

Estimation of Total Factor Productivity and Technology Transfer across Latvian Economic Sectors: A Cobb–Douglas Production Function Approach

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ABSTRACT

This paper presents an econometric analysis of ten key sectors of the Latvian economy using the Cobb–Douglas production function $Y=A \cdot L^{\alpha} \cdot K^{\beta}$. Based on data from the Central Statistical Bureau of Latvia (CSB), Eurostat and the World Bank for the period 2018–2024, the output elasticities of labour (α) and capital (β) are estimated and total factor productivity (TFP, parameter A) is calculated. A composite technology transfer index is constructed, incorporating R&D expenditure intensity, the share of innovative enterprises and patent activity. The results show that the highest TFP and technology transfer levels are found in the information and communication technology sector ($A = 4.14$; index = 0.82) and professional/scientific activities ($A = 3.60$; index = 0.76), whereas traditional sectors — agriculture and real estate — exhibit substantially lower values. A strong correlation ($r = 0.94$) between TFP and the technology transfer index confirms the pivotal role of technology diffusion in productivity growth.

JEL Codes:

Keywords: *Cobb–Douglas production function, total factor productivity, technology transfer, sectoral analysis.*