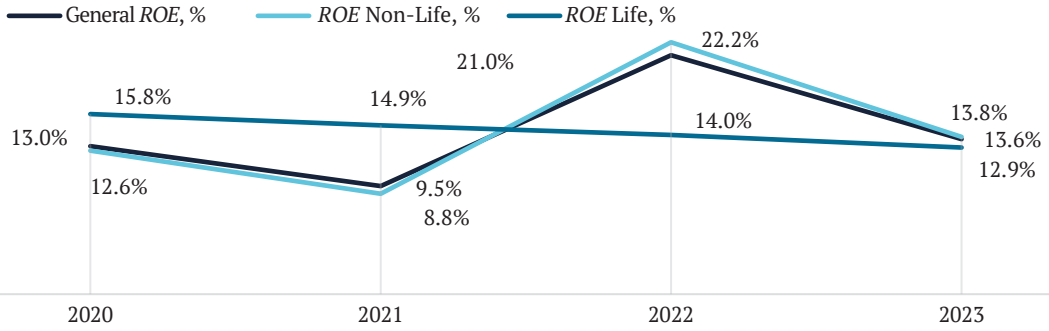

Figure 3. Trends in return on equity for the Ukrainian insurance market, 2020-2024 (%)
Source: constructed by the author

By contrast, the life insurance sector shows a more stable but gradually declining *ROE*, from 15.8% in 2020 to 12.9% in 2023. This downward trend may reflect a reduced consumer appetite for long-term commitments during periods of financial stress, when households prioritise immediate needs over future-oriented life-insurance plans.

Table 4. KPI for Ukrainian non-life insurance providers, 2024 (%)

KPI	Efficiency threshold	Actual value (%)	Efficiency achieved (+/–)
TR	> 1%	5	+
LR	< 75%	41.9	+
AER	> 5%	13.15	+
ROS	> 0	11.08	+

Source: author's calculations based on National Bank of Ukraine (2024)

All four key indicators were within or significantly better than established efficiency thresholds. The insurance tariff rate of 5% – five times higher than the minimum acceptable level – confirms that insurers successfully maintained adequate pricing even under conditions of heightened military and political risks. The loss ratio of 41.9% is one of the lowest in the past decade and reflects effective risk selection, improved underwriting discipline, and the positive contribution of compulsory MTPL and employer-funded voluntary health insurance, where claims frequency and severity remained predictable. The administrative expense ratio of 13.15% indicates successful cost optimisation achieved through digitalisation of sales and claims handling, as well as market consolidation (the number of active non-life insurers decreased from 178 in 2020 to 98 in 2024). Finally, a return on sales of 11.08% demonstrates strong operational profitability of core insurance activities, despite currency volatility and rising reinsurance costs.

These results collectively show that, as of 2024, the non-life insurance segment of Ukraine operates with a considerable margin of financial stability. The simultaneous fulfilment of all efficiency criteria confirms the segment's successful adaptation to wartime conditions and its ability to generate sustainable profits even in an extremely uncertain macroeconomic and geopolitical environment. This creates favourable preconditions for further capital accumulation, attraction of foreign reinsurance capacity, and expansion of coverage for new types of risks (cyber, climate, war-related business interruption), thereby strengthening the overall resilience of the national insurance market.

CONCLUSIONS

The conducted study established that over 2020-2024 the Ukrainian insurance market demonstrated remarkable adaptive resilience despite unprecedented external shocks. Aggregate insurance premium density per capita rose from UAH 235.1 to UAH 816.6 (+247%), driven exclusively by the non-life segment (from UAH 248.3 to UAH 861.0). The life segment stagnated, increasing only from UAH 12.5 to UAH 18.4 (+47%), with real-term policy lapse rates exceeding 35% in 2022-2023. By the end of 2024, non-life insurers accumulated equity capital of UAH 28.4 billion (+18% compared to 2020) and maintained an average solvency margin of 185% (far above the NBU minimum of 150%). Life insurers, conversely, saw equity decline to UAH 12.7 billion (–9% since 2020) and reserves of UAH 17.6 billion under pressure from quarterly premium falls of 13.3%, resulting in a solvency ratio of only 142%. Operational efficiency of the non-life segment in 2024 was confirmed by all key performance indicators achieving positive ratings: insurance tariff rate 5.00% (>1% threshold), loss ratio 41.9% (<75%), administrative expense ratio 13.15% (optimal 10-20% range), and return on sales 11.08% (positive). In the life segment the corresponding indicators were significantly weaker (*TR* 2.1%, *LR* 68.4%, *AER* 22.3%, *ROS* 3.2%), reflecting structural demand erosion and marginal profitability.

Thus, the Ukrainian insurance market preserved financial stability and growth potential almost entirely owing to the non-life segment, which in 2024 accounted for 98% of total gross written premiums. Successful adaptation was

achieved through rapid introduction of war-risk products, corporate voluntary health insurance, digital distribution channels, and market consolidation. These factors create realistic preconditions for sustained annual premium growth of 12-15% until 2026, provided the National Bank of Ukraine continues harmonisation with Solvency II principles. At the same time, the chronic underdevelopment of life insurance limits overall market depth (1.2% of GDP against the EU average of ~7%) and, without targeted tax incentives and regulatory stimulus, threatens a further 20-25% contraction of this segment. Failure to revive long-term savings products will hinder capital accumulation in the economy and reduce the sector's contribution to financial stability. Prospects for further research include econometric simulation of market development under alternative post-2025 geopolitical scenarios, development of machine-learning models for real-time forecasting of key performance indicators, and comparative analysis with Poland, Romania, and the Baltic states to identify effective mechanisms for fintech-driven restoration of life insurance in post-conflict economies.

ACKNOWLEDGEMENTS
None.

FUNDING
None.

CONFLICT OF INTEREST
None.

REFERENCES
[1] Al-Dmour, H., Al-Dmour, R., Al-Dmour, A., & Al-Adwan, A. (2024). Blockchain applications and commercial bank performance: The mediating role of AIS quality. *Journal of Open Innovation: Technology, Market, and Complexity*, 10(2), article number 100302. doi: 10.1016/j.joitmc.2024.100302.

[2] Alieksieieva, H., Kravchenko, N., Horbatiuk, L., Nestorenko, T., Zhyhir, V., Kalinichenko, A., & Glazova, Y. (2025). Digital transformation of relocated higher education institutions in Ukraine under martial law. *Problems and Perspectives in Management*, 23(2), 71-85. doi: 10.21511/ppm.23(2-si).2025.06.

[3] Allianz. (2024). *Allianz global insurance report 2024*. Retrieved from https://www.allianz.com/en/economic_research/insights/publications/specials_fmo/2024_05_23-Global-Insurance-Report.html.

[4] Amini, H., Deguest, R., Iyidogan, E., & Minca, A. (2024). Blockchain adoption and optimal reinsurance design. *European Journal of Operational Research*, 318(1), 341-353. doi: 10.1016/j.ejor.2024.03.033.

[5] Bulantsov, I. (2024). Problems and challenges in regulating the insurance market of Ukraine in the context of European integration. *Economic Forum*, 14(1), 8-17. doi: 10.62763/cb/1.2024.08.

[6] Bulantsov, I. (2025). Identification of key challenges of insurance market regulation in the context of globalisation and integration into the European market. *Economic Forum*, 15(3), 18-29. doi: 10.62763/ef/3.2025.18.

[7] Cooper, W.W., Seiford, L.M., & Zhu, J. (Eds.). (2011). *Handbook on data envelopment analysis* (2nd ed.). New York: Springer. doi: 10.1007/978-1-4419-6151-8.

[8] Deloitte. (2024). *2025 insurance industry outlook: Navigating resilience and reinvention*. Retrieved from https://www.deloitte.com/us/en/insights/industry/financial-services/financial-services-industry-outlooks/insurance-industry-outlook-2025.html.

[9] Domínguez Anguiano, T., & Parte, L. (2023). The state of art, opportunities and challenges of blockchain in the insurance industry: A systematic literature review. *Management Review Quarterly*, 74, 1097-1118. doi: 10.1007/s11301-023-00328-6.

[10] Duhiienko, N.O., & Tkachuk, O.O. (2024). Rebuilding of Ukraine's economy in the context of prospects for integration into the EU. *Financial Strategies of Innovative Economic Development*, 1(61), 33-41. doi: 10.26661/2414-0287-2024-1-61-07.

[11] Dymnich, O. (2025). External barriers to sustainable development of the Ukrainian insurance market. *Finance of Ukraine*, 7, 60-75. doi: 10.33763/finukr2025.07.060.

[12] Dymnich, O., Gamankov, D., & Stetsiuk, T. (2023). Impact of Russian-Ukrainian war on global marine and aviation insurance market. *Věda a Perspektivy*, 6(25), 188-200. doi: 10.52058/2695-1592-2023-6(25)-188-200.

[13] Farrell, M.J. (1957). The measurement of productive efficiency. *Journal of the Royal Statistical Society: Series A (General)*, 120(3), 253-290. doi: 10.2307/2343100.

[14] International Association of Insurance Supervisors. (2024). *Global insurance market report 2024*. Retrieved from https://www.iaisweb.org.

[15] Izbash, K.S. (2024). Current state of national security of Ukraine under martial law. In *World economy and civilizational progress amidst polystructural changes: Economic-technological, resource, political-legal, security-social factors* (pp. 224-227). Uzhhorod: Baltija Publishing. doi: 10.30525/978-9934-26-412-2-56.

[16] Kotsiurba, O., & Nasypaiko, D. (2020). Insurance market of Ukraine: Current state and development problems. *Central Ukrainian Scientific Bulletin. Economic Sciences*, 5(38), 284-291. doi: 10.32515/2663-1636.2020.5(38).284-291.

[17] Martins, A.M., Correia, P., & Gouveia, R. (2024). The impact of the Russia-Ukraine war on the world's largest listed insurance firms. *The Geneva Papers on Risk and Insurance – Issues and Practice*, 49, 779-803. doi: 10.1057/s41288-023-00305-w.

[18] Melnyk, M., Zhabynets, O., Myshchyshyn, I., & Orlov, V. (2021). Efficient use of the insurance sector potential adjusted for its shadowing: Case of Ukraine. *Insurance Markets and Companies*, 12(1), 14-26. doi: 10.21511/ins.12(1).2021.02.

[19] Musaigwa, M. (2024). From traditional to digital: Transforming business models in the insurance sector. *International Journal of Development and Sustainability*, 13(1), 68-86.

[20] Nagurney, A., Pour, I., & Kormych, B. (2025). Integrated crop and cargo war risk insurance: Application to Ukraine. *International Transactions in Operational Research*, 33, 5-37. doi: 10.1111/itor.70038.
[21] National Bank of Ukraine. (2024). *Review of the insurance market of Ukraine for 2024*. Retrieved from https://bank.gov.ua/ua.
[22] OECD. (2024). *Global insurance market trends 2024*. Paris: OECD Publishing. doi: 10.1787/5b740371-en.
[23] Shmygol, N., Glushchevsky, V., Cherniavska, O., Sembiyeva, L., Byrskyi, V., Khoroshun, V., & Merzhynskyi. (2024). Determining the leaders of Ukraine's insurance market based on the adaptation of the DEA method. *Insurance Markets and Companies*, 15(2), 14-25. doi: 10.21511/ins.15(2).2024.02.
[24] Siahaan, R., Sofyan, A., Oktaviani, V.M., Hasyim, N., & Amir, J. (2024). Human resource development effects on staff and the organization performance. *Economic Annals-XXI*, 207(1-2), 34-42. doi: 10.21003/ea.V207-05.
[25] Tkachuk, L., & Kraus, O. (2024). Impact of a full-scale invasion on the insurance market in Ukraine *Innovation and Sustainability*, 4(3), 34-44. doi: 10.31649/ins.2024.3.34.44.

Павло Бондаренко
Кандидат економічних наук, старший викладач
Одеський національний економічний університет
65082, вул. Преображенська, 8, м. Одеса, Україна
https://orcid.org/0000-0002-8000-1913

Ефективність функціонування страхового ринку України

Анотація. Метою цього дослідження було вивчення ефективності страхового ринку України за допомогою кількісних показників та ключових індикаторів результативності. Розглянуто теоретичні підходи до розмежування понять «страховий ринок» і «ринок страхових послуг», виділено дві провідні наукові школи. Запропоновано комплексну систему оцінки ефективності, що базується на класичному співвідношенні результатів до витрат Д. Рікардо та адаптована до страхової діяльності за допомогою показників *ROA*, *ROE*, щільності страхових премій, коефіцієнта відшкодування, адміністративних витрат і рентабельності продажів. На основі даних Національного банку України за 2020-2024 роки встановлено стійке зростання щільності страхових премій – з 235,1 до 816,6 грн., зокрема у сегменті non-life до 861,0 грн.. Виявлено волатильність ROA (максимум 6,8 % у сегменті non-life у 2022 р.) та *ROE* (пік 22,2 % у 2022 р.). Життєве страхування демонструє зниження інтересу клієнтів на тлі воєнного стану, що відобразилося у стабільно нижчих показниках прибутковості. ПрАТ «Страхова компанія "Перша"» було використано як еталон, що підтвердив ці галузеві тенденції. Стратегічні рекомендації включали розширення каналів дистрибуції через bancassurance і партнерства з фінтех-компаніями; M&A для оптимізації ресурсів; включення покриття нових ризиків (кібербезпека, криптовалюти); розвиток державно-приватних ініціатив; створення інтегрованих екосистем послуг (охорона здоров'я, юридична та автомобільна підтримка); впровадження зручних цифрових платформ; а також спрямування капіталу в більш дохідні активи з одночасною пропозицією індивідуалізованих продуктів для заможних клієнтів. Доведено, що сегмент non-life є більш резистентним до зовнішніх шоків, тоді як сегмент life потребує додаткових стимулів для відновлення попиту. Отримані результати підкреслили необхідність постійної адаптації регулювання та інновацій для забезпечення сталого зростання і конкурентоспроможності в умовах складного макроекономічного середовища

Ключові слова: стійкість страхового сектору; індикатори фінансової ефективності; коефіцієнти прибутковості; щільність ринку; стратегічний розвиток; сегмент нежиттєвого страхування; регуляторна адаптація