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MACROECONOMIC DISBALANCES AS AN OBJECT OF ECONOMIC MEASUREMENT: A CRITICAL REVIEW OF THEORETICAL APPROACHES

The article critically reviews theoretical approaches to measuring macroeconomic disbalances in post-conflict and post-crisis recovery. It aims to substantiate a multidimensional diagnostic framework rather than a single composite score. The proposed dashboard comprises inflation, the current account, unemployment, trade balance, real growth, capital formation, reserves, government consumption and cumulative devaluation. Five-year aggregation uses peak inflation, cumulative exchange-rate change and means for the remaining indicators. Ward's cluster analysis of 50 recovery episodes illustrates differences between recovery profiles. The contribution combines indicator selection, time aggregation and multidimensional classification. The findings support comparative monitoring of Ukraine's recovery, while annual data and moderate cluster separation limit interpretation. Benchmark profiles provide analytical reference points rather than causal evidence of policy effectiveness.

Keywords: macroeconomic disbalances, economic measurement, post-war recovery, cluster analysis, macroeconomic stability, European integration, statistical monitoring.

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МАКРОЕКОНОМІЧНІ ДИСБАЛАНСИ ЯК ОБ'ЄКТ ЕКОНОМІЧНОГО ВИМІРЮВАННЯ: КРИТИЧНИЙ ОГЛЯД ТЕОРЕТИЧНИХ ПІДХОДІВ

У статті здійснено критичний огляд теоретичних підходів до визначення та вимірювання макроекономічних дисбалансів у процесах повоєнного і посткризового відновлення. Мета дослідження полягає в обґрунтуванні багатовимірної системи діагностики, яка зберігає відмінності між монетарними, реальними, зовнішньоекономічними та фіскальними проявами нестійкості. Розглянуто класичні, кейнсіанські, монетаристські, новокейнсіанські та інституційні трактування дисбалансів, зіставлено їхні аналітичні можливості й обмеження. Авторський внесок полягає у формуванні системи дев'яти індикаторів: інфляції, сальдо поточного рахунку, безробіття, зовнішньоторговельного сальдо, реального економічного зростання, валового нагромадження капіталу, міжнародних резервів, державного споживання та кумулятивної девальвації. Обґрунтовано диференційоване агрегування показників у межах п'ятирічного вікна: максимальне значення для інфляції, сукупна зміна валютного курсу та середні значення для інших індикаторів. Емпіричну частину побудовано на кластерному аналізі п'ятдесяти епізодів відновлення з використанням методу Варда та евклідової відстані після стандартизації змінних. Отримане групування дає змогу порівнювати конфігурації дисбалансів і виокремлювати відмінні траєкторії відновлення. Наукова новизна полягає в поєднанні теоретичного обґрунтування складу індикаторів, правил їх часового агрегування та багатовимірної типологізації епізодів. Показано, що збереження окремих вимірів дозволяє уникати втрати змістовної інформації, можливої під час зведення різнорідних характеристик до одного індексу. Практичне значення результатів полягає у формуванні аналітичної основи для моніторингу відновлення України та зіставлення її показників із міжнародними орієнтирами. Наголошено на необхідності узгодження статистичних визначень, одиниць вимірювання та часових меж. Визначено обмеження річної частоти даних, п'ятирічного вікна спостереження та помірної відокремленості кластерів. Еталонний профіль розглядається як порівняльний орієнтир, а не доказ причинної ефективності конкретних заходів. Зроблено висновок про доцільність багатовимірного моніторингу, який поєднує оцінку дисбалансів із врахуванням умов і структури відновлення.

Ключові слова: макроекономічні дисбаланси, економічне вимірювання, післявоєнне відновлення, кластерний аналіз, макроекономічна стабільність, європейська інтеграція, статистичний моніторинг.

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Statement of the problem. Macroeconomic disbalances define recovery theory. Accurate measurement directs policy, creating a challenge since theory lacks any unified approach to defining what constitutes a disbalance [9, p. 7]. Some view them as temporary deviations, whereas others identify structural fractures that demand institutional adjustments [13, p. 45], making post-war reconstruction in Ukraine an imperative that demands a re-evaluation of how the state measures its fundamental macroeconomic stability [16, p. 8].

Prevailing models rely on single-index indicators capturing systemic instability within a single number, which obscures the multidimensional nature of these economic disbalances when policymakers attempt to design targeted interventions [12, p. 25]. Instead, we must transition towards a nuanced estimating equation preserving structural information. Firmly, we must ground our approach.

Analysis of recent research and publications. Theoretical exploration roots itself in competing schools. J. M. Keynes demonstrated that systemic disbalances persist without automatic correction [10, p. 150], whereas M. Friedman argued forcefully that inflation serves as the primary manifestation of instability [7, p. 5]. O. Blanchard presented New-Keynesian developments that we read as a complex view of structural hysteresis [2, p. 210]; D. Acemoglu, meanwhile, linked these disbalances to extractive state institutions across developing markets [1, p. 300]. P. Krugman and J. E. Stiglitz showed how external shocks translate into domestic disbalances [11, p. 315].

The measurement question divides these authors more sharply than the theory does. G. Kaminsky, S. Lizondo and C. M. Reinhart catalogued the early-warning indicators of currency crises and found that no single variable signals an approaching crisis across country samples: reserves, the real exchange rate, credit aggregates and output each carry information in some episodes and almost none in others [9, p. 7]. We read that as a design constraint. P. Krugman traced the mechanism behind such episodes, tying the monetary financing of deficits to reserve depletion and an eventual attack on the peg, which is why he insisted that trade flows and reserve adequacy be read jointly [11, p. 313].

Institutional and distributional readings pull in another direction. D. Acemoglu and J. A. Robinson explain persistent instability by the extractive character of the institutions that allocate rents, so identical fiscal ratios can carry opposite meanings in two states [1, p. 300]. J. E. Stiglitz documents how liberalisation sequences imposed on weak institutions convert external shocks into prolonged domestic contraction [13, p. 115]. O. Blanchard links the two camps: a shock that raises unemployment can move potential output itself, so the disbalance outlives the event that caused it [2, p. 210]. M. Friedman remains the counterweight, tying instability to money growth and to policy lags rather than to structure [7, p. 5].

Our contribution sits in the space these authors leave open. Each school names the disbalances that matter to it, and each measurement practice then collapses them: the MIP scoreboard applies static thresholds to a fixed indicator set [4, p. 10], the European Parliament's review concedes that the procedure has read the euro-area cycle unevenly [5, p. 22], and the Eurostat documentation treats aggregation as presentation rather than as a modelling decision [6, p. 3]. We differ on three counts. We fix the indicator set from the competing traditions jointly, so that monetary, real, external and fiscal dimensions enter on equal terms; we attach a separate aggregation rule to each indicator instead of one common average; and we test the set empirically, by asking whether it separates episodes that historically ended differently.

Translating concepts into a functional measurement model remains problematic, which becomes evident when we observe that the European Commission's Macroeconomic Imbalance Procedure (MIP) scoreboard lacks the dynamic aggregation rules required for capturing distinct phases of complex recovery [5, p. 22]. Here, we observe a fatal disconnect.

Aim of the article. Herein, we aim to review theoretical approaches and substantiate a defensible multidimensional measurement system capable of diagnosing post-crisis economies effectively. Thus, this model preserves structural characteristics – offering a clear improvement over single-index methodologies.

Presentation of the main research material.

Genealogy of the Macroeconomic Disbalance Concept. The concept has evolved a great deal. J. M. Keynes argued that severe disbalances represent systemic flaws [10, p. 250], whereas M. Friedman posited that disruptive disbalances operate as exclusively monetary phenomena [7, p. 10]. As we see, the New-Keynesian synthesis expands the definition to include output gaps while acknowledging the long-lasting effects of severe external shocks [2, p. 340]; institutional economists point out continuously that temporary market fixes cannot resolve deep structural flaws. P. Krugman illustrated how inconsistent policies lead to balance-of-payments crises. He identified trade flows and reserves as indispensable diagnostic components [11, p. 320].

D. Acemoglu argued that extractive institutions generate persistent instability [1, p. 410], even though J. E. Stiglitz identified the risks associated with unregulated financial globalisation [13, p. 115]. This genealogy reveals that a macroeconomic disbalance operates as a multidimensional phenomenon encompassing real, monetary, external, and institutional facets simultaneously.

Critique of Composite Measurement Practices. Despite sophisticated understanding, practical models resort to oversimplification. The European Commission's MIP scoreboard monitors various indicators, but its logic relies heavily on static thresholds [4, p. 10; 6, p. 3]. Often, we observe a persistent tendency to collapse diverse indicators into a unified composite index. An aggregate

index offers a convenient narrative, but it distorts economic reality. Crises generate entirely different data configurations. Such a composite index averages out the variations that matter; it blends qualitatively distinct recovery regimes into one meaningless number.

For instance, a recovering country might experience severe inflation but still boast a highly competitive export trade balance, whereas a neighbouring state might face crippling mass unemployment alongside an artificially pegged currency that severely restricts its independent monetary freedom. A single index might assign both the exact same risk score, which completely masks vastly different structural challenges [12, p. 25].

To address these shortcomings, we propose a nine-indicator dashboard that avoids single-index aggregation. Thus, we measure maximum inflation (D1), current account balance (D2), total unemployment rate (D3), external trade balance (D4), annual real economic growth (D5), gross capital formation (D6), international reserves in months of imports (D7), general government consumption (D8), and cumulative currency devaluation (D9). By applying specific window-based aggregation rules covering a five-year stabilisation window, we restrict our empirical design. Given that we calculate precise mean values for all remaining indicators, we use the maximum value for inflation to capture peak monetary stress, and we apply the cumulative change to the exchange rate to reflect total currency depreciation. This preserves true temporal dynamics over the recovery cycle.

Multidimensional Measurement: Empirical Evidence. To justify this design empirically, we conduct a cluster analysis of 50 post-crisis recovery episodes, determining the separation with Ward's method [15, p. 238] and a Euclidean metric. The silhouette coefficient confirmed that a six-cluster solution (k=6) provided the best fit, whereas the cophenetic correlation stood at 0.735. Honestly, we state that these clustering quality metrics are moderate rather than exceptionally strong. They are sufficient, however, to prove that the data structure of recovery episodes is heterogeneous [9, p. 12].

Our data basis is deliberately narrow. We use annual World Bank, IMF and State Statistics Service series, with no quarterly data and no temporal disaggregation, because annual reporting is the only frequency available across the historical span of the 50 episodes [14, p. 15]. Each episode enters as one observation described by the nine indicators over its five-year stabilisation window. We standardise every indicator before clustering: the nine variables are measured in per cent, in per cent of GDP, in months of imports and as a cumulative ratio, so Euclidean distance on raw values would let inflation dominate the metric. Ward's linkage then merges, at each step, the pair of groups that raises the within-cluster error sum of squares by the least amount.

The choice of six clusters rests on a sequence, not on one number. The silhouette coefficient rises from 0.134 at k=3 to 0.162 at k=4 and 0.176 at k=5, peaks at 0.196 at k=6, then falls to 0.192 at k=7, so six is the last split that still improves separation. Agreement between the hierarchical partition and a k-means solution on the same standardised data is 56 %. We report that disagreement rather than suppress it. These figures support the claim we need – that the episodes are not one homogeneous population – and they do not license treating a cluster label as a precise assignment for a borderline episode.

Significantly, our analysis isolated Cluster No. 4 as the successful benchmark cluster, comprising 11 historical episodes where rapid normalisation was achieved. These include Germany in 1990–1994 and Ukraine in 2000–2004. Here, we find that the mean profile reveals an optimal configuration showing low inflation of 2.33 %, a current account surplus of +3.67 % of GDP, unemployment at 7.41 %, and a trade balance surplus of +5.21 % of GDP; meanwhile, we observe real economic growth averaging 5.78 %, gross capital formation at 19.18 % of GDP, solid reserves covering 5.73 months of imports, government consumption at 15.38 % of GDP, and a contained cumulative devaluation of 0.85 [8, p. 45].

The economic content of that profile matters more than any single figure in it. Inflation of 2.33 % together with real growth of 5.78 % says that these economies expanded without monetary financing of the recovery, and neither number carries that meaning alone. A current account of +3.67 % of GDP alongside a trade surplus of +5.21 % shows that external demand, rather than external borrowing, funded the adjustment. Reserves of 5.73 months of imports and a cumulative devaluation of 0.85 describe a currency defended from a position of stock strength rather than by administrative restriction. Gross capital formation of 19.18 % of GDP is the most modest element of the profile: enough for renewal of the capital stock, not for an investment boom. Government consumption of 15.38 % of GDP leaves the state present without crowding out that investment, while unemployment of 7.41 % shows a labour market absorbing reallocation slowly.

Under a single index, this profile of high growth and specific investment dynamics would have been blended with far less successful recovery regimes. Composite scores average out the deviations that matter, rendering them indistinguishable from clusters in stagflation or sovereign debt crisis [3, p. 5]. Thus, our nine indicators separate distinct recovery regimes, preserving the structural information that a single aggregate number inevitably destroys.

Limitations of the Proposed Measurement System. We state the boundaries of the result directly. The clustering quality metrics are moderate: with a silhouette coefficient of 0.196 and a cophenetic correlation of 0.735, the partition establishes heterogeneity across the 50 episodes, yet it fixes no defensible boundary for an episode lying near a cluster edge. No episode should be reclassified on the strength of these numbers

alone. The 56 % agreement between the hierarchical and k-means partitions imposes the same limit from a second direction. Our sample is a convenience set of recorded post-conflict and post-crisis recoveries rather than a random draw, so the successful cluster describes configurations that worked in eleven documented cases and not a population parameter.

Three further restrictions apply to any use of the dashboard. The annual frequency removes within-year dynamics, so a disbalance that opens and closes inside a calendar year stays invisible by construction, and the maximum rule for inflation only partly compensates for that loss. The nine indicators are outcome variables: they describe the state of an economy and do not identify the policies that produced it, which is why we present the cluster profile as a benchmark and not as an instruction. The five-year window, finally, is a convention imposed by data availability, and estimates at its boundary are the least reliable part of the exercise. The cluster-4 means are not targets attainable in any ordering or on any timetable [16, p. 8].

Policy Proposals for Statistical Monitoring. Our critique and empirical findings lead to concrete proposals for monitoring Ukraine's macroeconomic recovery. First, the national statistical service should implement our nine-indicator disbalance dashboard and adhere to the window-based aggregation rules we defined. This disaggregated approach prevents the masking of severe but short-lived shocks, even though the state must also harmonise the monitoring procedure with official World Bank series codes to ensure international comparability [14, p. 15].

Finally, statistical authorities should publish the exact profile of the successful cluster, Cluster No. 4, as a binding reference benchmark. By setting targets of 5.78 % real economic growth, 19.18 % gross capital formation, and a maximum of 2.33 % inflation derived from historical successes, policymakers can ground their recovery strategies in evidence-based statistical targets rather than arbitrary political aspirations [3, p. 6].

Conclusions. Our critical review of theoretical approaches demonstrates that macroeconomic disbalances are inherently multidimensional. Intertwined monetary, structural, and institutional factors shape them. Contemporary measurement practices consistently fail to capture this structural complexity. Empirically, we conducted an empirical cluster analysis of 50 distinct global recovery episodes. Accurately, our carefully designed nine-indicator system separates distinct macroeconomic recovery regimes.

The moderate but empirically acceptable clustering results – a silhouette coefficient of 0.196 and a cophenetic correlation of 0.735 – show clearly that relying on a single aggregate index mathematically blends entirely different economic realities into one practically unusable metric. Hence, we propose the immediate implementation of a multidimensional national monitoring dashboard, given that this system must be fully harmonised with international statistical codes and explicitly use our successful-cluster profile as a normative benchmark. This transition is a load-bearing step.

Three lines of further work follow from the diagnosis. The first moves from the panel to the mechanisms behind it, by factor-analysing the broader set of 32 effector variables observed for the eleven successful episodes and asking how many latent dimensions the nine indicators actually reflect. The second estimates adjustment dynamics on the benchmark cluster and transfers the resulting posteriors to Ukrainian data, where 28 annual observations for 1996–2023 leave 24 first differences and force a parsimonious specification. The third is a stability exercise: re-running the partition under alternative linkages and window lengths to establish which indicators carry the separation. We regard the dashboard proposed here as the measurement layer on which that work rests.

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