

Advanced Stochastic Frontier Analysis for Evaluating Efficiency in Public Sector Expenditure

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Abstract. This study explores the application of advanced stochastic frontier analysis (SFA) within the public sector to assess expenditure efficiency. Utilizing a robust methodological framework combining parametric and non-parametric approaches, we provide nuanced insights into efficiency metrics. Our empirical findings reveal significant inefficiencies in resource allocation, suggesting potential reallocation strategies for optimizing fiscal policies. The study underscores the necessity of integrating SFA in fiscal policy evaluation to enhance governmental accountability and resource utilization.

Keywords: stochastic frontier analysis, public sector efficiency, expenditure optimization, fiscal policy evaluation, parametric and non-parametric methods, resource allocation, government accountability, data-driven decision-making

Introduction

The global public sector faces an urgent imperative to optimize expenditure efficiency, especially amidst burgeoning fiscal constraints and demands for transparency. In an era characterized by unprecedented economic fluctuations and budgetary challenges, governments worldwide grapple with efficiently allocating limited resources. The traditional methods of expenditure evaluation often fall short in capturing the complexities inherent in modern fiscal landscapes. This paper introduces an innovative approach leveraging advanced stochastic frontier analysis (SFA) to assess and enhance government expenditure efficiency. By synthesizing parametric techniques with non-parametric data envelopment methodologies, our study offers a comprehensive toolkit for policymakers aiming to identify and rectify inefficiencies in public spending. This methodological

advancement is pivotal as it aligns with global trends emphasizing data-driven decision-making in public administration. The paper proceeds as follows: Section 2 outlines the theoretical foundation of SFA applied to public sector evaluation; Section 3 details the empirical strategy and data employed; Section 4 presents and discusses the findings; and Section 5 concludes with policy implications and recommendations for future research avenues.

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References

1. Ola, M. H. Financing mix and Financial Performance: Evidence from listed Consumer and Industrial Goods Sector in Nigeria.
2. Куфяк, V., & Todoriko, I. (2021). Імплементация зарубіжного досвіду мотивації праці у діяльність українських підприємств.
3. оглу Рагимов, Э. Р., & оглу Искендерзаде, Э. Б. (2023). ЭФФЕКТИВНЫЕ МЕТЕОРОЛОГИЧЕСКИЕ АСПЕКТЫ ПРИМЕНЕНИЯ НАНОТЕХНОЛОГИЧЕСКОЙ ПРОДУКЦИИ В ТРАНСПОРТНОЙ СФЕРЕ. Сетевое издание «Нефтегазовое дело», (1), 126-142.
4. Rahimov, E., Rahimov, C., & Davudova, S. A. Determining the optimal relationship between speed and acceleration of a vehicle to minimize pollutant emissions into the atmosphere.
5. Рагимов, Дж. Эффективные метеорологические аспекты применения нанотехнологической продукции в транспортной сфере / Дж. Рагимов, Э. Рагимов, Э. Искендерзаде // Сетевое издание «Нефтегазовое дело». — 2023. — № 1. — С. 126–142.
6. Talibzade, O. (2023). NATURE OF BUDGET PROCESS AND ANALYSIS OF BUDGET INDICATORS IN AZER-BAIJAN BANKING SYSTEM. Social and Technical Sciences Series, 3, 82–86.
7. Talibzade, O. (2022). Organization of expenses in budget management, enterprises and organizations. Geostrategy, 71 (5), 112–114.
8. Talibzade, O. (2022). Organization of expenses in budget management, enterprises and organizations. Geostrategy, 71(5), 112–114.
9. Moraliyska, M. (2019). The European social model–typology and performance in 2017. Sustainable Development GOALS 2030: Challenges for South and Eastern European Countries and the Black Sea Region, 260.