

**RISE: A PANEL-BASED FRAMEWORK FOR
CROSS-COUNTRY GROWTH RANKINGS VIA
ECONOMIC AND ECOLOGICAL INDICATORS**

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ABSTRACT

This study investigates the key drivers of economic growth in G20 countries over the period 2000–2022, integrating economic, ecological, and developmental dimensions. The G20 is chosen as it serves as the premier international forum for economic cooperation, shapes global economic governance, and collectively accounts for a significant share of global GDP. Its diverse member composition also allows for a comprehensive analysis of structural differences across economies. The analysis combines panel data methods to examine how climate conditions, development indicators, financial market dynamics, and technological progress influence GDP per capita. Second, a novel machine learning-based approach is employed to identify and rank the most influential growth determinants and to cluster countries based on the similarity of their characteristics, capturing both linear and nonlinear relationships among the factors. Building on these results, a **RISE (Ranking by Impact of Sustainability and Economic factors)** framework is developed to provide a structured basis for understanding the relative importance of different growth drivers and inform policy formulation. Special attention is given to the COVID-19 pandemic as a major global disruption that altered economic dynamics and challenged existing growth trajectories. The findings reveal that capital investment consistently supports growth, while human development plays a stronger role in advanced economies. Financial market instability generally hampers growth, whereas the influence of environmental performance, renewable energy use, innovation, and climate factors varies by context. The study underscores the importance of tailored economic policies that account for structural differences, leverage key growth drivers, and respond to large-scale global shocks within the RISE framework.