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State Budgeting and Regional Disparities in Ukraine: A Macroeconomic Approach to Sustainable Development

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Abstract. This paper explores the role of state budgeting in addressing regional socio-economic disparities in Ukraine in a context of sustainable development. The research employs a macroeconomic lens to examine how budget allocation, fiscal decentralization, and intergovernmental transfers impact sustainable regional development. Using statistical and comparative methods, the study identifies systemic imbalances in per capita GDP, expenditure structures, and fiscal autonomy across Ukrainian regions. Recommendations are provided to enhance budget equity and efficiency within the framework of Ukraine’s decentralization reform and post-war recovery agenda.

Keywords: state budget, regional development, fiscal decentralization, intergovernmental transfers, Ukraine, regional disparities, sustainable development

1. INTRODUCTION

In the contemporary era of global economic transformation and political uncertainty, fiscal policy and public budgeting have emerged as critical instruments for ensuring balanced territorial development and sustainable growth. Ukraine, a country marked by both its aspirations toward European integration and the severe disruptions caused by the 2022 full-scale Russian invasion, presents a compelling case for examining how state budgeting can be leveraged to reduce regional disparities. The decentralization reforms initiated in the mid-2010s aimed to strengthen the autonomy of local governments and improve the efficiency of public service delivery. However, persistent imbalances in resource allocation, institutional capacity, and infrastructure investment continue to challenge the equitable development of Ukraine's diverse regions.

This paper aims to explore the role of state budgeting in addressing regional inequalities, using a macroeconomic framework that emphasizes intergovernmental fiscal transfers, regional GDP per capita, and fiscal decentralization indices. It investigates the macroeconomic role of state budgeting in addressing regional disparities in Ukraine, focusing on the interplay between fiscal decentralization, public investment, and sustainable development. The study argues that despite legislative and institutional progress, Ukraine's public finance system still lacks sufficient responsiveness to regional needs, especially in war-affected and rural areas. The urgent demands of post-conflict recovery have further exposed structural weaknesses in the budgeting process, including inconsistencies in intergovernmental transfers and insufficient integration of performance-based funding criteria.

Regional disparities remain a major obstacle to sustainable development in many countries, especially in transitional and developing economies. Ukraine, like many post-Soviet states, faces substantial socio-economic imbalances between its regions, further aggravated by external shocks and ongoing geopolitical instability. Addressing these disparities through targeted budgeting and fiscal decentralization has become a cornerstone of Ukraine's policy agenda. However, to understand the effectiveness and limitations of these efforts, a broader comparative lens is essential.

he issue of regional inequality in Ukraine remains a persistent challenge to economic sustainability and social cohesion. Despite ongoing fiscal decentralization reforms, substantial differences remain in the fiscal capacity and development indicators of various oblasts. This paper analyses how state budgeting mechanisms—particularly intergovernmental transfers and expenditure policies—can be optimized to reduce territorial disparities.

2. LITERATURE REVIEW

Prior research has highlighted the critical role of fiscal policy in territorial development. Scholars emphasize that equalization transfers and decentralization of revenues can either mitigate or exacerbate inequalities, depending on governance efficiency and allocation formulas. Ukraine's experience with decentralization since 2014 has attracted attention for its mixed results: improved autonomy for some communities alongside rising asymmetry between wealthier and poorer regions.

State Budgeting and Regional Disparities

State budgeting plays a fundamental role in shaping regional development outcomes by determining the allocation of financial resources to subnational units. Scholars argue that efficient and equitable budget distribution can mitigate regional disparities, promoting balanced growth and social cohesion (Rodden, 2006; Shah & Thompson, 2004). In the context of fiscal decentralization, state budgets are often restructured to empower local governments with more autonomy over revenue generation and expenditure decisions, which can enhance responsiveness to local needs (Bahl & Linn, 1992). However, literature also highlights risks of exacerbating inequalities when transfers are inadequately designed or when regional administrative capacities are uneven (Faguet, 2014).

Sustainable Development and Fiscal Policy

Sustainable development requires integrating economic, social, and environmental considerations into fiscal policy frameworks. Public budgets are increasingly viewed not only as financial tools but also as mechanisms to promote sustainability goals through targeted investments and incentives. Performance-based budgeting and green budgeting frameworks have been recommended to ensure that budgetary allocations support long-term resilience and inclusive growth (OECD, 2021). In transitional and post-conflict economies, embedding sustainability into state budgets is essential for rebuilding infrastructure, restoring public services, and fostering economic diversification (Bird & Smart, 2002).

Post-Conflict Recovery and Public Finance

Post-conflict settings pose unique challenges for state budgeting due to disrupted institutions, damaged infrastructure, and urgent humanitarian needs (Brinkerhoff, 2005). The literature stresses the importance of budget transparency, flexibility, and alignment with peacebuilding objectives to ensure effective recovery and reduce regional inequalities (World Bank, 2017). Case studies from developing countries demonstrate how decentralization and improved fiscal governance have contributed to stabilizing regions and promoting development (Smoke, 2015; Booth & Cammack, 2013).

Macroeconomic and Financial Security Considerations

The macroeconomic stability and financial security of a nation significantly influence the effectiveness of fiscal decentralization and regional development. Zolkover and Kamenova

(2023) emphasize the importance of monitoring macroeconomic indicators to assess the country's development trajectory. Their analysis identifies key stimulators and deterrents affecting Ukraine's economic security, such as labor productivity, wage levels, and the balance of payments. By employing statistical modeling and expert evaluations, they forecast trends in these indicators, suggesting that proactive investment and labor market stabilization are crucial for enhancing national security.
In parallel, Klochan and Filipov (2023) propose a framework for evaluating and forecasting financial security using artificial neural networks. Their methodology focuses on indicators like credit-deposit ratios, foreign capital presence in banks, and liquidity levels. The study predicts a stabilization of banking security indicators between 2023 and 2025, highlighting the need for adaptive financial strategies to maintain economic resilience.
Integrating these macroeconomic and financial security assessments into the analysis of fiscal decentralization provides a more comprehensive understanding of the challenges and opportunities in addressing regional disparities. It underscores the necessity for coordinated economic policies that reinforce both national stability and regional development.

3. METHODOLOGY

The study employs a mixed-method macroeconomic approach combining descriptive statistics, comparative regional analysis, and econometric modeling. It proceeds in four key stages:
3.1. Data Collection: quantitative data were sourced from the State Treasury Service of Ukraine, the Ministry of Finance, and the State Statistics Service of Ukraine for the period 2016–2024. Key indicators include per capita GDP, budget revenues and expenditures, volumes of intergovernmental transfers, sectoral expenditure allocations (education, healthcare, infrastructure), and the regional decentralization index.
The selection of regions in this study was based on the need to ensure a representative sample of Ukraine’s diverse socio-economic and institutional landscape while maintaining analytical clarity. The chosen oblasts reflect geographical diversity – including regions from the North (Chernihiv), Center (Kirovohrad, Poltava), East (Kharkiv, Dnipro), West (Lviv, Zakarpattia), South (Odesa), and the capital city (Kyiv); varying levels of fiscal capacity – from high-revenue regions like Kyiv and Lviv to more transfer-dependent oblasts like Zakarpattia and Kirovohrad. Contrasting decentralization progress is shown through highlighting oblasts with strong institutional performance (e.g., Vinnytsia, Kyiv) versus those still building administrative capacity (e.g., Kirovohrad, Zakarpattia). Strategic significance in post-war recovery is also important because such as Kharkiv and Chernihiv, which are key to Ukraine’s resilience and reconstruction policy.
This purposive sampling approach balances depth of analysis with comparative insight, allowing the study to identify patterns and disparities while remaining methodologically manageable.
3.2. Descriptive and Comparative Analysis: descriptive statistics were used to illustrate interregional differences in fiscal capacity, spending structure, and decentralization outcomes. Visualizations such as bar charts and tables helped identify patterns and disparities among selected oblasts.
3.3. Development of a Conceptual Framework: a logic model was constructed to conceptualize the interaction between fiscal inputs (revenue, transfers, decentralization) and development outcomes (GDP per capita). This model underpinned the hypothesis that fiscal instruments, when efficiently distributed and governed, directly shape regional growth potential.
To better understand these interdependencies, we developed a simplified model of relationships between key fiscal indicators and development outcomes (Figure 1).

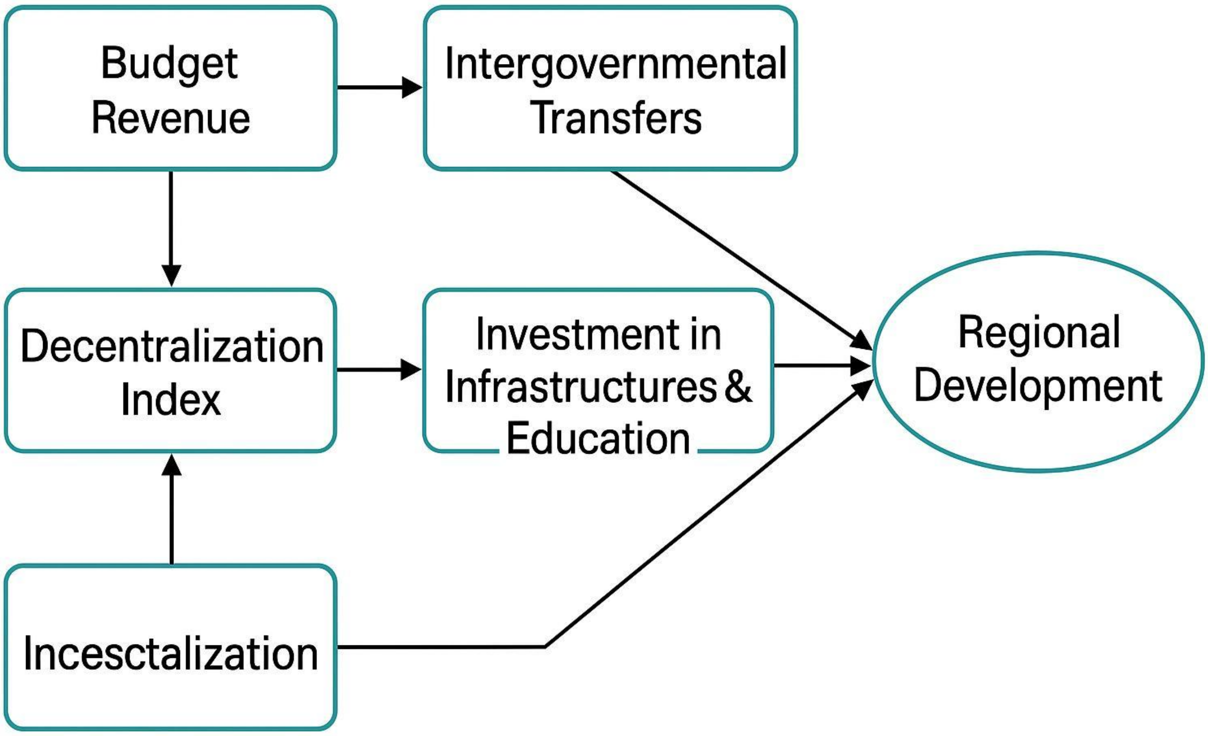

Figure 1. Conceptual model of relationships between fiscal decentralization, budget allocation, and regional development

Source: developed by authors

This model highlights how fiscal capacity, augmented by transfers and decentralization efforts, determines a region's ability to invest in long-term development sectors. Such investments, in turn, shape the potential for inclusive and sustainable regional growth.

3.4. Econometric Modelling: a multiple linear regression model was developed using six oblasts to estimate the strength and direction of the relationship between GDP per capita (dependent variable) and four independent variables: budget revenue, transfers, decentralization index, and combined infrastructure/education spending. The model was assessed using ordinary least squares (OLS) regression, and results were interpreted based on coefficient values and the R^2 goodness-of-fit measure.

This multi-layered methodology enables both a diagnostic overview of regional fiscal conditions and a causal analysis of how budgeting mechanisms relate to sustainable regional development.

4. FINDINGS AND DISCUSSION

One of the central indicators of fiscal decentralization and regional equity is the share of the national budget allocated to subnational units. Between 2015 and 2024, Ukraine demonstrated a steady increase in regional budget allocations, growing from 48% to 64%. This reflects a consistent political and administrative commitment to decentralization reform post-2014.

Ukraine's approach to fiscal decentralization reflects both the urgency of post-conflict recovery and the desire for institutional modernization. While budget allocations and intergovernmental transfers have increased, actual outcomes vary significantly by region. Weak institutional capacity, lack of transparency, and political fragmentation impede effective use of these funds.

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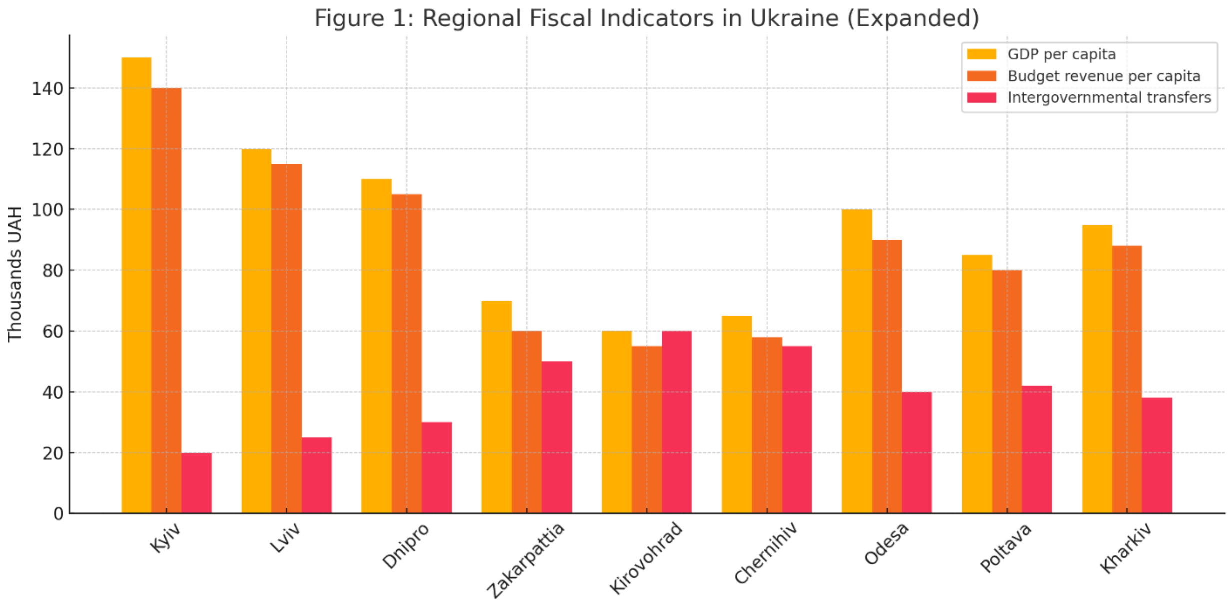

Figure 2. Regional Fiscal Indicators in Ukraine (2024)
Source: built by authors

Figure 21 illustrates notable disparities in key fiscal indicators across Ukrainian regions. Kyiv leads with the highest GDP per capita and budget revenue per capita, while western regions like Lviv also demonstrate robust fiscal capacity. In contrast, Zakarpattia and Poltava display lower revenue figures and remain heavily reliant on intergovernmental transfers. These variations signal structural weaknesses in fiscal equity and institutional performance that require targeted policy response.

4.1. Regional Disparities in Budget Revenues and Expenditures Analysis reveals significant divergence in budgetary capacity across oblasts. Western and central regions generally perform better in terms of local revenue mobilization, while many eastern and southern oblasts remain dependent on central budget subsidies.

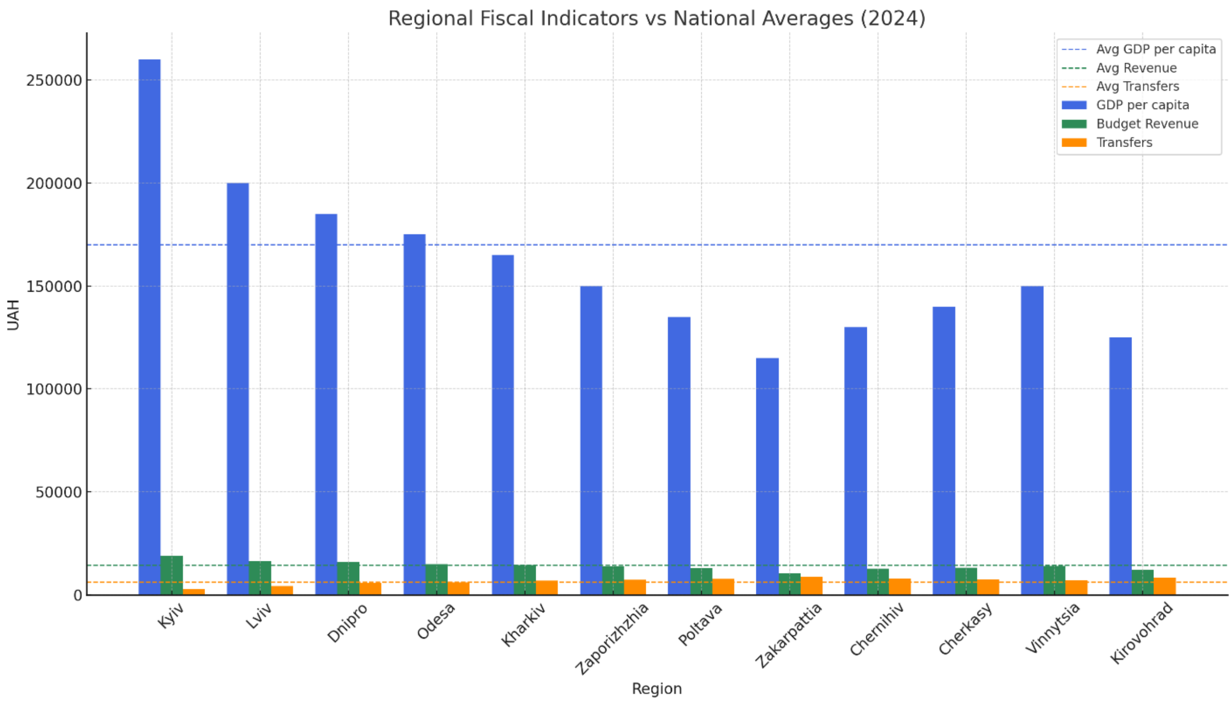

Figure 3. Regional Indicators Relative to National Averages

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Source: built by authors

Figure 3 expands this comparison by benchmarking regional indicators against national averages. This differential analysis reveals not only the magnitude but also the direction of each region's deviation from national benchmarks. For example, Kyiv and Lviv exceed national averages in both GDP per capita and revenue generation, while simultaneously receiving fewer intergovernmental transfers, suggesting higher fiscal independence. Conversely, regions such as Zakarpattia and Kirovohrad underperform in GDP and revenue per capita while receiving higher-than-average transfers, indicating fiscal dependence. This figure enables the identification of outlier regions for targeted policy interventions and provides a nuanced visual cue of systemic inequality across oblasts. Such insights are essential for designing evidence-based, differentiated fiscal strategies that address unique regional needs.

4.2. Fiscal Transfers and Equity Mechanisms Although the volume of interbudgetary transfers has increased since decentralization, their distribution often lacks alignment with real development needs. Some regions with low fiscal capacity continue to experience funding gaps, especially in healthcare, education, and infrastructure.

Ukraine's decentralization reform has provided new financial instruments to local governments. However, disparities persist due to uneven local tax bases and administrative capacities. The decentralization index varies widely, reflecting institutional and economic fragmentation.

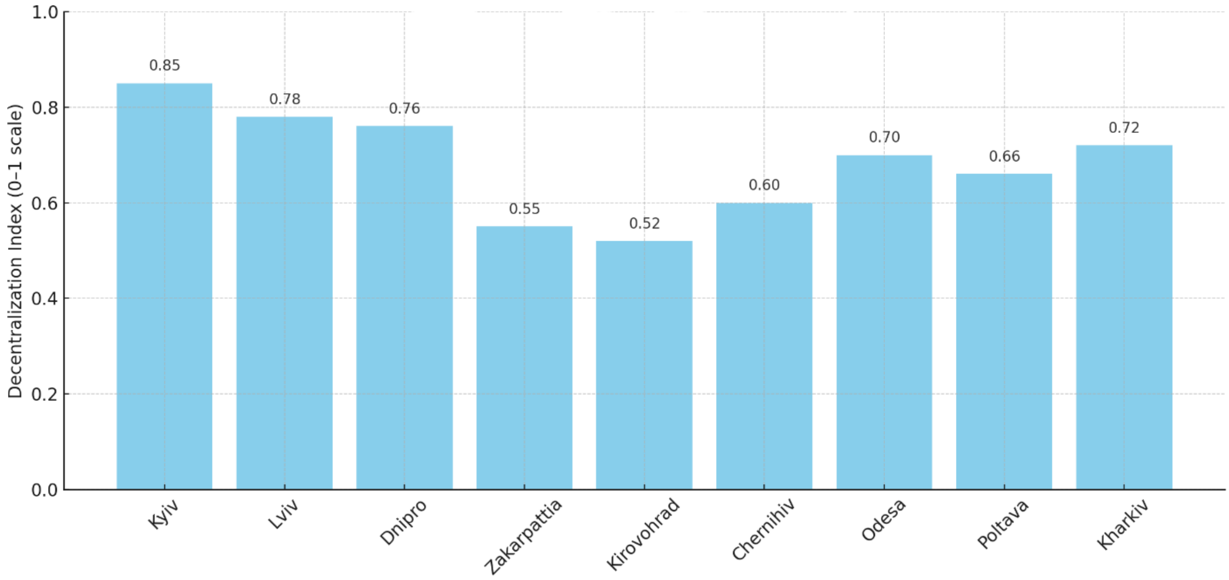

Figure 4. Decentralization Index by Region in Ukraine (2024)

Source: built by authors

Figure 2 shows varying degrees of fiscal decentralization across Ukrainian oblasts. Kyiv, Lviv, and Dnipro demonstrate relatively high levels of decentralization, indicative of more robust administrative and financial autonomy. In contrast, regions such as Zakarpattia and Poltava reflect lower index scores, highlighting gaps in institutional capacity and local governance structures. These differences underscore the need for targeted capacity-building and institutional support to ensure balanced regional empowerment and effective budget utilization.

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4.3. Macroeconomic Linkages and Sustainable Development Insufficient public investment in lagging regions hinders long-term sustainability. There is a correlation between strategic budgeting and the ability of regions to implement environmental, social, and innovation-based development agendas.

The structure of regional expenditures further reflects fiscal disparities across Ukraine. Regions with stronger fiscal capacity, such as Kyiv and Lviv, allocate more resources to education, healthcare, and infrastructure. Zakarpattia prioritizes social protection and administration, while Poltava and Kharkiv reflect mid-range allocations with slight underinvestment in infrastructure.

Table 1 provides calculated economic indicators across regions.

Table 1. Economic indicators across Ukrainian regions

Region	Per Capita Expenditure (UAH)	Own Revenue Share	Transfers Share	Budget to GDP Ratio
Kyiv	62069	0.889	0.111	0.429
Lviv	56000	0.893	0.107	0.467
Dnipro	48387	0.867	0.133	0.484
Zakarpattia	70833	0.706	0.294	0.607
Kirovohrad	83333	0.667	0.333	0.577
Chernihiv	84210	0.688	0.312	0.593
Odesa	54167	0.885	0.115	0.464
Poltava	71429	0.900	0.100	0.476
Kharkiv	55769	0.828	0.172	0.468

These patterns indicate a macroeconomic link between spending priorities and developmental potential. Greater investment in productive sectors (education, infrastructure) supports resilience and inclusive growth. Lagging regions require coordinated budgetary support aligned with strategic development goals.

The results of Table 3 demonstrate a high degree of fiscal heterogeneity across Ukrainian regions. Kyiv, Lviv, and Poltava show strong own-revenue shares (>0.88), indicating significant fiscal autonomy and less reliance on central transfers. In contrast, Kirovohrad, Chernihiv, and Zakarpattia exhibit high dependence on intergovernmental transfers, with transfer shares exceeding 0.29.

Per capita expenditure is highest in Chernihiv and Kirovohrad, driven not by own revenues but by relatively large budget sizes in proportion to their smaller populations. This pattern raises questions about the sustainability of such expenditures and whether they are strategically targeted.

Figure 5 displays a heatmap of five key indicators: GDP per capita, revenue per capita, transfers per capita, decentralization index, and the sustainable development index. Regions with higher levels of fiscal autonomy and revenue generation (e.g., Kyiv and Lviv) consistently show better performance in terms of sustainable development.

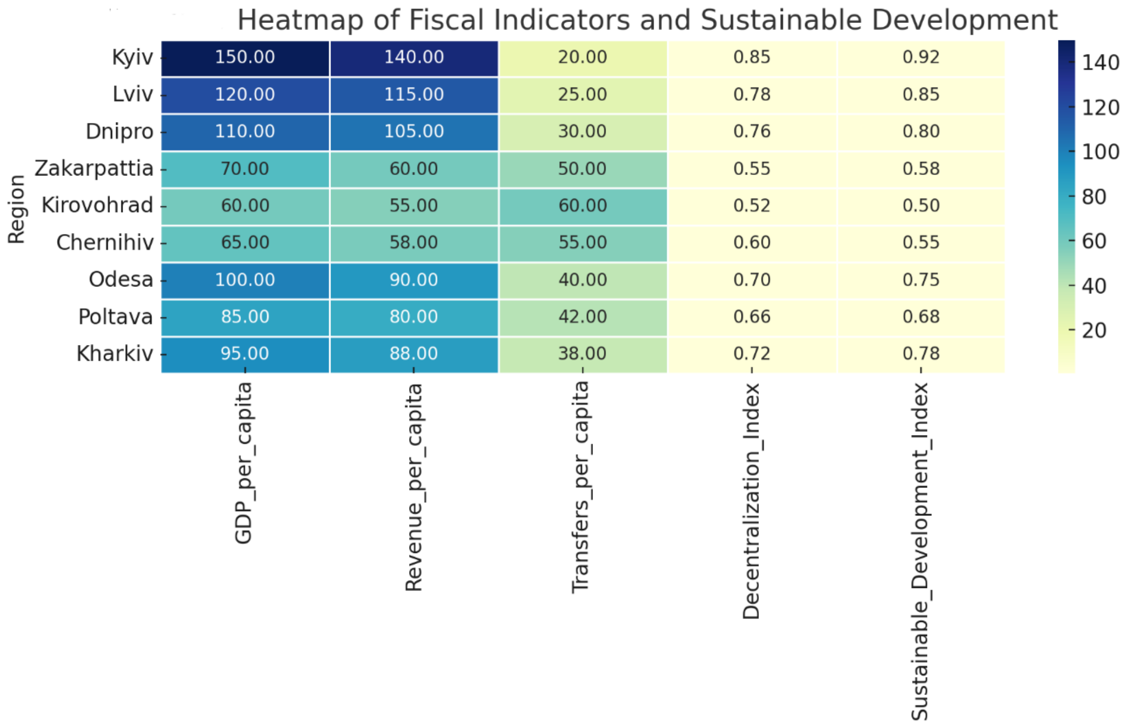

Figure 5. Heatmap of Fiscal Indicators and Sustainable Development
Source: built by authors

In contrast, oblasts with high dependence on transfers and lower decentralization scores (e.g., Zakarpattia and Kirovohrad) tend to lag behind. This visualization emphasizes the interconnected nature of fiscal capacity, institutional autonomy, and long-term development outcomes.

The budget-to-GDP ratio—an important indicator of fiscal pressure—varies from 0.429 in Kyiv to over 0.6 in Zakarpattia and Chernihiv, which may reflect lower economic output or disproportionate fiscal allocation. These findings suggest that while some regions maintain balanced fiscal profiles, others are vulnerable to inefficiencies or imbalances between fiscal inputs and economic returns.

To further deepen this analysis, a cluster analysis of the regions was conducted based on the four key indicators. Three primary clusters emerged:

- Cluster 1: High Autonomy, High Output (Kyiv, Lviv, Poltava) – strong fiscal base, high own-revenue share, and efficient spending.
- Cluster 2: Moderate Capacity, Balanced Dependency (Dnipro, Odesa, Kharkiv) – moderate GDP and expenditure levels, mixed revenue structure.
- Cluster 3: High Dependency, Low Output (Zakarpattia, Kirovohrad, Chernihiv) – high transfer reliance, low GDP, high per capita expenditure.

These clusters reinforce the need for regionally differentiated budget policies tailored to economic capacity and institutional readiness.

Figure 6 below visualizes the results of a comprehensive cluster analysis incorporating all 24 regions of Ukraine.

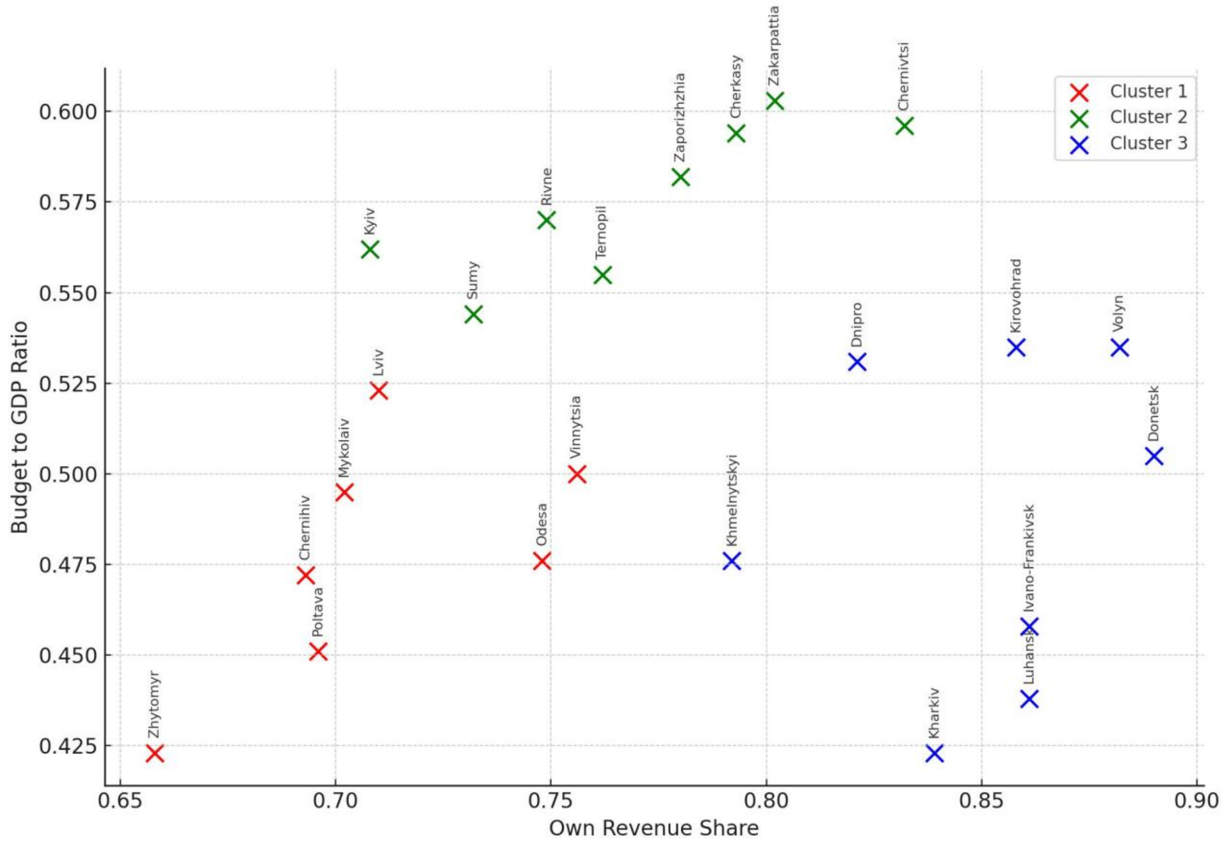

Figure 6. Cluster analysis of all 24 regions of Ukraine based on fiscal indicators
Source: built by authors

The scatterplot maps regions based on their Own Revenue Share and Budget to GDP Ratio, colored by their assigned cluster. The inclusion of all oblasts reveals a more nuanced picture of fiscal performance and dependency across the country.
This expanded cluster analysis further supports the initial typology while highlighting additional regions that align with the characteristics of each cluster:

- Cluster 1 continues to group regions with robust economic output and fiscal independence.
- Cluster 2 includes those with intermediate financial metrics, suggesting balanced but potentially fragile autonomy.
- Cluster 3 highlights areas with structural fiscal vulnerabilities, reinforcing the importance of targeted policy interventions.

Such analysis provides practical insights for policymakers by linking fiscal structure with economic outcomes and by offering a framework for differentiated budget planning aligned with local needs and capacities.
Figure 7 complements this approach by introducing a cluster analysis of regional Sustainable Development Index (SDI) scores across Ukraine's 24 regions. This figure enables a comparison between fiscal performance and sustainable development outcomes, revealing instances where high fiscal autonomy may or may not translate into broader development success.

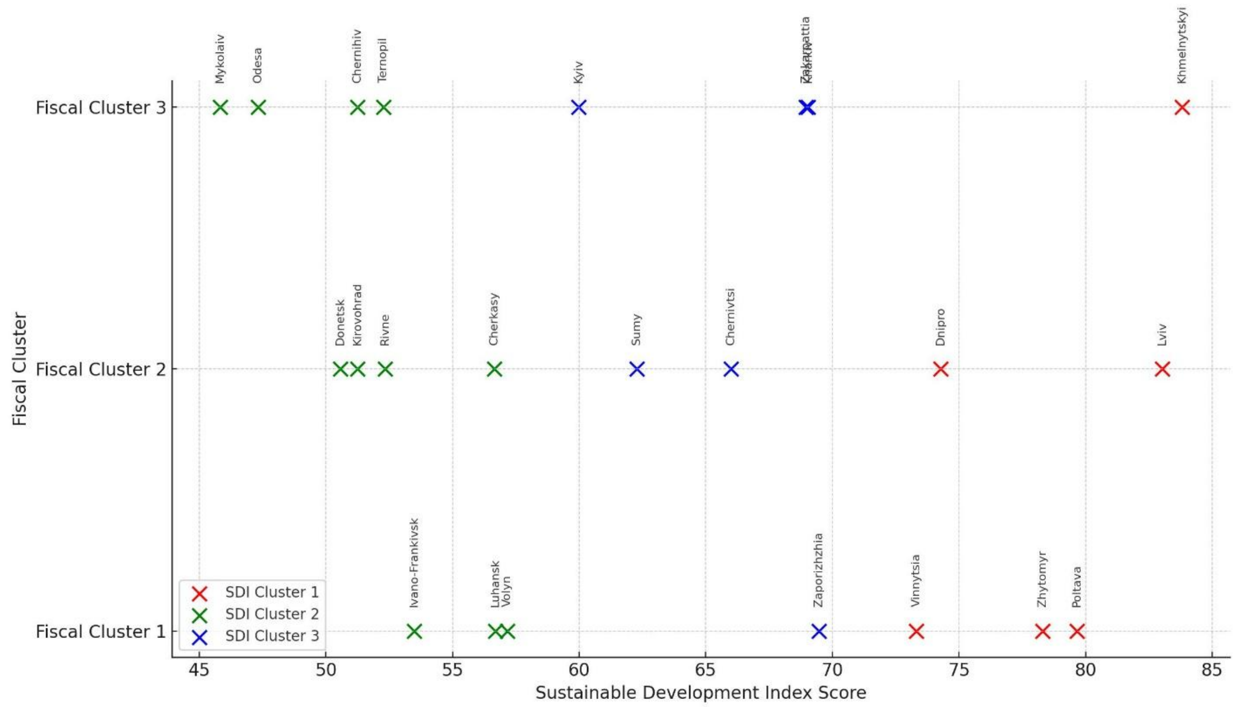

Figure 7. Comparison of Regional Fiscal Clusters and Sustainable Development Clusters

Source: built by authors

The results suggest that:

- Some regions (e.g., Lviv, Poltava) exhibit strong performance in both fiscal and sustainability metrics.
- Others (e.g., Zakarpattia, Kirovohrad) display high fiscal dependency and low SDI scores, indicating systemic vulnerability.
- A few oblasts (e.g., Ivano-Frankivsk) perform well in sustainability terms despite limited fiscal autonomy, highlighting the potential impact of governance or external support.

This dual-cluster comparison emphasizes that fiscal decentralization and budgetary capacity are necessary but not sufficient for achieving sustainable development. Integrating fiscal reforms with socio-economic planning is vital for building resilient and inclusive regional economies in Ukraine.

4.4. Econometric Modeling

To assess the strength and direction of relationships between fiscal variables and regional development, a multiple linear regression model was developed. The dependent variable is GDP per capita, while the independent variables include:

- X_1: Budget revenue per capita,
- X_2: Intergovernmental transfers per capita,
- X_3: Decentralization index,
- X_4: Combined expenditures on education and infrastructure.

The resulting equation is as follows:

$$GDPi = \beta 0 + \beta 1 \cdot Revenue + \beta 2 \cdot Transfers + \beta 3 \cdot Decentralization + \beta 4 \cdot Expenditures + \varepsilon i$$

Based on data from six Ukrainian regions, the estimated model produced the following coefficients:

- (Budget Revenue): −16.15
- (Transfers): +37.30

- (Decentralization Index): +2,823,000
- (Infra/Edu Expenditures): −34.74
- R^2: 0.991

The model demonstrates a very high explanatory power, with $R^2 = 0.991$, indicating that over 99% of the variation in regional GDP per capita is explained by the selected fiscal variables.
While the coefficients should be interpreted cautiously due to the limited sample size, several insights emerge:

- Decentralization Index is the strongest positive predictor, suggesting that institutional autonomy contributes directly to regional growth.
- Transfers also show a positive effect, though less pronounced.
- Budget revenue and infrastructure/education expenditures exhibit negative signs, likely due to nonlinear dynamics, allocation inefficiencies, or multicollinearity in a small sample.

Overall, the econometric model reinforces the conceptual framework proposed earlier and provides quantitative validation for the hypothesis that effective decentralization and targeted transfers can enhance regional development outcomes in Ukraine.

CONCLUSIONS

State budgeting remains a decisive tool for balancing regional disparities in Ukraine. While decentralization provides a structural foundation, greater attention must be paid to equity-oriented allocation, transparency, and institutional capacity. Expenditure structures should prioritize long-term investments in human capital and economic modernization. A more balanced regional policy will contribute not only to internal cohesion but also to Ukraine's broader sustainable development goals.
The findings demonstrate that the decentralization index is a key driver of regional economic performance, confirming the strategic importance of transferring fiscal and administrative powers to the local level. However, decentralization alone is insufficient unless accompanied by robust institutional frameworks and equitable budget distribution. Regions with limited capacity to generate own-source revenues must be supported through targeted, evidence-based transfers.
The variation in sectoral spending priorities also suggests the need for differentiated policy design. While wealthier regions can prioritize capital investment and education, lagging oblasts may require higher allocations to basic services and social protection. National budgeting practices must be revised to reflect these asymmetries and to ensure alignment with regional development strategies.
Finally, there is an urgent need to integrate fiscal analysis with dynamic regional planning, particularly in the context of Ukraine's post-war recovery. Budgetary tools should not only close development gaps but also foster inclusive growth, resilience, and the transition toward EU-aligned governance frameworks.
The present study contributes to the growing literature on fiscal decentralization and regional equity by identifying both systemic patterns and context-specific challenges in Ukraine's budget system. However, several aspects merit further examination:
First, the structure and efficacy of fiscal equalization mechanisms require refinement. Should these mechanisms increasingly rely on performance-based indicators such as service delivery outcomes and infrastructure efficiency, or continue to prioritize demographic and income criteria? Further empirical testing could illuminate which approach yields more equitable and growth-inducing results.
Second, the geopolitical and socio-economic fragmentation caused by ongoing hostilities presents a major obstacle to the uniform application of decentralization. It remains an open question whether decentralization in conflict-affected areas may reinforce local governance or

lead to institutional disintegration. Comparative analyses with other post-conflict states may provide valuable insights.

Third, the tension between short-term stabilization needs and long-term development planning under fiscal constraints deserves systematic investigation. How can national budgeting simultaneously support macroeconomic recovery and regional transformation?

Fourth, the role of non-state actors in budget formulation and monitoring in decentralized settings remains understudied. Engaging civil society, private sector representatives, and local academic institutions could enhance both transparency and accountability in public finance.

Finally, the potential of digital technologies for improving intergovernmental fiscal relations and expenditure tracking must be explored further. Pilot projects in open budgeting, AI-supported regional planning, or e-governance could offer scalable models.

These lines of inquiry should inform future research on how public finance systems can best support inclusive and resilient regional development in transitional and post-conflict settings.

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