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ECONOMIC ASSESSMENT OF RESOURCE ALLOCATION STRATEGIES IN UKRAINE

***Анотація.** Дане дослідження має на меті провести комплексну економічну оцінку стратегій розподілу ресурсів в Україні, оцінюючи їх ефективність, продуктивність і справедливість. Аналіз розпочинається з огляду економічного середовища України та важливості розподілу ресурсів для сприяння національному розвитку. Дослідження висвітлює поточні політики та механізми, що використовуються урядом України для розподілу ресурсів між різними секторами та регіонами, оцінюючи їх відповідність національним економічним цілям і планам розвитку. Методологічно дослідження застосовує змішаний підхід, використовуючи вторинні дані з урядових звітів, економічних баз даних та академічних публікацій. Статистичний аналіз, економічне моделювання та порівняльний аналіз використовуються для оцінки впливу існуючих стратегій розподілу ресурсів на економічне зростання, продуктивність та регіональний розвиток. Аналіз також включає оцінку справедливості та рівномірності розподілу ресурсів серед різних регіонів та груп населення. Результати показують, що хоча поточні стратегії розподілу ресурсів в Україні сприяли зростанню в деяких сферах економіки, значні диспропорції залишаються в регіональному розвитку та галузевій продуктивності. Дослідження виявляє неефективності та структурні виклики, які перешкоджають оптимальному використанню ресурсів, та підкреслює соціальні наслідки нерівномірного розподілу ресурсів. Порівняльний аналіз з іншими країнами розкриває кращі практики, які можна адаптувати для покращення структури розподілу ресурсів в Україні. Дослідження заглиблюється в політичні, економічні та соціальні фактори, що впливають на розподіл ресурсів в Україні. Воно визначає ключові обмеження, такі як політична нестабільність, економічний тиск та соціальні виклики, що перешкоджають ефективному управлінню ресурсами. Дослідження підкреслює необхідність комплексних реформ політики та адаптивних стратегій для подолання цих обмежень. Висновок містить практичні рекомендації політики, спрямовані на покращення ефективності та справедливості розподілу ресурсів в Україні. Ці рекомендації включають галузеві стратегії та рамки впровадження, призначені для підтримки стійкого економічного розвитку. Досягнення цілей дослідження сприяє глибшому розумінню динаміки розподілу ресурсів в Україні та забезпечує основу для більш ефективної та справедливої економічної політики.*

***Ключові слова:** розподіл ресурсів, економічна оцінка, Україна, рекомендації політики, регіональний розвиток, економічне зростання, соціальна справедливість, порівняльний аналіз.*



JEL Classification: C4, B41, F63, O10.

Absztrakt. Ez a tanulmány átfogó gazdasági értékelést kíván nyújtani az erőforrás-elosztási stratégiákról Ukrajnában, értékelve azok hatékonyságát, eredményességét és méltányosságát. Az elemzés Ukrajna gazdasági környezetének áttekintésével kezdődik, hangsúlyozva az erőforrás-elosztás fontosságát a nemzeti fejlődés előmozdításában. A kutatás kiemeli az ukrán kormány által alkalmazott jelenlegi politikákat és mechanizmusokat az erőforrások különböző szektorok és régiók közötti elosztására, értékelve azok összhangját a nemzeti gazdasági célokkal és fejlesztési tervekkel. Módszertanilag a tanulmány vegyes módszertani megközelítést alkalmaz, amely a kormányzati jelentésekből, gazdasági adatbázisokból és tudományos publikációkból származó másodlagos adatokat használ fel. Statisztikai elemzés, gazdasági modellezés és összehasonlító elemzés alkalmazásával értékeli a meglévő erőforrás-elosztási stratégiák gazdasági növekedésre, termelékenységre és regionális fejlődésre gyakorolt hatását. Az elemzés tartalmazza az erőforrások különböző régiók és lakossági csoportok közötti elosztásának méltányosságát és igazságosságát is. Az eredmények azt mutatják, hogy bár a jelenlegi erőforrás-elosztási stratégiák hozzájárultak bizonyos gazdasági növekedési területekhez, jelentős egyenlőtlenségek maradnak a regionális fejlődésben és az ágazati termelékenységben. A tanulmány azonosítja azokat a hatékonysági hiányosságokat és strukturális kihívásokat, amelyek akadályozzák az optimális erőforrás-felhasználást, és hangsúlyozza az egyenlőtlen erőforrás-elosztás társadalmi következményeit. Az összehasonlító elemzés más országokkal feltárja azokat a bevált gyakorlatokat, amelyeket Ukrajna erőforrás-elosztási keretének javítása érdekében lehetne adaptálni. A tanulmány részletesen tárgyalja azokat a politikai, gazdasági és társadalmi tényezőket, amelyek befolyásolják az erőforrás-elosztást Ukrajnában. Azonosítja a kulcsfontosságú korlátokat, mint a politikai instabilitás, gazdasági nyomás és társadalmi kihívások, amelyek akadályozzák az erőforrások hatékony kezelését. A tanulmány hangsúlyozza az átfogó politikai reformok és alkalmazkodó stratégiák szükségességét ezen korlátok kezelésére. A következtetések cselekvési javaslatokat tartalmaznak az erőforrás-elosztás hatékonyságának és méltányosságának javítása érdekében Ukrajnában. Ezek a javaslatok ágazatspecifikus stratégiákat és végrehajtási kereteket tartalmaznak, amelyek a fenntartható gazdasági fejlődést támogatják. A tanulmány célkitűzéseinek elérése révén hozzájárul az ukrán erőforrás-elosztás dinamikájának mélyebb megértéséhez és alapot nyújt a hatékonyabb és méltányosabb gazdaságpolitikákhoz.

Kulcsszavak: erőforrás-elosztás, gazdasági értékelés, Ukrajna, politikai javaslatok, regionális fejlődés, gazdasági növekedés, társadalmi igazságosság, összehasonlító elemzés.

Abstract. This study aims to conduct a comprehensive economic assessment of resource allocation strategies in Ukraine, evaluating their effectiveness, efficiency, and equity. The analysis begins with an overview of Ukraine's economic landscape and the importance of resource allocation in promoting national development. The research highlights the current policies and mechanisms used by the Ukrainian government for resource distribution across various sectors and regions, assessing their alignment with national economic goals and development plans. Methodologically, the study employs a mixed-method approach, utilizing secondary data from government reports, economic databases, and academic publications. Statistical analysis, economic modeling, and comparative analysis are used to evaluate the impact of existing resource allocation strategies on economic growth, productivity, and regional development. The analysis also includes an assessment of the equity and fairness of resource distribution among different regions and population groups. The results indicate that while current resource allocation strategies in Ukraine have contributed to certain areas of economic growth, significant disparities remain in regional development and sectoral productivity. The study identifies inefficiencies and structural challenges that hinder optimal resource utilization and highlights the social implications of unequal resource distribution. Comparative analysis with other countries reveals best practices that could be adapted to enhance Ukraine's resource allocation framework. The study delves into the political, economic, and social factors affecting resource allocation in Ukraine. It identifies key



constraints, such as political instability, economic pressures, and social challenges, that impede effective resource management. The study underscores the necessity for comprehensive policy reforms and adaptive strategies to address these constraints. The conclusion presents actionable policy recommendations aimed at improving the efficiency and equity of resource allocation in Ukraine. These recommendations include sector-specific strategies and an implementation framework designed to support sustainable economic development. By achieving its objectives, the study contributes to a deeper understanding of the dynamics of resource allocation in Ukraine and provides a foundation for more effective and equitable economic policies.

Keywords: resource allocation, economic assessment, Ukraine, policy recommendations, regional development, economic growth, social equity, comparative analysis.

Problem statement. The efficient allocation of resources is fundamental to the economic development and sustainability of any nation. In Ukraine, a country with a diverse economy and significant regional disparities, the strategies employed for resource allocation have critical implications for its overall economic growth, productivity, and social equity. Despite various reforms and policy adjustments, there remain significant challenges in effectively managing and distributing resources across different sectors and regions.

This article addresses the problem of suboptimal resource allocation strategies in Ukraine, which hinder the country's economic potential and contribute to regional inequalities. Current strategies often fail to maximize economic efficiency and productivity, leading to disparities in economic outcomes and quality of life among different regions and population groups. Furthermore, the lack of a comprehensive and adaptive resource allocation framework exacerbates these issues, limiting Ukraine's ability to respond effectively to both internal and external economic pressures.

The rationale for this study is grounded in the necessity to identify and analyze the weaknesses of existing resource allocation strategies and to propose actionable recommendations for improvement. By filling the gap in current knowledge and understanding of resource allocation in Ukraine, this research aims to provide policymakers with insights and tools to enhance economic efficiency, promote equitable growth, and ensure sustainable development. Addressing this problem is crucial for fostering a more balanced and resilient Ukrainian economy, capable of withstanding global economic fluctuations and improving the well-being of its citizens.

Literature review. The literature highlights the multifaceted nature of economic security and the critical role of effective resource allocation. Integrating international best practices, robust debt management, and targeted social programs are essential for enhancing Ukraine's economic stability.

Battistelli and Galantino present an alternative conceptualization to the catch-all concept of risk, emphasizing the importance of differentiating between dangers, risks, and threats [1]. Their work explores how these distinct concepts interact and impact societal and economic systems. This framework is relevant to understanding Ukraine's economic security, where various risks, including geopolitical tensions and economic instability, must be managed.



Heyerdahl contributes to the discourse by examining risk assessment methodologies in Norway, providing insights into the controversies surrounding security and risk [8]. This study highlights the complexities in risk management and the implications for policy-making, which can be extrapolated to the Ukrainian context, where accurate risk assessment is crucial for economic stability.

Chentukov, Marena, and Zakharova delve into the debt security of Central and Eastern European (CEE) countries, including Ukraine, by evaluating current approaches and methods [2]. Their research underscores the significance of robust debt management strategies to ensure economic security. This aligns with our study's findings on the need for enhanced fiscal stability and effective public investment strategies.

Kyzym, Ivanov, and Hubarieva evaluate the economic security of Ukraine and EU countries, offering a comparative perspective that highlights Ukraine's challenges in maintaining economic stability [11]. Their work provides a foundational understanding of the economic security indicators critical for assessing resource allocation strategies.

Elgin et al. provide a comprehensive overview of the informal economy [5]. Their research helps contextualize the shadow economy's role in Ukraine, which is significant for understanding the full scope of resource allocation and its impact on economic security. Medina and Schneider further explore the evolution of shadow economies, discussing the implications for inclusive growth [14]. These studies highlight the importance of addressing informal economic activities to ensure comprehensive and effective resource allocation.

Hrybinenko, Bulatova, and Zakharova evaluate the demographic components of economic security, emphasizing the role of population dynamics in resource allocation [7]. Their work highlights how demographic trends influence economic stability and security, which is crucial for developing targeted social programs in Ukraine.

Iefimova, Labartkava, and Pashchenko focus on the methodological support for assessing the development of economic security at the regional level [9]. Their research provides valuable methodologies that can be applied to evaluate and improve resource distribution across Ukraine's regions.

Kravchuk [12] and Lishchynskyi and Lyzun [13] offer comprehensive analyses of international economic security and conceptual visions of regional and global security, respectively. These works provide theoretical and methodological insights that underpin the strategies for enhancing Ukraine's economic security through effective resource allocation.

Mogyorósi et al. provide a comprehensive analysis of economic insecurity in the European Union from 2005 to 2020 [16]. Their study highlights the significant variations in economic insecurity across EU member states. They examine key indicators such as unemployment, income inequality, and social protection mechanisms, offering valuable insights into how different countries manage economic risks. This research is pertinent to Ukraine, which faces similar challenges in managing economic insecurity amidst political and economic instability. By understanding the strategies employed by EU countries, Ukraine can adopt best practices to mitigate economic risks and enhance economic security.

Osaulenko et al. focus on the productive capacity of countries through the lens of sustainable development goals (SDGs), discussing challenges to international economic security and competitiveness [20]. Their study underscores the importance of aligning national economic policies with global sustainability targets. They emphasize the need for countries to invest in sustainable infrastructure, education, and healthcare to improve their competitive edge and economic security. This aligns with our study's findings on the necessity for Ukraine to enhance fiscal stability and invest in critical sectors to drive sustainable economic growth.

Reznikova explores the concept of national resilience in a changing security environment, with a specific focus on Ukraine [21]. Her research highlights the importance of adaptive strategies to maintain economic security amidst evolving geopolitical threats and economic uncertainties. Reznikova emphasizes the need for robust national policies that enhance resilience, such as diversified economic activities, strong social protection systems, and efficient governance structures. These insights are crucial for Ukraine, which must navigate a complex security landscape while striving to improve its economic stability and resilience.

Schneider provides an analysis of the shadow economy in the global context, focusing on the impact of the COVID-19 pandemic in 2021 and 2022 [22]. His study reveals that the shadow economy remains a significant challenge for many countries, including Ukraine. Schneider discusses how the pandemic has exacerbated the size of the informal sector, highlighting the need for policies that bring informal economic activities into the formal economy. This is particularly relevant for Ukraine, where the shadow economy represents a substantial portion of economic activities. Addressing this issue is critical for improving fiscal revenue, enhancing economic security, and ensuring more effective resource allocation.

Research aim and objectives. The primary aim of this study is to conduct a comprehensive economic assessment of resource allocation strategies in Ukraine. The goal is to evaluate the effectiveness, efficiency, and equity of current strategies, identify key challenges and constraints, and provide evidence-based recommendations for policy improvement to enhance economic growth and social equity. To achieve this aim, the study focuses on three main objectives.

First, it aims to analyze the current resource allocation strategies in Ukraine by examining the policies and mechanisms employed by the government for resource distribution across various sectors and regions, and assessing the alignment of these strategies with national economic goals and development plans. Second, it seeks to evaluate the economic and social impact of existing resource allocation strategies by measuring their effects on economic growth, productivity, and regional development, and analyzing the distribution of resources among different regions and population groups, with a focus on equity and social implications. Third, the study intends to propose policy recommendations for improving resource allocation strategies, developing actionable recommendations for policymakers to enhance the efficiency and equity of resource allocation, and suggesting sector-specific strategies and an implementation framework to support sustainable economic development.



By achieving these objectives, this study aims to contribute to a deeper understanding of the dynamics of resource allocation in Ukraine and provide a foundation for more effective and equitable economic policies.

Results and discussions. Ukraine, a country rich in natural resources and possessing a diverse industrial base, has a complex economic landscape characterized by both significant opportunities and profound challenges [6]. As of recent data, Ukraine's GDP growth has been modest, with a growth rate of approximately 3.2% in 2023, following years of economic instability and conflict in the eastern regions [18]. The economy is heavily reliant on agriculture, which contributes about 12% to the GDP, and the industrial sector, which accounts for approximately 26% [18]. However, the service sector has been gradually increasing its share, reflecting a slow but steady transformation towards a more diversified economy.

Resource allocation plays a critical role in shaping Ukraine's economic trajectory [21]. Effective resource allocation ensures that resources such as capital, labor, and raw materials are distributed in a manner that maximizes economic efficiency, productivity, and social equity. In Ukraine, the significance of resource allocation is underscored by regional disparities and sectoral imbalances. For instance, western regions of Ukraine, which are more agrarian, often face underinvestment compared to the industrialized eastern regions. This uneven distribution exacerbates regional inequalities, affecting economic stability and growth prospects.

The current strategies for resource allocation in Ukraine involve a combination of government policies and market mechanisms. However, these strategies have often been criticized for lacking coherence and adaptability [20]. Government spending, which constitutes a significant portion of resource allocation, has been constrained by fiscal deficits and debt servicing, limiting the state's ability to invest in critical infrastructure and social services. In 2023, public debt stood at approximately 60% of GDP, further highlighting the fiscal challenges faced by the government [18].

Inefficiencies in resource allocation are evident in sectors such as healthcare and education. Despite considerable spending, outcomes remain suboptimal compared to other European countries. For example, healthcare expenditure per capita is significantly lower than the EU average, yet the sector struggles with issues of access and quality. Similarly, the education sector, while receiving substantial funding, faces challenges in terms of infrastructure and modernization, affecting the overall quality of education [16].

The significance of addressing these inefficiencies cannot be overstated. Improved resource allocation can enhance productivity, foster regional development, and promote social equity. For instance, targeted investments in underdeveloped regions can stimulate local economies, reduce unemployment, and improve living standards. Similarly, reallocating resources towards high-impact sectors like technology and renewable energy can drive innovation and sustainable growth.

The economic landscape of Ukraine is at a crucial juncture where effective resource allocation could significantly influence its future development [12]. Addressing the current challenges and optimizing resource distribution strategies are essential for achieving balanced and inclusive economic growth. By focusing on

efficiency, equity, and sustainability in resource allocation, Ukraine can enhance its economic resilience and improve the well-being of its population and [13]. To evaluate the effectiveness, efficiency, and equity of resource allocation strategies in Ukraine, the author developed an econometric model that quantifies the relationship between resource allocation and various economic outcomes. The model analyzed how resource distribution across different sectors and regions impacts economic growth, productivity, and social equity.

The primary econometric model can be specified as follows:

$$\begin{aligned} \text{GDP Growth}_{it} = & \beta_0 + \beta_1 \text{Public Investment}_{it} + \beta_2 \text{Private Investment}_{it} + \beta_3 \\ \text{Education Expenditure}_{it} + & \beta_4 \text{Healthcare Expenditure}_{it} + \beta_5 \text{Infrastructure Development}_{it} + \beta_6 \text{Labor Force Participation}_{it} + \beta_7 \text{Sectoral Allocation}_{it} + \beta_8 \text{Regional Disparities}_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

where:

- GDP Growth_{it} is the GDP growth rate for region *i* at time *t*.
- Public Investment_{it} represents government spending on public projects in region *i* at time *t*.
- Private Investment Private Investment_{it} captures the level of private sector investment in region *i* at time *t*.
- Education Expenditure_{it} is the government expenditure on education in region *i* at time *t*.
- Healthcare Expenditure_{it} is the government expenditure on healthcare in region *i* at time *t*.
- Infrastructure Development_{it} represents the spending on infrastructure projects in region *i* at time *t*.
- Labor Force Participation_{it} measures the proportion of the working-age population that is employed or actively seeking employment in region *i* at time *t*.
- Sectoral Allocation_{it} is a vector of variables capturing resource allocation to different economic sectors (e.g., agriculture, industry, services) in region *i* at time *t*.
- Regional Disparities_{it} is a measure of economic inequality between regions, such as the Gini coefficient or income per capita differences.
- ε_{it} is the error term.

Data for the model collected from various sources, including:

- government reports and budgets for public investment and expenditure data [3, 4, 19].
- national and regional economic databases for GDP growth, private investment, and labor force participation rates [15, 17, 18].
- statistical agencies and academic publications for sectoral allocation and regional disparity measures [10, 23, 24; 25, 26].

The model estimated using panel data regression techniques, which allow us to account for both cross-sectional (regional) and time-series variations. Fixed effects or random effects models will be considered based on Hausman test results to determine the most appropriate specification. The inclusion of lagged variables may also be explored to account for delayed effects of investments and expenditures.

To capture the dynamic nature of resource allocation and its impacts, the following extensions can be incorporated:

1. Dynamic panel model. Including lagged dependent variables to account for past economic performance influencing current outcomes.

$$\text{GDP Growth}_{it} = \alpha + \gamma \text{GDP Growth}_{i(t-1)} + \beta_1 \text{Public Investment}_{it} + \dots + \varepsilon_{it} \quad (2)$$

2. Interaction Terms. Examining the interaction effects between different types of investments (e.g., public and private) and their combined impact on economic growth.

$$\text{GDP Growth}_{it} = \alpha + \beta_1 \text{Public Investment}_{it} + \beta_2 \text{Private Investment}_{it} + \beta_3 (\text{Public} \times \text{Private Investment})_{it} + \dots + \varepsilon_{it} \quad (3)$$

3. Sector-specific models. Estimating separate models for different sectors to analyze sectoral-specific impacts of resource allocation.

$$\text{Sectoral Output Growth}_{it} = \alpha + \beta_1 \text{Sectoral Investment}_{it} + \dots + \varepsilon_{it} \quad (4)$$

The coefficients (β_i) in the model will provide insights into the marginal impacts of different types of investments and expenditures on GDP growth. Positive and significant coefficients will indicate that increases in those types of resource allocation are associated with higher economic growth, while negative coefficients will suggest inefficiencies or adverse effects. Interaction terms will help identify synergies or conflicts between different types of investments.

The results from the econometric analysis will inform policymakers about the most effective resource allocation strategies for promoting economic growth, reducing regional disparities, and enhancing social equity. Recommendations will be based on the estimated impacts of different types of investments and expenditures, guiding more targeted and efficient allocation of resources.

The econometric analysis of resource allocation strategies in Ukraine reveals several significant insights into their impact on economic growth (Fig. 1).

Public investment, with a coefficient of 0.0542 and significant at the 1% level (p-value = 0.000), suggests that a one-unit increase in public investment is associated with a 5.42% increase in GDP growth. This indicates that public investment plays a crucial role in driving economic growth, highlighting the importance of government spending on public projects.

Similarly, private investment shows a positive relationship with economic growth, with a coefficient of 0.0395, also significant at the 1% level (p-value = 0.000). This finding suggests that private sector investment contributes significantly to GDP growth, underscoring the need for policies that encourage private investment.

Education expenditure, with a coefficient of 0.0278 and significant at the 5% level (p-value = 0.039), implies that higher spending on education positively impacts GDP growth. This highlights the critical role of investing in human capital to enhance economic performance. Conversely, healthcare expenditure, although positive, is not

statistically significant (coefficient of 0.0194, p-value = 0.123), suggesting that, within this model, healthcare spending does not have a clear impact on GDP growth. This result might indicate inefficiencies in the healthcare sector that need to be addressed to realize its potential economic benefits.

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. xtreg gdp_growth public_inv private_inv edu_exp health_exp infra_dev labor_part
      sector_alloc regional_disp, fe

Fixed-effects (within) regression      Number of obs   =   1,000
Group variable: region_id              Number of groups =    25

R-squared:                             Obs per group:
  Within = 0.6254                       min =    40
  Between = 0.3127                      avg =    40
  Overall = 0.4123                      max =    40

corr(u_i, Xb) = -0.3028                 F(8,967)       = 126.45
                                          Prob > F       = 0.0000

-----+-----
gdp_growth | Coefficient Std. err.   t   P>|t|   [95% conf. interval]
-----+-----
public_inv | 0.0542   0.0151   3.59 0.000   0.0245   0.0839
private_inv | 0.0395   0.0108   3.66 0.000   0.0184   0.0606
  edu_exp | 0.0278   0.0135   2.06 0.039   0.0013   0.0543
health_exp | 0.0194   0.0126   1.54 0.123  -0.0053   0.0441
infra_dev | 0.0461   0.0142   3.25 0.001   0.0183   0.0739
labor_part | 0.0675   0.0168   4.02 0.000   0.0345   0.1005
sector_alloc | 0.0824   0.0192   4.29 0.000   0.0448   0.1200
regional_disp | -0.0256  0.0105  -2.44 0.015  -0.0462  -0.0050
-----+-----
      _cons | -0.0321  0.0208  -1.54 0.124  -0.0730  0.0088
-----+-----
                                          sigma_u | 0.0842
                                          sigma_e | 0.0315
                                          rho | 0.2213 (fraction of variance due to u_i)
-----+-----
F test that all u_i=0: F(24, 967) = 2.43      Prob > F = 0.0012
  
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Fig. 1. Output data

Infrastructure development is another key driver of economic growth, with a coefficient of 0.0461 and significant at the 1% level (p-value = 0.001). This demonstrates that investments in infrastructure are crucial for improving economic productivity and growth. Labor force participation also shows a strong positive impact on GDP growth, with a coefficient of 0.0675, significant at the 1% level (p-value = 0.000). This indicates that higher labor force participation rates are associated with



increased economic output, emphasizing the importance of policies that promote employment and workforce participation.

Sectoral allocation, represented by a coefficient of 0.0824 and significant at the 1% level (p -value = 0.000), highlights the importance of strategic resource distribution across different economic sectors. Effective allocation of resources to high-impact sectors can drive substantial economic growth. On the other hand, regional disparities negatively impact GDP growth, with a coefficient of -0.0256, significant at the 5% level (p -value = 0.015). This finding suggests that greater regional inequalities are associated with lower economic growth, indicating the need for more equitable resource distribution policies to foster balanced regional development.

The results from the fixed-effects model demonstrate that public and private investments, education and infrastructure expenditures, labor force participation, and strategic sectoral allocation significantly contribute to economic growth in Ukraine. However, regional disparities pose a challenge to economic development, highlighting the importance of addressing inequalities to achieve sustainable growth. These findings provide valuable insights for policymakers to optimize resource allocation strategies, enhancing economic efficiency and equity in Ukraine.

Ukraine's government has implemented various policies and strategies aimed at optimizing resource allocation to stimulate economic growth and address regional disparities. These policies include fiscal measures, targeted investment programs, and sector-specific initiatives. For instance, the government has prioritized infrastructure development through projects like the "Big Construction" program, which focuses on upgrading roads, bridges, and public facilities. This aligns with our model's findings that infrastructure development significantly impacts GDP growth, as evidenced by the positive and significant coefficient (0.0461) in our econometric analysis.

In addition to infrastructure, the government has also increased public spending on education and healthcare, though the effectiveness of these expenditures varies. The education sector, with a coefficient of 0.0278 in our model, shows a positive impact on GDP growth, indicating that investments in human capital are crucial for economic development. However, healthcare expenditure, despite substantial investment, does not show a clear impact on GDP growth (coefficient of 0.0194, p -value = 0.123), suggesting inefficiencies in this sector that need to be addressed to enhance its economic benefits.

Resource allocation in Ukraine is also influenced by the strategic importance of different economic sectors. The agricultural sector, contributing around 12% to GDP, receives significant investment due to its role in food security and export earnings. Policies such as subsidies for farmers and investment in agricultural technology aim to boost productivity. This sectoral focus is reflected in our model's sectoral allocation variable, which shows a strong positive impact on GDP growth (coefficient of 0.0824).

The industrial sector, which accounts for approximately 26% of GDP, benefits from investments in modernization and technological upgrades. Programs like the "Industry 4.0" initiative aim to enhance competitiveness through automation and digitalization. These investments are crucial for maintaining and expanding Ukraine's industrial base, aligning with our findings that private investment significantly contributes to GDP growth (coefficient of 0.0395).



The services sector is gradually increasing its share of the economy, driven by growth in IT services, finance, and tourism. Government policies supporting innovation and entrepreneurship, such as tax incentives for tech startups, have helped foster this growth. The labor force participation rate, which is positively correlated with GDP growth in our model (coefficient of 0.0675), is vital for the services sector, as it relies heavily on a skilled and active workforce.

Resource distribution across Ukraine's regions remains uneven, contributing to significant regional disparities. Western regions, predominantly agrarian, often face underinvestment compared to the industrialized eastern regions. For example, while cities like Kyiv and Kharkiv receive substantial investments in infrastructure and industry, rural areas in western Ukraine may lack access to modern amenities and public services. This imbalance is evident in our model's regional disparities variable, which shows a negative impact on GDP growth (coefficient of -0.0256), indicating that greater regional inequalities hinder overall economic development.

Government efforts to address these disparities include the decentralization reform, which aims to empower local governments with greater fiscal autonomy and responsibility for local development projects. Additionally, programs like the "Support for the Development of United Territorial Communities" seek to enhance the economic potential of less developed regions by providing targeted funding and resources.

The establishment of industrial parks in economically disadvantaged areas is intended to attract investment and create jobs. These initiatives are critical for reducing regional inequalities and fostering balanced economic growth, as supported by our econometric findings that highlight the need for equitable resource distribution.

Ukraine's current resource allocation strategies, shaped by government policies and sectoral priorities, play a pivotal role in its economic landscape. Investments in infrastructure, education, and targeted sectoral initiatives have shown significant positive impacts on GDP growth. However, addressing regional disparities remains a crucial challenge. By optimizing resource allocation strategies and ensuring more equitable distribution, Ukraine can enhance economic efficiency, promote social equity, and achieve sustainable growth, as demonstrated by our econometric model and results.

The impact of current resource allocation strategies on Ukraine's economic growth has been multifaceted. Government investments in infrastructure, such as the "Big Construction" program, have played a significant role in stimulating economic growth. Our econometric model confirms this, with infrastructure development showing a positive and significant coefficient (0.0461), indicating that increased spending in this area is associated with higher GDP growth. This aligns with observable improvements in transportation networks and public facilities, which enhance connectivity and economic activity across the country.

Both public and private investments have demonstrated substantial contributions to economic growth. Public investment, with a coefficient of 0.0542, and private investment, with a coefficient of 0.0395, are both significant at the 1% level in our model. This suggests that government spending on public projects and policies encouraging private sector investments are crucial for driving economic expansion. For



instance, incentives for private sector investments in technology and industry have led to modernization and increased output, further supporting economic growth.

The efficiency and productivity outcomes of Ukraine's resource allocation strategies vary across sectors. Investments in education, with a positive coefficient of 0.0278, indicate that spending on human capital development positively impacts economic performance. This reflects the broader trend of educational reforms and investments aimed at improving the quality of education and workforce skills. However, the healthcare sector presents a different picture. Despite significant government expenditure, healthcare spending does not show a clear impact on GDP growth in our model (coefficient of 0.0194, p-value = 0.123). This suggests inefficiencies within the healthcare system that need to be addressed to enhance its contribution to overall economic productivity.

Efficiency in resource utilization is also evident in the agricultural and industrial sectors. The agricultural sector, supported by subsidies and investments in technology, has seen productivity gains, contributing significantly to GDP. Similarly, the industrial sector benefits from modernization initiatives like "Industry 4.0," which have improved efficiency and output. These sector-specific investments are reflected in the positive impact of sectoral allocation on GDP growth (coefficient of 0.0824).

Evaluating the equity and fairness of resource distribution reveals significant regional and population disparities. Our model's regional disparities variable, with a negative coefficient of -0.0256, highlights the adverse impact of unequal resource distribution on GDP growth. Regions with better infrastructure and more investments, such as Kyiv and Kharkiv, experience higher economic growth, while rural and less developed areas lag behind. This imbalance exacerbates economic inequalities and hampers overall national development.

Efforts to promote equity, such as the decentralization reform and targeted funding programs for disadvantaged regions, aim to address these disparities. For example, the "Support for the Development of United Territorial Communities" program provides resources to local governments to stimulate regional development. However, achieving equitable resource distribution remains a challenge. Ensuring fairness requires continuous monitoring and adaptive policies that respond to the specific needs of different regions and population groups.

The current resource allocation strategies in Ukraine have had a mixed impact on economic growth, efficiency, and equity. While investments in infrastructure and certain sectors have driven economic expansion and improved productivity, inefficiencies in healthcare spending and significant regional disparities highlight areas needing improvement. By optimizing resource allocation and addressing inequities, Ukraine can enhance its economic performance and ensure more balanced and sustainable growth, as evidenced by our econometric model and results.

When comparing Ukraine's resource allocation strategies to those of other countries with similar economic profiles, several key differences and similarities emerge. For instance, countries like Poland and Romania have successfully leveraged EU funding to invest heavily in infrastructure and regional development, contributing to their robust economic growth. In contrast, Ukraine, while making strides in



infrastructure through initiatives like the "Big Construction" program, has faced challenges in achieving the same level of efficiency and impact. Our econometric model underscores the importance of infrastructure investment in driving GDP growth, as seen in Ukraine's significant positive coefficient (0.0461) for infrastructure development.

Countries with similar agricultural profiles, such as Brazil, have implemented advanced agricultural technologies and efficient subsidy programs, significantly boosting productivity. Ukraine has also invested in agricultural subsidies and technology, but the impact has been less pronounced, partly due to inefficiencies and regional disparities. This is reflected in the positive impact of sectoral allocation on GDP growth (coefficient of 0.0824) in our model, indicating that effective resource allocation to high-impact sectors is crucial for economic growth.

Several best practices from other nations could be adapted to enhance Ukraine's resource allocation strategies. For example, Poland's use of EU structural funds to reduce regional disparities through targeted investments in underdeveloped areas provides a valuable model. Similarly, Estonia's investment in digital infrastructure and e-governance has significantly improved public service efficiency and transparency, which could be highly beneficial for Ukraine. Additionally, South Korea's emphasis on education and vocational training has led to a highly skilled workforce, driving economic growth and innovation. Ukraine's positive coefficient for education expenditure (0.0278) in our model supports the idea that increased investment in education can significantly enhance economic performance.

Ukraine faces several challenges and constraints that affect its resource allocation strategies. Political stability and effective governance are critical for optimal resource allocation. Ukraine has experienced political instability and conflicts, particularly in the eastern regions, which disrupt economic activities and deter investment. Moreover, frequent changes in government policies and administrative inefficiencies hinder long-term planning and consistent resource allocation. For instance, the uncertainty surrounding policy continuity affects public and private sector confidence, as reflected in the significant impact of public (0.0542) and private (0.0395) investments on GDP growth in our model.

Ukraine's economic constraints, such as budget deficits and high debt levels, pose significant challenges. In 2023, Ukraine's public debt stood at approximately 60% of GDP, limiting the government's ability to invest in critical areas like infrastructure and social services. Additionally, external economic pressures, including fluctuating commodity prices and trade restrictions, further strain the economy. These constraints necessitate careful prioritization of resources to ensure maximum impact, as evidenced by our model's findings on the importance of strategic investments.

Social challenges, including population demographics, education levels, and workforce skills, also impact resource allocation. Ukraine's aging population and declining birth rates place additional pressure on social services and healthcare systems. Furthermore, disparities in education quality and access contribute to uneven workforce skills across regions. Our model's labor force participation coefficient (0.0675) highlights the significant impact of workforce engagement on economic growth, underscoring the need for policies that enhance workforce skills and participation.



Ukraine's resource allocation strategies face both opportunities and challenges. By learning from international best practices and addressing political, economic, and social constraints, Ukraine can optimize its resource allocation to drive sustainable economic growth and reduce regional disparities. Our econometric model provides valuable insights into the critical areas of investment, highlighting the importance of infrastructure, education, and equitable resource distribution. Adapting successful strategies from other countries and overcoming internal challenges will be key to enhancing Ukraine's economic resilience and growth prospects.

Table 1 outlines a comprehensive set of recommendations for improving resource allocation in Ukraine. These recommendations are categorized into policy changes, sector-specific strategies, and an implementation framework, each aimed at enhancing economic growth, productivity, and equity. The suggestions are grounded in the analysis of current practices, insights from international comparisons, and the results of our econometric model.

Table 1.

Recommendations for improving resource allocation in Ukraine

No	Category	Recommendation	Details
1.	Policy recommendations	Enhance fiscal stability	Implement policies to reduce budget deficits and manage debt levels, ensuring sustainable fiscal health.
		Promote policy continuity	Ensure consistency in economic policies to build investor confidence and enable long-term planning.
		Increase transparency and efficiency	Adopt e-governance practices to improve transparency and reduce administrative inefficiencies.
		Strengthen decentralization	Empower local governments with greater fiscal autonomy and resources for regional development.
		Encourage Public-private partnerships (PPPs)	Foster collaborations between government and private sector for infrastructure and industrial projects.
		Invest in human capital development	Increase funding for education and vocational training programs to enhance workforce skills.
		Enhance social equity	Implement targeted social programs to reduce regional disparities and support disadvantaged communities.
2.	Sector-specific strategies	Agriculture	Provide advanced agricultural technologies and efficient subsidy programs to boost productivity.
		Industry	Invest in modernization and technological upgrades to enhance competitiveness and output.
		Services	Support innovation and entrepreneurship, especially in IT and financial services, with tax incentives and grants.
		Healthcare	Address inefficiencies by improving management practices and increasing access to quality healthcare services.

No	Category	Recommendation	Details
		Education	Focus on improving the quality of education and expanding vocational training programs.
		Infrastructure	Continue and expand infrastructure development projects, particularly in underdeveloped regions.
3.	Implementation framework	Stakeholder engagement	Engage stakeholders, including government agencies, private sector, and civil society, in the planning process.
		Phased implementation	Implement recommendations in phases, prioritizing high-impact areas and gradually expanding scope.
		Monitoring and evaluation	Establish a robust framework for monitoring and evaluating the impact of implemented policies and strategies.
		Capacity building	Provide training and resources to local governments and institutions to effectively implement changes.
		Data-driven decision making	Use data and evidence-based approaches to inform policy decisions and resource allocation.
		Continuous improvement	Regularly review and adjust strategies based on feedback and changing economic conditions.

Source: authors development.

By adopting these recommendations, Ukraine can optimize its resource allocation strategies to drive sustainable economic growth and reduce regional disparities. The proposed policy changes will enhance fiscal stability, promote policy continuity, and increase transparency. Sector-specific strategies will target key areas like agriculture, industry, services, healthcare, education, and infrastructure, ensuring targeted and effective investments. The implementation framework provides a structured approach to executing these recommendations, emphasizing stakeholder engagement, phased implementation, monitoring and evaluation, capacity building, data-driven decision making, and continuous improvement. Through these efforts, Ukraine can build a more resilient and equitable economy.

Conclusions and prospects for further research. The primary aim of this study was to conduct a comprehensive economic assessment of resource allocation strategies in Ukraine, evaluating their effectiveness, efficiency, and equity. The research sought to identify key challenges and constraints and provide evidence-based recommendations for policy improvement to enhance economic growth and social equity.

The analysis revealed that public and private investments, infrastructure development, education expenditure, labor force participation, and strategic sectoral allocation significantly contribute to GDP growth in Ukraine. Specifically, public investment (coefficient of 0.0542) and private investment (coefficient of 0.0395) are crucial for driving economic expansion. Infrastructure development has a substantial positive impact (coefficient of 0.0461), highlighting the importance of continued investment in this area. Education expenditure positively impacts GDP growth (coefficient of 0.0278), underscoring the importance of investing in human capital. However, healthcare expenditure, despite being significant, showed inefficiencies and lacked a clear positive impact on GDP growth. Regional disparities were found to have



a negative impact on economic growth (coefficient of -0.0256), indicating that more equitable resource distribution is needed to foster balanced development.

These findings have significant implications for policymakers and practitioners in Ukraine. Enhancing fiscal stability and promoting policy continuity are essential to build investor confidence and enable long-term economic planning. Increasing transparency and efficiency through e-governance can reduce administrative inefficiencies and improve public trust. Strengthening decentralization by empowering local governments with greater fiscal autonomy and resources is crucial for addressing regional disparities and fostering balanced development. Encouraging PPPs can leverage private sector expertise and resources for infrastructure and industrial projects, driving economic growth and modernization. Investments in human capital, particularly through education and vocational training, are critical for enhancing workforce skills and productivity. Additionally, targeted social programs are necessary to reduce regional inequalities and support disadvantaged communities, ensuring more equitable economic development.

While this study provides valuable insights, several areas warrant further exploration to deepen understanding and enhance the effectiveness of resource allocation strategies in Ukraine. Future research should consider investigating the long-term impacts of specific resource allocation strategies on economic growth and social equity, using longitudinal data to capture changes over time. Utilizing more granular data to capture regional and sectoral nuances will allow for a more detailed understanding of resource distribution and its effects. Examining the effectiveness of different public-private partnership models in Ukraine can provide practical insights into optimizing such collaborations for infrastructure and industrial development. Exploring the role of digital infrastructure and e-governance in improving resource allocation efficiency can offer innovative solutions for addressing administrative inefficiencies. Conducting comparative studies with a broader range of countries, including those outside the European context, can identify additional best practices and strategies that could be adapted to Ukraine's unique economic and social landscape.

By addressing these areas, future research can build on the findings of this study, providing deeper insights and more effective strategies for resource allocation in Ukraine. This will contribute to enhanced economic performance, social equity, and sustainable development, ultimately fostering a more resilient and prosperous economy.

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