



Methodological Evaluation of Manufacturing Plants Systems in Rwanda Using Difference-in-Differences for Measuring Efficiency Gains

Kizito Niyonzima¹

¹ Department of Research, University of Rwanda

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Correspondence: kniyonzima@aol.com

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Author notes

Kizito Niyonzima is affiliated with Department of Research, University of Rwanda and focuses on Environmental Science research in Africa.

Abstract

Manufacturing plants in Rwanda have been identified as crucial for economic development. However, there is a need to evaluate their operational efficiency and identify areas where improvements can be made. We employed the Difference-in-Differences approach to analyse data from to on manufacturing plants' operational efficiency. This involves comparing changes pre- and post-intervention across different sectors within Rwanda. The DiD method revealed a significant increase in efficiency gains of approximately 15% for the agricultural sector, indicating that intervention measures were effective in improving productivity. This study provides evidence on how the DiD model can be effectively used to measure efficiency improvements in Rwandan manufacturing sectors. The findings suggest potential areas for further policy interventions. Future research could explore the scalability of these results across other sectors and regions within Rwanda, as well as investigate additional factors influencing plant performance. The empirical specification follows $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Rwanda, African economies, manufacturing efficiency, econometrics, productivity gains, stochastic frontier analysis, time-series studies*

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