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REVIEWER'S REPORT

Manuscript No.: IJAR-59893

Title: Trend Analysis of State GSDP in India.

Assessment and Rating

Criterion	Excellent	Good	Fair	Poor
Originality		✓		
Technical quality			✓	
Clarity		✓		
Significance			✓	

Recommendation: ACCEPT AFTER MAJOR REVISION

Reviewer ID: JPR - 196

Detailed Reviewer's Report

1. Overall Evaluation

The manuscript, "Trend Analysis of State GSDP in India," examines the growth trajectories of 30 Indian states and Union Territories over 2011-12 to 2023-24. It compares nominal and real GSDP using compound annual growth rates, linear time-trend models and quadratic trend specifications, and discusses the 2020-21 pandemic-related contraction. The central proposition—that apparent acceleration in nominal GSDP is substantially less evident in constant-price series—is relevant to regional economic analysis. The paper is generally well organised, uses clear visualisations, and provides state-wise results in an appendix.

Nevertheless, the empirical strategy and interpretation require further development before the findings can be considered sufficiently robust. In particular, the treatment of the incomplete and non-uniform state/UT sample, the assumptions underlying the polynomial regressions and F-tests, multiple testing across 30 units, the interpretation of nominal-real differences, and the analysis of the pandemic shock need to be addressed. Some conclusions are stronger than the evidence from 13 annual observations can support. The manuscript is therefore recommended for major revision.

2. Major Comments (Essential Revisions)

Sample coverage and representativeness. The paper states that the analysis covers 30 states/UTs, while also acknowledging that Assam, Haryana, Nagaland and Ladakh are absent. The authors should clearly identify all included and excluded units in the main text, explain the data-availability criteria, and discuss the implications for representativeness. The title and conclusions should not imply complete coverage of all Indian states. A concise sample-composition table would improve transparency.

Definitional discontinuity in Jammu and Kashmir. The data section notes that the Jammu and Kashmir series includes Ladakh up to 2018-19 and represents the Union Territory of Jammu and Kashmir alone from 2019-20. This is a material change in geographical coverage within the time series and may affect growth rates, fitted trends and state rankings. The authors should quantify or discuss the likely effect, consider an adjusted/consistent series if

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available, and present a sensitivity analysis excluding Jammu and Kashmir. The limitation should also be reflected in the interpretation of the cross-state comparisons.

Time-series properties and regression assumptions. The linear and quadratic models are estimated using only 13 annual observations per unit. The reported F-test for the additional quadratic term appears to rely on the conventional OLS assumptions. Since annual macroeconomic series may exhibit serial correlation, heteroskedasticity, outliers and non-stationary behaviour, the authors should report relevant residual diagnostics and explain why the conventional F-test is appropriate. Where feasible, provide robust inference or sensitivity checks. The high R^2 values should not be treated as evidence of model adequacy on their own.

Multiple testing across 30 states. The quadratic term is tested separately for 30 units at the 5% significance level, for both current and constant prices. Conducting multiple tests increases the probability of false-positive findings. The conclusion that 20 of 30 states exhibit statistically significant nominal curvature may therefore be sensitive to the testing procedure. The authors should address the multiple-comparison problem, for example by reporting adjusted p-values using an appropriate procedure such as Holm or false-discovery-rate control, alongside the unadjusted results. The main conclusion should be reconsidered if the number of significant cases changes.

Interpretation of quadratic coefficients and economic meaning. The manuscript interprets a positive quadratic coefficient as acceleration in annual absolute gains. This is mathematically consistent with the specified model, but the economic interpretation requires care: a quadratic fit over a short sample does not necessarily establish a persistent acceleration process. The authors should report the estimated quadratic coefficients and uncertainty, explain the scale and time units, and avoid extrapolating the fitted curvature beyond the observed period. It would also be useful to discuss whether the results are driven by particular years or influential observations.

Nominal-real comparison and the price effect. The paper argues that nominal curvature largely disappears at constant prices and attributes the difference to price growth. The price effect is calculated from the ratio of nominal and real CAGRs. Please clarify that this is an implied average annual price-growth measure and explain its relationship to the GSDP implicit deflator. The authors should consider directly analysing the implicit deflator series, including its trend and variation across states, rather than relying only on the difference between nominal and real CAGR measures. This would provide stronger empirical support for the central explanation.

Pandemic shock analysis. The discussion of 2020-21 is informative, but the treatment is primarily descriptive. The paper reports that real GSDP declined in 27 of 30 units and that 29 of 30 observations were below their fitted linear trends. Please define precisely how the fitted trend is estimated and whether the pandemic year is included in the estimation. Consider reporting the size of each unit's deviation from trend and testing the sensitivity of the results to excluding 2020-21. The authors should also distinguish a one-year shock from a persistent change in the underlying growth process.

Comparison of pre- and post-pandemic growth. The manuscript compares median real CAGR for 2011-12 to 2019-20 with that for 2019-20 to 2023-24. These windows have different lengths and share the 2019-20 endpoint, while the later period includes the contraction year. The authors should explain the rationale for the selected intervals and clarify that the comparison is descriptive rather than a formal test of a structural change. A year-by-year growth profile or an alternative comparison that isolates the contraction and recovery phases would make the analysis more informative.

Relationship between initial size and subsequent growth. The paper reports a correlation of 0.07 between log initial GSDP and real CAGR and concludes that there is no evidence of convergence or divergence. A simple bivariate correlation across 30 heterogeneous units is not sufficient to establish the absence of convergence. The authors should qualify this conclusion and discuss the limitations of using initial aggregate GSDP rather than per-capita income or

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productivity measures. If the convergence question is retained as a substantive result, a more appropriate convergence specification and relevant controls should be considered.

Data documentation and reproducibility. The source is identified as the MoSPI dashboard release dated 15 April 2026, and the authors state that spreadsheet calculations were cross-checked using Python. Please provide the exact dataset/table identifier, access or retrieval details, and a clear note on the status of the estimates used. A supplementary data file containing the annual current- and constant-price GSDP observations, together with the calculation procedure or code, would allow readers to reproduce the tables, figures and regression results.

3. Minor Comments and Editorial Suggestions

Clarify the mathematical notation in the growth-measure definitions. In particular, write percentage growth explicitly as [(Y12 − Y0)/Y0] × 100 to avoid ambiguity.

Use consistent terminology for "current prices," "nominal GSDP," "constant prices" and "real GSDP" throughout the manuscript.

Define all abbreviations at first use, including GSDP, MoSPI, CAGR and UT. Ensure that the title and abstract accurately reflect the scope of the sample.

Table 1 should state clearly whether the reported mean and median are calculated across the 30 units with equal weight. The distinction between the unweighted state-level distribution and the aggregate of the 30 units should remain explicit.

Provide standard errors, confidence intervals or other measures of uncertainty for the principal trend coefficients and growth estimates, where appropriate.

Figures 1–6 are useful and generally informative. However, ensure that all axes include units, that legends and labels remain legible at journal-print size, and that every figure has a complete source note.

Explain why the linear trend is preferred for most constant-price series in terms of the model's statistical limitations; avoid equating failure to reject a quadratic term with proof that real growth is exactly linear.

The statement that the rebound was faster than pre-pandemic growth in 21 of 30 states should be supported with a clearly identified calculation and should distinguish rebound growth from restoration of the pre-pandemic output path.

Review the appendix table for consistent number formatting, alignment, and state/UT naming. Ensure that all values can be read clearly in the final typeset version.

Standardise the reference list and in-text citations using the journal's prescribed referencing style. Check bibliographic details and ensure every in-text citation appears in the reference list.

4. Strengths of the Manuscript

The paper addresses an important question concerning the measurement and interpretation of state-level economic growth in India.

The comparison of current-price and constant-price GSDP is useful for distinguishing nominal expansion from real output growth.

The use of CAGR, linear trends and quadratic specifications provides readers with several complementary descriptive measures.

The state-wise figures and appendix make the cross-unit variation visible and provide a useful starting point for further regional analysis.

The authors acknowledge important data limitations, including incomplete coverage and the definitional change in the Jammu and Kashmir series.

5. Final Recommendation

Major Revision. The manuscript has a relevant research focus, a clear overall structure and potentially useful descriptive evidence on the differences between nominal and real GSDP trends across Indian states and Union Territories. However, the central findings require stronger statistical support and more cautious interpretation. The authors should address sample coverage and the Jammu and Kashmir definitional break, examine the assumptions and diagnostics of the trend regressions, account for multiple testing, strengthen the analysis

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of the implicit price effect, and qualify the conclusions concerning the pandemic shock and convergence. Revisions to data documentation, tables and figures are also necessary. I would be willing to reconsider the manuscript after these substantive issues have been satisfactorily addressed.