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INTEGRATED METHODOLOGY FOR EVALUATING THE EFFECTIVENESS OF STATE SUPPORT MEASURES

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Abstract

This paper quantitatively demonstrates the insufficiency of the financial execution indicator for evaluating the effectiveness of state support measures and substantiates two key methodological solutions within an integrated assessment framework: constructing indicators in the form of symmetric deviations and relating the outcome indicator to the aggregate amount of support received. Calculations based on 2025 data are presented.

Keywords: performance audit, integrated index, financial execution, deviation index, aggregate support, subsidy, budget control.

In evaluating the effectiveness of public expenditure, the only indicator calculated on a regular basis is financial execution, i.e., the ratio of cash expenditure to the approved plan. This indicator reflects the degree of implementation, but says almost nothing about the effect achieved. The limitation can be quantified using support measures for the agro-industrial sector as an example.

According to the departmental register of the Ministry of Economy and Finance, in 2025, among fourteen measures for which both planned and actual cash expenditure were recorded, execution ranged from 2.3% to 296.8%. Such dispersion reflects two fundamentally different situations through the same



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indicator: 2.3% indicates that the measure was practically non-operational, whereas 296.8% suggests that the plan was set too low. In both cases, the indicator reflects the quality of planning rather than effectiveness.

Two Key Methodological Solutions

The first solution is to construct the indicator not as a level, but as a symmetric deviation. When expressed as a level, spending above the plan increases the index and thus effectively rewards overspending. The deviation form eliminates this weakness:

$$I_f(j) = \max \{ 0 ; 1 - | C(j) / P(j) - 1 | \} \quad (1)$$

where $C(j)$ is the cash expenditure for measure j , and $P(j)$ is the approved plan. The form is symmetric: spending 30% below the plan and spending 30% above the plan are penalized equally. The index for the physical indicator is constructed in the same form.

The second solution is to relate the outcome indicator not to payments through an individual support channel, but to the aggregate amount received by the supported entity through all channels:

$$I_r(j) = [E(j) / S(j)] : [E(b) / S(b)] \quad (2)$$

where $E(j)$ is the achieved effect, $S(j)$ is the aggregate amount of support, and “b” denotes the base period. Without this condition, the outcome of a single supported entity would be attributed separately to each measure it used, artificially overstating the effectiveness of every measure. From an audit perspective, this is double counting of results, an error arising from the same underlying source as financial duplication.

The integrated index is calculated as a weighted sum of all three components. The weights are determined not through expert judgment alone, but by the Analytic



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Hierarchy Process [4]. The consistency ratio by type of measure did not exceed 0.004, which is substantially below the accepted threshold of 0.10.

The weights are differentiated according to the type of measure. Since the purpose of a compensatory measure is to reduce the expenditure burden, greater weights are assigned to financial execution and the physical indicator. In an incentive measure, the objective is to increase production volume, and therefore the outcome component receives the dominant weight. In an investment-compensatory measure, the effect emerges in subsequent periods, so the outcome component is assigned a moderate weight. From an audit perspective, the rationale for this differentiation is clear: if identical weights are applied, a measure designed primarily to reduce the cost burden would be unjustifiably rated low on the basis of its outcome indicator.

The information base of the methodology was assessed separately. The first component—the deviation index of financial execution—can be calculated for all measures using the register data, because the planned and cash expenditure fields are populated. The second component can be calculated only for areas in which physical indicators are recorded regularly; the third component, in the current situation, can hardly be calculated for any measure. This assessment determines the sequence of implementation: first, a reduced-form index; then, the introduction of a physical-indicator field; and finally, the inclusion of an outcome indicator.

Empirical Calculation Results

At the system level, the assessment is calculated in weighted form according to the financial share of each measure. The results obtained using 2025 data are presented in Table 1.



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Table 1 Deviation Index of Financial Execution, 2025 (Sample)

Measure	Plan, UZS billion	Cash expenditure, UZS billion	I _f	Share, %
Raw cotton subsidy	2,109.0	2,109.0	1.000	51.90
Electricity for pumping units	170.0	167.9	0.987	4.13
Drip irrigation in cotton fields	290.0	414.0	0.572	10.19
Irrigation systems for grain crops	120.0	282.9	0.000	6.96
Subsidy for machinery and equipment	250.0	742.0	0.000	18.26
Weighted assessment	—	—	0.649	100.00
Simple average	—	—	0.371	—

Source: Author's calculations based on data from the departmental register [5].

The last two rows of the table provide the key result of the methodology. The weighted assessment equals 0.649, whereas the simple average is 0.371; almost the entire difference is attributable to a single measure with a 51.90% share. If this measure is excluded from the calculation, the weighted assessment falls to 0.270.

This result shows that the weighted assessment cannot be used in isolation. Only two measures fall within the acceptable range—defined as a deviation of no more than 10%—representing 14.3% of the total number of measures. Thus, although the aggregate system-level assessment appears close to satisfactory, 85.7% of the measures lie outside the acceptable range. Therefore, a mandatory companion indicator—the share of measures within the acceptable range—is incorporated into the methodology and should always be reported alongside the integrated index.

The limitations of the methodology are also stated explicitly. First, because the unit of observation is the individual measure, all quantitative results are



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descriptive and should not be used for statistical inference. Second, the deviation index assumes that the underlying plan itself is well-founded; if the quality of planning is poor, the index evaluates planning rather than execution. It must therefore be interpreted together with the companion indicator and the physical indicator. Third, because the effects of investment measures materialize in subsequent periods, it is recommended that their index be calculated on the basis of at least three years of observations. These limitations do not invalidate the methodology; rather, they clarify the conditions for its application and determine the level of reliability of the audit conclusion [1].

Analysis of the calculation results shows that the distribution is concentrated in two ranges: index values cluster close to zero and close to one, while observations are sparse in the intermediate zone. This pattern may be related to how well the planning methodology corresponds to the type of measure. For measures whose volume can be calculated in advance—such as those linked to the amount of energy consumed or products sold—the plan tends to be more precise. For demand-dependent measures, planning relies on forecasts and the probability of error is higher. Because the number of observations is limited, this relationship is not tested statistically and is reported as a hypothesis.

For audit practice, the practical significance of this result is that two measures receiving the same financial-execution score may, in fact, represent entirely different situations. In the first case, the plan may have been prepared accurately and execution may have matched it; in the second, both the plan and execution may be imprecise, with similar values occurring by chance. The financial indicator alone is insufficient to distinguish between these two cases; a physical indicator is required. Therefore, the second component of the integrated methodology is not merely a formal requirement, but a necessary condition for ensuring that the audit conclusion is well-founded.



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In conclusion, the proposed methodology does not reject the existing assessment procedure. It retains the financial execution indicator but changes its form and role. The indicator is calculated as a deviation rather than a level, and instead of being the sole component of the overall assessment, it becomes one of three components. The effect of this modification is demonstrated empirically: using the same data, two averaging methods produced values of 0.649 and 0.371, while the share of measures within the acceptable range was 14.3%. Taken together, the three indicators provide a substantially more complete picture of the state of the system than financial execution alone.

Proposals and Recommendations

1. Add fields for physical indicators and outcome indicators to the departmental register and annual reporting forms. Under the current data structure, the first component of the integrated index can be calculated for all measures, the second only for one area, and the third cannot be calculated at all.
2. Formalize the procedure for calculating the integrated index and its mandatory companion indicator in an internal departmental document; the calculated value should be incorporated directly into the procedure for categorizing performance indicators.
3. Present the financial execution indicator in budget reporting as a deviation rather than as a level; otherwise, the indicator creates an incentive to spend the allocated funds in full or even to exceed them.
4. In audit practice, treat double counting of outcomes as a separate type of error and use aggregate support calculations at the level of the supported entity to identify such cases.



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