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IMPACTS OF UKRAINE'S SOCIAL, FINANCIAL AND ECONOMIC SECURITY

ВПЛИВИ СОЦІАЛЬНОЇ, ФІНАНСОВОЇ ТА ЕКОНОМІЧНОЇ БЕЗПЕКИ УКРАЇНИ

The article examines the impacts of social and economic security in Ukraine under contemporary challenges, including military aggression, globalization, and structural economic transformations. The dynamics of key socio-economic indicators are analyzed, threshold values of safe development are identified, and integral indices are assessed. The necessity of adaptive governance models and strategic planning is substantiated. It is proved that social stability is a crucial factor in strengthening the economic security of the state.

Key words: *public administration, authorities, national security, economic security, social security, socio-economic policy, war, threats, strategy, standard of living, demographic trends and factors, social security, financial security.*

У статті досліджено впливи соціальної, фінансової й економічної безпеки в Україні в умовах сучасних викликів, зокрема воєнної агресії, глобалізації та структурних економічних трансформацій. Проаналізовано динаміку ключових соціально-економічних показників, визначено порогові значення безпечного розвитку та оцінено інтегральні індекси. Обґрунтовано необхідність застосування адаптивних моделей управління та стратегічного планування. Доведено, що соціальна стабільність є визначальним чинником зміцнення економічної безпеки держави.

Ключові слова: *публічне управління, органи влади, національна безпека, економічна безпека, соціальна безпека, соціально-економічна політика, війна, загрози, стратегія, рівень життя, демографічні тенденції та чинники, соціальна безпека, фінансова безпека.*

Problem setting. Global transformations, world restructuring, digitalization and Russia's war against Ukraine create conditions for a socio-economic crisis, an increase in the level of entropy of economic systems and serious threats to the national economy of Ukraine. In the context of globalization, one of the key factors for the growth of the economic well-being of the state is becoming socio-humanitarian aspects, which play an important role in shaping the institutional framework and strategies for socio-economic development.

Problems such as the rapid growth of poverty, increased urbanization, population growth, shortage of resources for development, the struggle for their redistribution and monopolization of property rights indicate the need for radical changes in the methodology for ensuring economic security. To adapt to these challenges, it is critically important to guarantee a high level of well-being and quality of life of citizens, create favorable conditions for their

economic self-realization and effectively use socio-humanitarian potential, improving the institutional basis for the functioning of the national economy.

However, the lack of necessary reforms, in particular, ignoring the criteria for ensuring the economic security of citizens, significantly exacerbates the threats to the country's economic stability. The war has caused a number of negative consequences: demographic losses, the spread of poverty, deepening property inequality, increased military aggression and increased insecurity of citizens. These factors indicate the imperfection of the current model of economic development and emphasize the urgent need to improve the institutional support of the national economy.

Priority tasks should be the implementation of human-centric approaches, the protection of fundamental rights and interests of citizens, as well as the integration of social and humanitarian values in the strategy of sustainable development. The formation of a reliable institutional framework and the use of social potential will contribute to overcoming modern challenges and ensuring the sustainable development of the national economy.

Analysis of recent research and publications. The economic security of the state has become the object of close attention of both domestic and foreign scientists in recent years. In particular, thorough studies of various aspects of national economic security have been reflected in the works of such well-known scientists as O. I. Baranovsky, T. G. Vasyltsiv, O. S. Vlasyuk, Z. B. Zhivko, F. Ferreira, Y. Kharazishvili, G. V. Kozachenko, D. V. Nikitenko, S. V. Onyshchenko, S. I. Pyrozhkov and others [1; 5; 8; 9–11; 10; 22]. In parallel, the issues of social security in Ukraine, in particular aspects related to ensuring the social security of the individual, are actively considered in the works of Z. I. Galushka, V. A. Goshovska, O. I. Ilyash, O. M. Lyashenko, H. Mishchuk, V. O. Onyshchenko, O. G. Sydorchuk, A. I. Sukhorukov, V. P. Udovichenko, Yu. M. Kharazishvili and others [4; 7; 13; 19; 20; 21].

Paper objective. The purpose of the article is to determine the factors influencing the state of social and economic security in Ukraine, as well as the negative effect of the level of security on society and the state.

Paper main body. Ensuring the security of modern society is one of the most important priorities of state policy. The feeling of security of citizens is a

key condition not only for the disclosure of human potential, but also for the formation and development of civil society in general. In the current conditions, when human rights and freedoms, as well as economic stability, are under threat due to Russia's military aggression, the issue of social protection becomes particularly relevant.

State social protection plays a critically important role, offering people opportunities for a full life, work and service to society, which in turn contributes to the sustainable socio-economic growth of the country [15–16]. Most Ukrainian researchers interpret the social component of economic security as the need for legal and institutional protection of the basic social interests of citizens and society from external and internal threats.

The threat of globalization in conditions of military operations only complicates the ways of solving social problems. For Ukraine, the war has become a critical challenge that radically affects national security, and especially the social security of its citizens. The lack of an adequate level of socio-economic security instantly generates negative consequences that can significantly undermine the well-being and stability of the state.

The modern approach to the problem of economic security of the state from the point of view of ensuring one of the key internal factors of the country's economic development should be aimed at strengthening the social stability of society. In this context, the main goals of the strategy should be defined as:

– reducing threats to state sovereignty and creating conditions for the restoration of the territorial integrity of Ukraine within internationally recognized borders;

– ensuring the peaceful future of Ukraine as a sovereign, independent, democratic, social and legal state; establishing the rights and freedoms of every citizen, creating new conditions for high-quality economic, social and humanitarian development;

– achieving Ukraine's integration into the European Union and creating prerequisites for joining NATO [8; 22].

To implement the tasks of social security of a person in modern conditions, the following tools should be used:

– legislative and regulatory legal acts that define and guarantee the rights and freedoms of citizens;

– social partnership and dialogue between the authorities, employers and employees to resolve controversial issues;

– responsible and conscious behavior of citizens;

– a developed system of democratic institutions of civil society;

– consolidation of the population, ensuring stability and maintaining social order;

– development of clear criteria for targeted social support for vulnerable groups of the population;

– accessibility of social services;

– provision of targeted assistance to those who are most in need of social protection [1; 3; 16; 17].

The following can be attributed to external means of ensuring human social security, which are implemented through the state and society:

– creation of favorable conditions for the preservation and sustainable development of the Ukrainian nation;

– adoption of the Social Code of Ukraine as a systematized regulatory act aimed at protecting the social rights of citizens;

– harmonization of social security standards of Ukraine with the standards of the European Union countries;

– modernization of the national healthcare system to ensure access to quality medical services;

– provision of opportunities for lifelong learning that meets the modern challenges of the knowledge economy;

– preservation and development of spiritual and cultural values as components of national identity;

– effective protection of the rights and freedoms of citizens, which involves preventing their violations;

– support for employment and incomes of the population, including the provision of social guarantees for internally displaced persons;

– creation of conditions for the coordinated functioning and intensive development of all social institutions in the country [4; 7; 9; 14; 19].

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Social security of a person, it seems, is understood as the level of protection of the key socio-economic interests of an individual, his fundamental rights, freedoms and values from the influence of internal and external, potential and real threats. The functional components of this level of social security include: the safety of human life; the protection and implementation of general social values; the safety of the social environment; ensuring a decent standard of living; psychological and mental security; as well as the ability to self-defense, self-preservation and self-development.

The research draws on a range of statistical indicators from both national [12; 18] and international sources [2; 5; 6], focusing on the components of social safety within society over recent years. The primary nations whose data contributed to defining the threshold vector include France, the United Kingdom, Sweden, Finland, Spain, Denmark, the Russian Federation, Slovakia, Poland, the Czech Republic, Italy, Portugal, Germany, Canada, Luxembourg, the Netherlands, Norway, Austria, Ireland, the United States, and China, although the specific countries varied with each indicator.

For particular indicators, our team chose nations demonstrating superior performance in relevant areas that could serve as promising models for Ukraine. Ideally, consistent country lists and time periods would have been used for all indicators, but this was not always feasible. Establishing the threshold vector involves constructing a hypothetical country that exemplifies the highest level of social safety across all indicators. Most threshold data corresponds to 2015–2016, though Eurostat forecasts from 2015–2020 were occasionally employed [6].

The State Statistics Service of Ukraine provided data on the majority of Ukraine's social indicators. For indices like shadow economy indicators, dynamics and thresholds were determined using the 'social justice' method as part of a general macroeconomic equilibrium model [10, pp. 104–128]. A comprehensive macroeconomic model [20, pp. 81–177] helps calculate safety indicators not covered by official statistics and justifies some threshold values by modeling crisis situations. Given the State Statistics Service of Ukraine’s inadequate reporting on the shadow economy (estimated at 17–18% of official GDP) and a lack of published data on some aspects, we devised our own

methodology for estimating shadow economic activity. This method is versatile and applicable to any country or region. It allows for calculating indicators such as: (1) The volume of shadow GDP that could be added to the official GDP; (2) the volume of official GDP produced through shadow wages, employment, intermediate consumption, capital loading, and energy consumption.

Determining the boundaries of safe existence in a dynamic system is a crucial step toward ensuring secure development. Without understanding these boundaries, protecting vital security interests is impossible. Therefore, it is essential to establish a threshold vector for each indicator: identifying lower and upper critical, lower and upper threshold, and lower and upper optimal values (Figure 1).

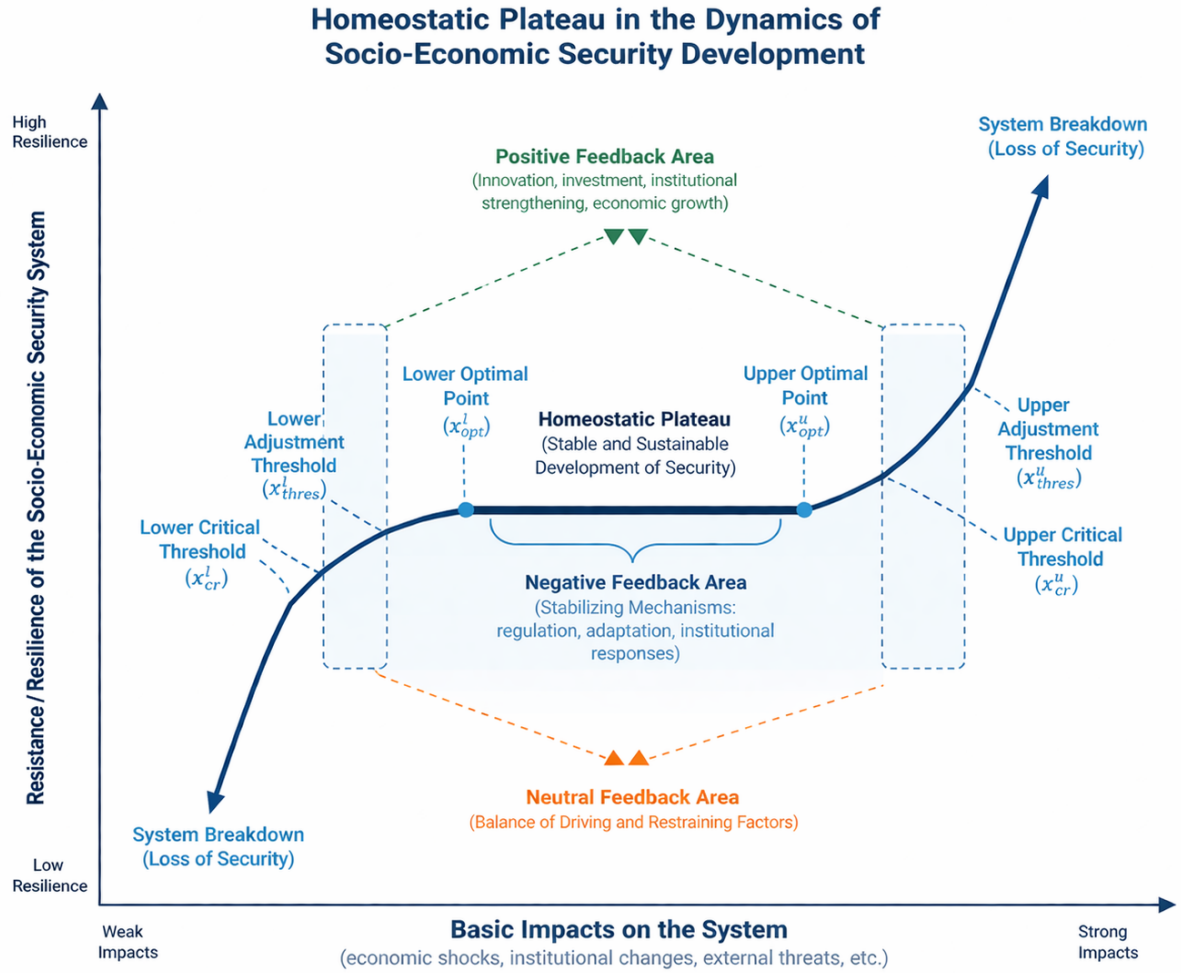

Fig. 1. Homeostatic plateau of the dynamics of the development of the socio-economic system in Ukraine

Source: compiled based on [9; 10].

A set of optimal values delineates the homeostatic plateau, a conceptual space within which a system operates under its most favorable conditions, governed by negative feedback mechanisms. This optimal range of variability in indicators corresponds to the notion of the "efficient frontier" in economic theory. In contrast, the "threshold range" aligns conceptually with the "crisis frontier," while the "critical range" is comparable to the "critical frontier." The term "homeostatic plateau" was originally introduced by Van Gigch (1968) within the framework of applied systems theory. This construct encompasses both the plateau itself and the systemic breakdowns that occur when parameters deviate beyond its bounds. Subsequent research (see [10, p. 67; 11]) has expanded on this proposition by incorporating additional dimensions, such as threshold and critical value ranges, while introducing a neutral feedback zone. Furthermore, these studies elaborate on the nature of transitions between distinct zones. Such transitions are characterized by exponential shifts in feedback relationships: the pre-existing feedback dynamics weaken exponentially before new dynamics emerge and intensify in a similarly exponential manner. Notably, this transformation does not happen instantaneously upon crossing the defined thresholds but involves a gradual change in the type and magnitude of feedback. Empirical analysis of the majority of social indicators for Ukraine, based on data from the State Statistics Service of Ukraine, provides key insights into these dynamics. At an initial stage of this study, certain indicators were analyzed using a macromodel. To identify the vector of threshold values for these indicators, comparative data samples from economically developed nations in recent years were employed. Numerous methodologies for determining threshold value vectors are available, yet some are particularly well-suited to this type of analysis. These include macroeconomic models, which effectively capture the influence of destabilizing factors specific to a nation's economic conditions at a given point in time; functional dependency approaches (e.g., macro/microeconomic analytical equations, statistical models such as those derived from the Akhiezer-Goltz framework, information theory constructs, or the "golden section" principle); and stochastic techniques (e.g., statistical significance tests

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such as the t-test). In scenarios where macromodels are unavailable, the t-test method represents a practical and accessible alternative. Despite requiring only a modest sample size (typically ≥ 20 observations), it proves sufficient for reliably identifying threshold values in a statistically robust manner [9].

The primary function of the threshold vector is to assess the level of societal social safety, establish strategic objectives for future development, and implement a methodical approach to designing a strategy for societal safety from a sustainable development perspective. Additionally, the average optimal values of key indicators will serve as essential criteria for achieving sustainable development goals. This threshold vector is intended to be reviewed and updated approximately every 3–5 years [9; 19]. Moving forward, the adoption of dynamic thresholds, akin to the scientific community's practice of applying dynamic weights in integrated assessments, is recommended. The research framework comprises three phases, with the centerpiece being the modeling process.

To execute this study, several methods were employed. Statistical analysis techniques for variations and distributions were utilized to examine specific patterns of social indicator distribution and to compare Ukraine's structural characteristics in this regard with European benchmarks by determining the threshold vector [16] Furthermore, interconnection analysis methods were applied to calculate elasticity coefficients and evaluate the influence of societal safety indicators on the aggregated index, using data from Ukraine and other European nations. During the initial phase, the research focused on tracking the dynamics of indicators and defining the parameters of secure existence by employing strategic benchmarking. This involved constructing probability density functions and calculating statistical properties such as the mathematical mean, root mean square deviation, and asymmetry coefficient. These calculations facilitated the determination of the threshold values for each indicator. Among various probability density function types, those with the most representative and closest-fitting distribution characteristics—such as normal, lognormal, and exponential distributions—were selected. For these cases, the research team developed equations to derive the threshold vector (refer to [10, pp. 66–72]. In these equations, μ represents the average value, σ

denotes the mean square deviation, and t is derived from Student's t-distribution tables [21].

In the second stage, a comprehensive integration of indicators and thresholds was conducted [11, p. 113]. This process involves anticipating their application. Moving into the third stage, the challenge of strategic planning is addressed, aiming to chart future development by following the principle that "the future is determined by the trajectory one sets toward it" [9; 10, pp. 83–89], as opposed to the conventional forecasting principle that "the past determines the future." It becomes evident that traditional forecasting methods are unsuitable in this context. Firstly, forecasting merely extends existing trends into the future without adaptability. Secondly, it inherently involves a margin of error. Most importantly, there arises a critical need to identify how elements and indicators related to sustainable development or safety should evolve to ensure the desired developmental outcomes. Thus, alternative approaches are indispensable, as evidenced by the method proposed within this article. After establishing the dynamics of the integrated index and the corresponding thresholds, the next step is to set target values for this index that reflect future aspirations. The subsequent task is to predict the developmental trajectory to align with those targets. Once the integral index values are defined for each period, the focus shifts to decomposing the index. This involves synthesizing the required values of its components and their respective indicators to maintain the index within predefined limits. Solving this inverse problem for each element of sustainable development, when its target value is known or predetermined, allows for a nuanced approach. By incorporating factors such as the sensitivity of components or indicators, weight distributions, and adaptive control strategies derived from management theory [13], it becomes feasible to compute the required values of these components and indicators for each year within the forecasting period (refer to Figure 2).

The presented figure illustrates a comprehensive adaptive control system with a reference model for the socio-economic development of Ukraine, conceptualized as a dynamic, multi-layered governance framework. At its core, the model reflects a transition from traditional linear management approaches toward a complex, feedback-driven system capable of functioning under conditions of uncertainty, crisis, and structural transformation. The architecture of the model integrates input data streams, analytical processing, decision-

making mechanisms, and adaptive governance tools into a unified system that ensures continuous monitoring, evaluation, and adjustment of development trajectories.

The input data layer forms the foundational component of the system, incorporating macroeconomic indicators, statistical data streams, and external shocks such as war, economic crises, and global market fluctuations. Unlike classical models that rely primarily on stable and predictable inputs, this framework explicitly recognizes the volatile and disruptive environment in which Ukraine operates. By embedding external shocks directly into the analytical process, the model enhances its sensitivity to real-time changes and allows for more accurate identification of emerging risks and structural imbalances. This ensures that policy responses are grounded in a realistic understanding of both internal dynamics and exogenous pressures.

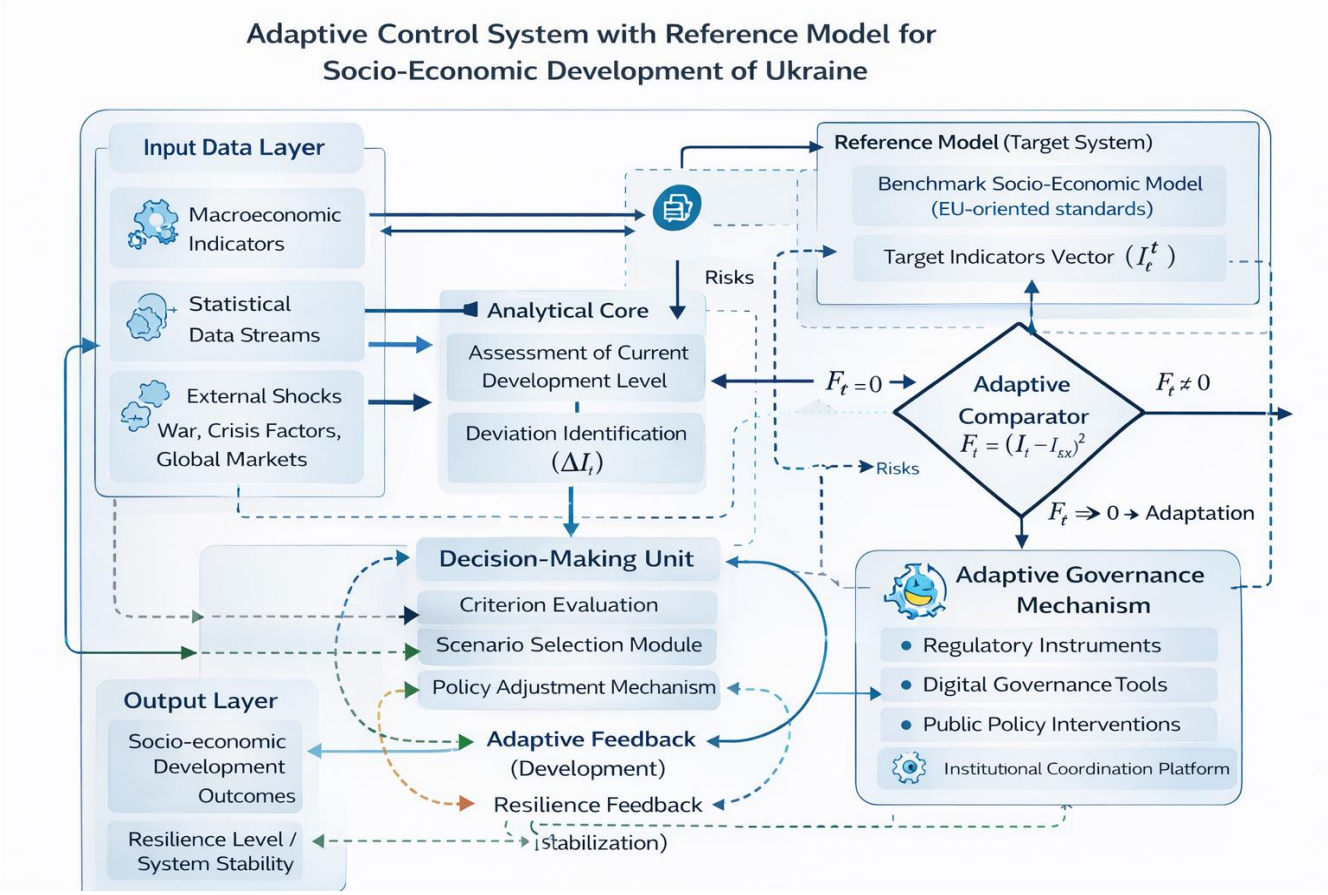

Fig. 2. Generalized block diagram of an adaptive control system with a reference model of socio-economic development of Ukraine

Source: author's development

The analytical core represents the central processing unit of the system, where the current level of socio-economic development is assessed and deviations from target indicators are identified. A key innovation in this block is the integration of deviation analysis (ΔI_t) with risk and uncertainty assessment, enabling a deeper interpretation of system performance beyond simple indicator comparison. This analytical layer transforms raw data into actionable insights, revealing not only the magnitude of deviations but also their underlying causes and potential consequences. As a result, the system gains the capacity to anticipate cascading effects and systemic vulnerabilities, which is particularly critical in the context of hybrid threats and economic instability.

A pivotal element of the model is the reference (benchmark) system, which defines the desired trajectory of development based on European standards and strategic national objectives. The comparison between actual and target indicators is operationalized through an adaptive comparator, expressed mathematically as a deviation function. However, unlike conventional control systems, this comparator incorporates constraints, risks, and environmental variability, making it more flexible and context-sensitive. The decision-making unit, in turn, builds upon this analysis by integrating criterion evaluation, scenario selection, and policy adjustment mechanisms. This allows the system to move beyond reactive responses and adopt a proactive stance, selecting optimal strategies under different scenarios and continuously refining policy interventions.

Finally, the model emphasizes the role of the adaptive governance mechanism and feedback loops as key drivers of system resilience and evolution. The governance block integrates regulatory instruments, digital tools, public policy interventions, and institutional coordination platforms, ensuring coherence across different levels of administration. The inclusion of multiple feedback types—adaptive, resilience-oriented, and stabilizing—enables the system to learn from past experiences, correct deviations, and maintain equilibrium under changing conditions. The output layer reflects the ultimate outcomes in terms of socio-economic development, system stability, and resilience. Overall, the figure conceptualizes socio-economic development

as a continuously evolving process, where adaptability, digital integration, and risk-oriented governance become central elements of effective public administration in Ukraine.

The regulation of the constituent elements of the integrated index, along with their respective indicators, aims to establish aggregate values that ensure the integrated indicator remains within predefined thresholds, either optimal or acceptable. Notably, the mechanism for parameter adjustment within the model relies on methodologies grounded in the gradient of the error function. Central to this adjustment process is the principle of minimizing a quadratic error function, including its derivatives, under the assumption that all functions involved are continuous and at least twice differentiable. The delineation of the structure and boundaries of safe existence aligns with our conceptualization of societal social safety. Within this framework, three fundamental components are identified: the standard of living, encompassing material and financial resources necessary for sustenance; a demographic dimension, which ensures the security of demographic and reproductive processes; and a social dimension of quality of life, encapsulating access to health preservation, education, and conditions conducive to a safe existence. Using the chosen integral estimation method, we derive the dynamics of the integral indices representing societal social safety, which are compared against the corresponding threshold values (refer to Figure 3).

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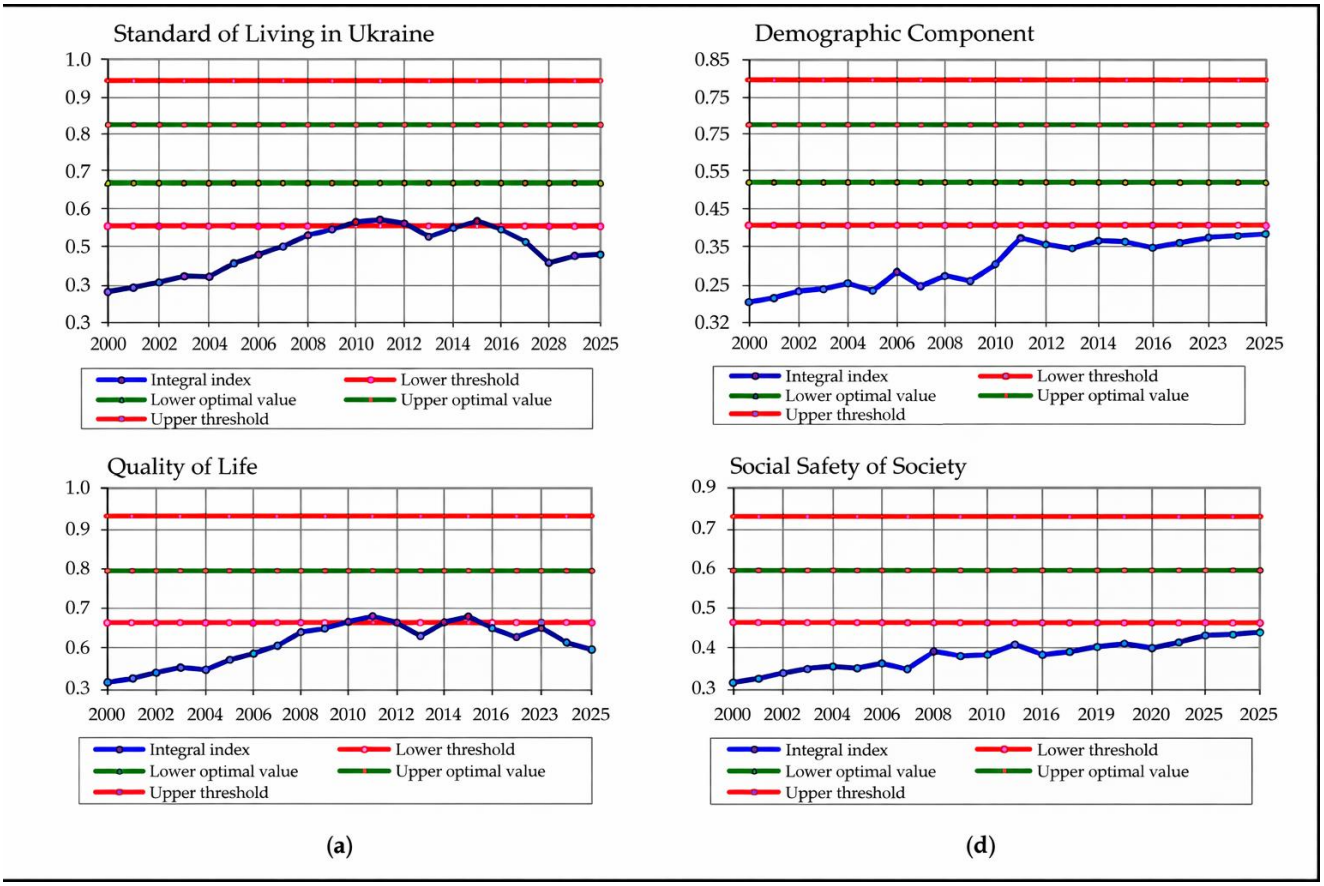

Fig. 3. The dynamics of integral indices encompass the following key aspects: (a) standards of living, (b) demographic trends and factors, (c) quality of life, and (d) the social security and safety of society.

Source: compiled based on [9; 10; 12; 18]

The figure presents a comprehensive, multi-dimensional assessment of socio-economic development in Ukraine through four interrelated components: (a) Standard of Living, (b) Demographic Component, (c) Quality of Life, and (d) Social Safety of Society. Each block reflects the dynamics of an integral index over time, complemented by threshold and optimal value boundaries that define the safe, critical, and desirable ranges of development. This structure allows for a holistic interpretation of national resilience, where each subsystem contributes to the overall stability and sustainability of socio-economic security.

In panel (a), the Standard of Living in Ukraine demonstrates a fluctuating yet generally moderate trajectory. The integral index consistently remains below the lower optimal threshold, indicating that while basic living conditions are maintained, they do not reach the level considered sustainable for long-

term socio-economic stability. Periods of growth are followed by noticeable declines, reflecting sensitivity to external shocks and internal economic instability. This suggests that improvements in income levels, consumption capacity, and access to essential services remain uneven and insufficiently resilient to crises.

Panel (b), which represents the Demographic Component, reveals a relatively low but slightly improving trend over time. The integral index remains significantly below both optimal and threshold values, highlighting persistent demographic challenges such as population decline, aging, migration, and reduced labor force potential. Although there are minor positive shifts in certain periods, the overall trajectory indicates structural demographic weaknesses that constrain economic growth and social development. This component underscores the long-term risks associated with demographic imbalance and the need for targeted policy interventions.

In panel (c), the Quality of Life index reflects moderate variability with periodic improvements followed by declines. Similar to the standard of living, the values remain below the optimal range, indicating that access to healthcare, education, environmental quality, and social services is not yet at a level that ensures high societal well-being. Meanwhile, panel (d), Social Safety of Society, shows relatively more stability compared to other components, though still below optimal thresholds. This suggests that while basic mechanisms of social protection and public safety are functioning, they lack the robustness required for high resilience. Together, the four components illustrate a system operating within a constrained zone of development, where none of the key dimensions reach optimal levels, emphasizing the need for integrated, adaptive governance strategies to enhance overall socio-economic security.

Thus, utilizing the calculated dynamics of integral indices for the components of sustainable development, along with their respective threshold values, to determine deviations from their average optimal levels, can serve as a benchmark for achieving sustainable development (Figure 4). The figure titled “Imbalances in the components of Ukraine's social and economic security from the perspective of its sustainable development” illustrates the dynamic behavior of key socio-economic indicators and their deviations from a balanced

(sustainable) trajectory. The graphical representation combines historical data with projected trends, allowing for a comprehensive understanding of how different components of social and economic security evolve over time. The curves demonstrate that imbalances are not static but fluctuate under the influence of internal structural transformations and external shocks, including economic crises and geopolitical instability.

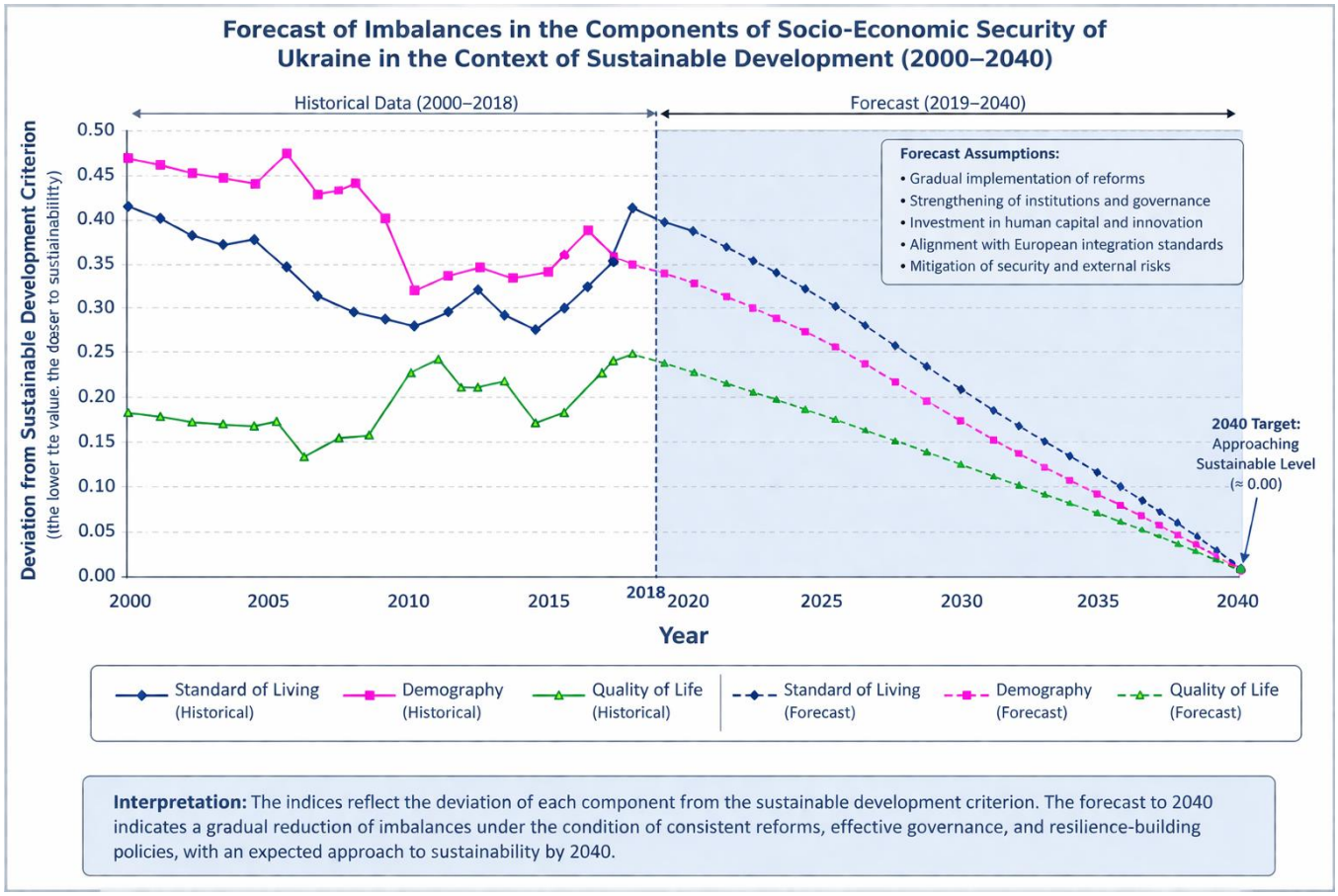

Fig. 4. Imbalances in the components of Ukraine's social and economic security from the perspective of its sustainable development.

Source: compiled based on [9; 10; 12; 18]

A notable feature of the figure is the presence of both actual and forecasted trajectories, typically represented by solid and dashed lines. The historical segment reflects real fluctuations in socio-economic indicators, indicating periods of both improvement and deterioration. In contrast, the forecast section projects a gradual convergence toward more balanced values by 2040, suggesting the potential effectiveness of sustainable development

policies. However, the differing slopes and amplitudes of the curves imply that not all components adjust at the same pace, revealing asymmetries in recovery and adaptation processes across sectors.

Overall, the figure emphasizes that achieving sustainable socio-economic security in Ukraine requires reducing systemic imbalances between its core components. While the projected trends indicate a positive direction toward stabilization, the persistence of gaps highlights the need for integrated policy measures, institutional coordination, and long-term strategic planning. The visualization reinforces the idea that sustainable development is not merely about growth, but about harmonizing social and economic dimensions to ensure resilience, inclusiveness, and long-term stability.

Conclusions. Based on the analysis, the following conclusions can be drawn:

1. It is insisted that social security is a key element of the economic security of the state, as it determines the level of stability of society, the quality of life of the population and the potential for economic development.

2. It is found out that the current state of socio-economic security of Ukraine is characterized by systemic imbalances, in particular in the areas of living standards, demographic development and quality of social services, which are exacerbated in conditions of military challenges. The use of integral indices and threshold values allows us to objectively assess the level of security, identify critical zones and form scientifically based guidelines for state policy.

3. It is substantiated that adaptive models of management and strategic planning are necessary tools for ensuring socio-economic security. Since they allow us to take into account the dynamics of external and internal threats and form effective development scenarios.

4. It is proven that achieving sustainable socio-economic development of Ukraine is possible only if the imbalances between the key components of its social and economic security are reduced, which requires the implementation of effective state policy, the integration of European standards and increasing the efficiency of social protection of the population.

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