



Methodological Evaluation of Secondary School Systems in Ethiopia Using Difference-in-Differences Models for System Reliability Analysis

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Abstract

Ethiopia's secondary school system faces challenges in maintaining high levels of education quality and reliability. A Difference-in-Differences model was employed to assess changes in system reliability over time. The study utilised administrative education records and applied robust statistical techniques to ensure the validity of findings. The DiD model revealed a significant improvement ($p < 0.05$) in system reliability, indicating enhanced educational quality after implementing key reforms. The application of the Difference-in-Differences method provided valuable insights into the effectiveness of recent educational interventions in Ethiopia's secondary schools. Further research should explore long-term impacts and scalability of these methods to other regions with similar challenges. Difference-in-Differences, Secondary Education, System Reliability, Ethiopian School Systems Model estimation used $\hat{\theta} = \text{argmin}\{\theta\} \text{sumiell}(y_i, f\theta(\xi)) + \lambda I \text{Vert}\theta r \text{Vert} 2^2$, with performance evaluated using out-of-sample error.

Keywords: Sub-Saharan, African, Ethiopia, DID, model, SystemsAnalysis, Reliability, Governance

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