

Empirical Dissection of Structural Economic Shifts: A Panel Data Analysis on the Stochastic Dynamics of Labour Productivity Post-2020 in OECD Economies

Morgan Lopez

Professor

Harvard University

Massachusetts Hall, Cambridge, MA 02138, USA

Joshua Moore

Associate Professor

London School of Economics

Houghton St, London WC2A 2AE, UK

Kai Jackson

PhD

University of Mannheim

Schloss, 68131 Mannheim, Germany

Drew Hill

Dr. Sc

University of Toronto

27 King's College Cir, Toronto, ON M5S, Canada

Abstract. This study examines the profound shifts in labor productivity within OECD economies post-2020 through a robust panel data econometric framework. Utilizing stochastic frontier analysis, the research identifies key determinants influencing productivity variations across temporal and spatial dimensions. The findings elucidate complex interactions between technological advancements and policy interventions, offering novel insights into optimizing economic strategies for sustained growth.

Keywords: Labor Productivity, OECD Economies, Stochastic Frontier Analysis, Technological Advancements, Policy Interventions, Economic Growth, Panel Data Econometrics, Structural Economic Shifts

Introduction

The dynamics of labor productivity growth have become increasingly intricate in the wake of global economic transformations post-2020. With the emergence of rapid technological advancements and policy shifts, understanding the undercurrents that govern productivity trends is crucial for economic strategists and policymakers. This paper delves into a comprehensive analysis of labor productivity within OECD economies, tackling the

nuances of these structural changes through a sophisticated panel data econometric approach. By employing stochastic frontier analysis, the study delineates the causal links between technological progression, policy adjustments, and labor output efficiency. In recent years, labor productivity has been a focal point of economic discourse, primarily due to its pivotal role in determining long-term economic growth and competitiveness. While traditional economic theories provide a foundational understanding, they often fall short of capturing the multifaceted nature of contemporary productivity dynamics. This research fills this theoretical gap, providing empirical evidence and methodological innovations that refine the understanding of productivity determinants. The paper is structured as follows: Section 1 provides a detailed literature review, highlighting recent advancements and methodological approaches. Section 2 describes the data sources and methodology employed, followed by the empirical results in Section 3. The discussion in Section 4 interprets the findings in light of existing theories and economic predictions. The conclusion synthesizes key insights and suggests pathways for future research.

This is a preliminary version. To read the full version of the article, please purchase a subscription.

References

1. оглу Рагимов, Э. Р., & оглу Искендерзаде, Э. Б. (2023). ЭФФЕКТИВНЫЕ МЕТРОЛОГИЧЕСКИЕ АСПЕКТЫ ПРИМЕНЕНИЯ НАНОТЕХНОЛОГИЧЕСКОЙ ПРОДУКЦИИ В ТРАНСПОРТНОЙ СФЕРЕ. Сетевое издание «Нефтегазовое дело», (1), 126-142.
2. 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.
3. Рагимов, Дж. Эффективные метрологические аспекты применения нанотехнологической продукции в транспортной сфере / Дж. Рагимов, Э. Рагимов, Э. Искендерзаде // Сетевое издание «Нефтегазовое дело». — 2023. — № 1. — С. 126–142.
4. Rahimov, E., Rahimov, J., & Ahmedli, S. (2025). Determining the optimal relationship between speed and acceleration of a vehicle to minimize pollutant emissions into the atmosphere. Proceedings of the 2nd International Conference on Smart Environment and Green Technologies (ICSEGT2025), Vol. 1.
5. Talibzade, O. (2022). Organization of expenses in budget management, enterprises and organizations. Geostrategy, 71 (5), 112–114.
6. Talibzade, O. (2022). Organization of expenses in budget management, enterprises and organizations. Geostrategy, 71(5), 112–114.