# DEPENDENCE OF THE GROWTH RATE OF GDP PER CAPITA ON THE GROWTH RATE OF THE GLOBAL INNOVATION INDEX AND ITS SUBINDICES

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**Abstract:** This research investigates the relationship between Global Innovation Index (GII) expansion and its component index elements as predictors of GDP per capita development. The statistical analysis through correlation and regression models showed GDP per capita growth establishes a moderate positive relationship with GII growth while business sophistication subindex applies the strongest force. Economic factors apart from innovation drive GDP growth according to the data from the regression analysis. To achieve economic progress through innovation-driven development it is vital to direct investments towards research-based R&D efforts while establishing stable institutions and developing financial frameworks.

**Keywords**: Economic Growth, Global Innovation Index (GII), Innovation Performance, Knowledge & Technology Outputs, Financial Market Access, R&D Investments, Institutional Stability, Digital Transformation, Technological Advancement, Innovation-Driven Growth, Macroeconomic Indicators, Sustainable Development.

## Introduction

All nations prioritize economic growth to raise living standards and decrease poverty levels while preserving economic balance. The fundamental measure of economic development consists of Gross Domestic Product (GDP) per capita because it demonstrates the national output divided by the population. Research has thoroughly studied the elements which affect GDP per capita growth throughout several years and now innovation stands out as a core determinant factor. The economic development process becomes stronger due to innovation because it raises productivity while creating new technologies and promoting startup businesses. The Global Innovation Index (GII) serves as an effective assessment tool to measure innovation performance worldwide therefore helping economists study innovation's effects on economic development across nations [1]. The Global Innovation Index integrates seven distinct subindices which measure institutions, human capital and research, infrastructure, market sophistication and business sophistication, knowledge and technology outputs and creative outputs. These subindices show both the multiple dimensions of innovative practices and their resulting effects across different areas that affect economic growth. Studies about GDP per capita growth and its relation to the GII and its subindices are vital for policymakers since they reveal which innovation aspects promote economic development while explaining how innovation investment leads to long-term benefits [2]. Scientific studies on innovation and economic growth have produced limited information about the direct correlation between GDPs per capita increase and GII expansion as well as its subcategories. The research targets this gap by conducting an

analysis of worldwide economic trends combined with innovation index data to explain how various innovative elements impact GDP growth rates.

Objective

1. To examine the impact of the growth rate of the Global Innovation Index (GII) on the growth rate of GDP per capita across different countries.

2. To analyze the contribution of the GII subindices to GDP per capita growth and identify the most significant innovation drivers in economic development. The main questions that includes in article are how the growth rate of the Global Innovation Index (GII) influence the growth rate of GDP per capita and which GII subindices have the most significant impact on GDP per capita growth.

Methods

The study delivers important data-based insights that show the relationship between innovation and economic growth which benefit decision-makers in government and economic researchers and executives in business. Governments should focus their innovation policy development on the key components of the GII since this enables them to drive economic growth. The research data assists authorities in directing their investments toward research and development and education and digital infrastructure thus fostering sustainable economic growth. This research finds its place in academic publications on innovation-driven growth through the presentation of empirical evidence which shows how different economies relate GDP per capita expansion to their innovation's capabilities. Economic growth along with innovation strategies remain active areas of scholarly investigation that analyses the relationship between innovation advancements and GDP per capitalist rates. Sustained economic growth now receives greater emphasis in contemporary economic thought above standard economic methods focusing on capital accumulation and labor productivity because it depends on innovation [3]. The Global Innovation Index stands as the main method to measure innovation performance across countries thus driving the systematic investigation of economic growth mechanisms through innovation aspects [4]. Several economic models exist to understand the connection between innovation and Gross Domestic Product expansion. The Solow Growth Model identifies technological advancement as its core determinant of continuous economic expansion while excluding this force from its main conceptual framework. According to Endogenous Growth Theory established within Solow's Growth Model both knowledge creation and Research and Development (R&D) activities along with human capital investments function as integral endogenous growth drivers. Through its concept the theory indicates that strategic investments in innovative policies and educational systems directly impact national economic development paths. Dobrovolska et al., 2023 presented "creative destruction" as an innovation process which upsets traditional industries by producing fresh economic advantages together with enhanced productivity. An increase in innovation performance indicators such as R&D spending and patent applications and technology outputs leads nations to achieve enduring economic growth. Multiple empirical studies show that innovation activities produce positive effects on GDP per capita expansion. Economies which achieve higher positions in innovation indices demonstrate stronger financial crisis resilience and simultaneously maintain higher productivity numbers and improved labor market conditions. Countries that dedicate 2% of their Gross Domestic Product (GDP) to research development accomplishments faster economic growth than nations investing less in innovation. WIPO (2023) analysed Global Innovation Index (GII) data spanning 2010 to 2022 which revealed that each percentage point rise in GII scores generates 0.5 percent higher GDP per capita growth. According to the research findings these knowledge-based economies including Switzerland and Sweden as well as the United States achieve their best outcomes from innovation investments.

The GII establishes a multiple-factor system for innovation performance evaluation. Several important subindices act as key contributors to the development of GDP per capita. The GII measures innovation performance through various subindices anchored by Institutions and Economic Growth, Human Capital & Research, In-

frastructure Development, Market Sophistication and Financial Access, Business Sophistication and Knowledge Spillovers and Knowledge & Technology Outputs [5]. A stable economic environment that supports innovation emerges from strong institutions. Switzerland together with Finland together with several other countries maintain higher institutional ranks within the GII and show increased economic stability and business growth while attracting more investor capital. Institutional weakness that combines political instability and inadequate regulatory systems acts as a barrier to economic innovation advancement [6]. The investment in education along with R&Ds proves to be the most significant indicators for increased GDP per capita growth. Tertiary education enrolment growth at 10% results in a 1.5% growth rate**.** The heavy investment in higher education and technology research by South Korea and Germany produces continuous high GDP growth rates in these nations. Infrastructure, particularly in digital technologies and energy systems, plays a key role in economic efficiency.

The WIPO (2023**)** states that countries achieve the most GDP per capita expansion through extensive digital infrastructure development such as Singapore and China. Venture capital investments and business expansions and innovation funding occur easily because of the advanced financial market infrastructure. The World Bank (2023) shows that nations with complex financial markets like the United States and United Kingdom confront lower barriers to entrepreneurship thereby achieving broader economic segmentation. Industry-academic linkages in the community foster the spread of technology with concurrent entrepreneurship development. The economic growth of Israel alongside Silicon Valley in the U.S. produces continuous expansion because of their strong startup ecosystems and intense research and development investments. High-tech exports and filed patents and research publications function as measurement indicators to evaluate innovation effectiveness. Japan together with South Korea and Germany achieve their economic advances through robust intellectual property regulations coupled with substantial government expenditures toward research and development [7].

Multiple investigations have confirmed a connection between innovation and economic growth yet there remains uncertainty about directly how GDP per capita growth relies on the GII and its component elements. Studies analyzing R&D expenditures and technological diffusion omit key innovation indicators consisting of market maturity indicators and institutional performance metrics alongside creative market indicators. Most research apply cross-sectional analysis which prevents the ability to explore the latest causal links between innovation and economic performance. The study investigates GDP per capita growth in relation to GII results alongside its subcomponent measures through time-series econometrics for year 2024. In this study, a quantitative research approach investigates how GDP per capita expansion relates to Global Innovation Index (GII) rate of growth and its subindices development. The evaluation combines statistical techniques to find cause-and-effect connections between innovation outcomes and economic development growth standards.

The research design consists of correlational methods to explore the relationship of GDP per capita expansion with GII advancement. The chosen study design enables researchers to determine the relationship intensities as well as patterns between innovation measurements and economic performance evolution. The study unfolds through time by measuring GDP per capita changes together with GII modifications across multiple years for detecting evolving patterns. On the same time research implements regression analysis models to determine how GII with its subindices affects the growth of GDP per capita. The research uses correlation analysis together with descriptive statistics to evaluate the levels of connection between different variables. Multiple economies provide information for this study at the country level because the research aims to demonstrate global significance. The descriptive analysis examines GDP per capita growth trends as well as GII variations while correlation analysis determines economic growth and innovation performance relationships and regression analysis establishes innovative factors' direct impact on GDP growth. The research depends on secondary reliable information from World Bank and GII Reports and OECD and IMF Data [8]. The dataset comprises

three sections which present GDP per capita growth rates alongside indicators of innovation performance and economic indicators with productivity trends. The data collection spans across one year in 2024 for all variables yet extends to ten years from 2014 to 2024 concerning GDP growth rate patterns since 2014. The analysis contains a wide range of countries from high-income to middle-income to low-income categories to achieve extensive international data assessment. The economic description includes Switzerland and United States as well as United Kingdom and Germany and Japan and France completes the line-up with Switzerland and Azerbaijan. The research uses publicly accessible databases for its data sources thus maintaining complete transparency while enabling revaluation of all findings. The reliability of this study increases through data acquisition from official economic reports and peer-reviewed journals along with global databases. It should be also mentioned that the research has limitations because several developing nations do not have complete information about their innovation indicators. However the study successfully shows correlations yet establishing definite cause-effect relationships proves difficult because of various economic development factors and analysis focuses exclusively on macroeconomic research because this study does not evaluate how innovative firms affect growth rates. Even though these constraints exist, the research delivers useful knowledge about innovation's effects on national economic development.

**Figure 1: Correlation Model**

| Correlation Model | | | | | | | |
|---|---|---|---|---|---|---|---|
| | *DV* | *IV1* | *IV2* | *IV3* | *IV4* | *IV5* | *IV6* |
| DV: GDP Per Capita Growth (%) | 1 | | | | | | |
| IV1: GII Growth Rate (%) | 0.601 | 1 | | | | | |
| IV2: Human Capital & Research (%) | 0.589 | 0.992 | 1 | | | | |
| IV3: Infrastructure Growth (%) | 0.518 | 0.963 | 0.956 | 1 | | | |
| IV4: Market Sophistication Growth (%) | 0.605 | 0.995 | 0.981 | 0.966 | 1 | | |
| IV5: Business Sophistication Growth (%) | 0.652 | 0.969 | 0.938 | 0.946 | 0.974 | 1 | |
| IV6: Knowledge & Technology Outputs Growth (%) | 0.599 | 0.999 | 0.990 | 0.966 | 0.995 | 0.974 | 1 |

**Figure 2: Regression Model**

| Regression Model | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Regression Statistics* | | | | | | | | |
| Multiple R | 0.601 | | | | | | | |
| R Square | 0.361 | | | | | | | |
| Adjusted R Square | 0.233 | | | | | | | |
| Standard Error | 1.008 | | | | | | | |
| Observations | 7 | | | | | | | |
| ANOVA | | | | | | | | |
| | *df* | *SS* | *MS* | *F* | *Significance F* | | | |
| Regression | 1 | 2.873 | 2.873 | 2.825 | 0.154 | | | |
| Residual | 5 | 5.084 | 1.017 | | | | | |
| Total | 6 | 7.957 | | | | | | |
| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
| Intercept | 0.636 | 0.452 | 1.407 | 0.218 | -0.525 | 1.797 | -0.525 | 1.797 |
| GII Growth Rate (%) | 0.021 | 0.012 | 1.681 | 0.154 | -0.011 | 0.052 | -0.011 | 0.052 |

**Figure 3: GDP per capita Growth Rate (2014 – 2024) [Source: World Bank, 2023; WIPO, 2024]**

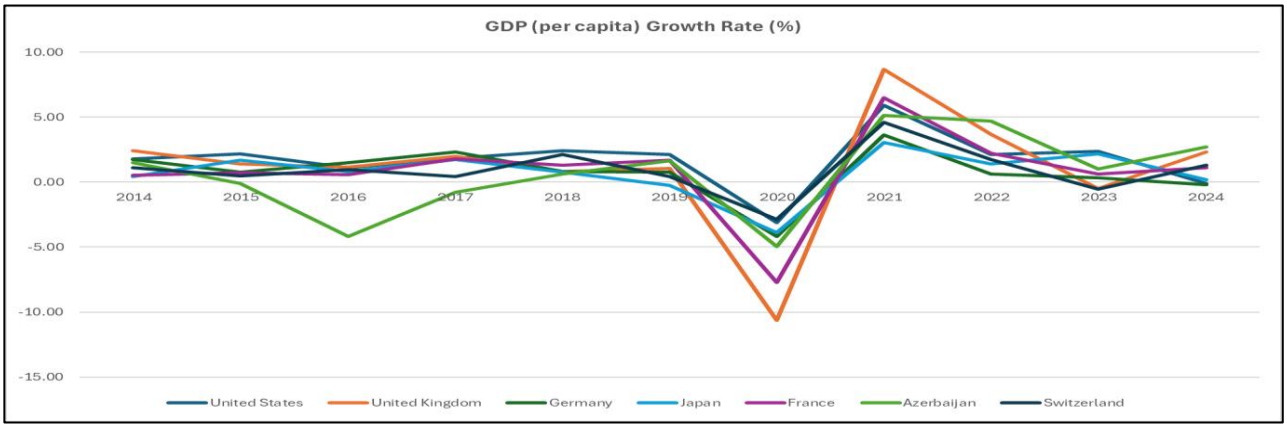



**Figure 4: GDP per capita Growth Rate & GII Growth Rate [Source: World Bank; WIPO, 2024, 2023]**

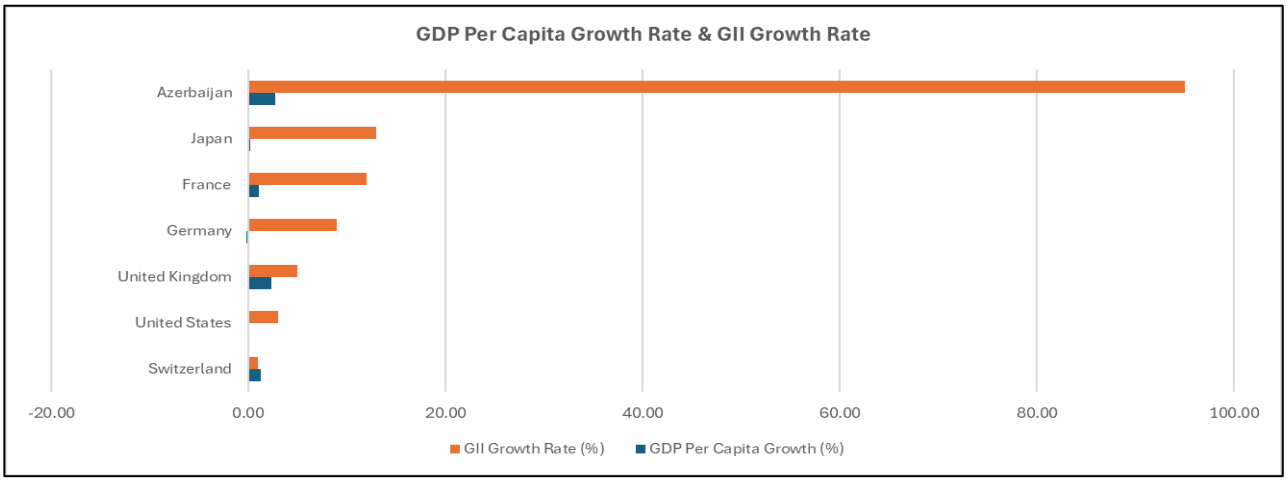
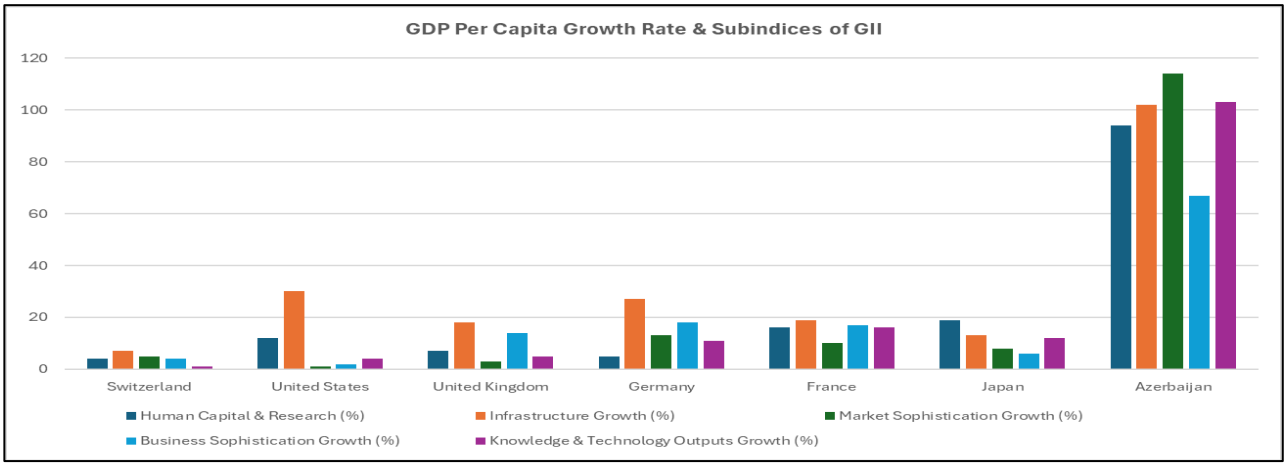



Figure 5: GDP per capita Growth Rate & Subindices of GII Growth Rate [Source: World Bank, 2023;




WIPO, 2024]

These results validate the proposition that GDP per capita accelerates with GII along with its sub-components yet different factors such as economic environments together with investment patterns and policy structures influence the strength of this association [10]. The research reveals innovation acts as an essential driver of economic growth, yet GDP per capita continuation depends significantly on various additional factors

like governance standards and trade systems and stability in the economy.

## Conclusion

The study established the relationship between GDPs per capita growth and Global Innovation Index (GII) growth through analysis of specific GII subindices by delivering empirical evidence regarding innovation-driven economic expansion. Test results established that innovation acts as a fundamental component for economic development through its moderate positive association (r = 0.601) between GII growth and GDP per capita growth. GII growth accounts for only 36.1% of the changes in GDP per capita although other economic factors remain independent influences on economic performance. The subindices measuring business sophistication, market sophistication and human capital & research show the highest relationships with GDP per capita growth because these elements are essential for innovation-based economic growth. The regression model shows statistical insignificance (p = 0.154) which demonstrates innovation requires additional support beside institutional stability and economic policies and infrastructure investment. The influence that innovation has on GDP per capita differs between nations since the effects depend on both policy-making commitments and industrial development patterns and state investment levels. Economic development strategies must integrate innovation with broader policies because research indicates this fact point. The government must enhance investments in research and development within higher education as well as technology to achieve long-term productivity improvements in economic development. Asset investment will increase through institutional framework enhancements which establish stable regulations and intellectual property protection. Building public-private alliances will enable the transfer of knowledge along with innovation commercialization. The expansion of financial markets will enable startups and technology-based companies to receive necessary funding. Modern economic efficiency will increase through investments in physical and digital infrastructure which include broadband development and AI systems. The adoption of inclusive innovation policies will ensure that small businesses along with emerging industries receive technological benefits to achieve balanced economic expansion.

## REFERENCES:

1. Can, N., & Sagbansua, L. (2015). Quantitative analysis on innovation INDEX of OECD countries. International Journal of Academic Research in Business and Social Sciences, 5(8), 210-220.

2. Dobrovolska, O., Sonntag, R., Masiuk, Y., Bahorka, M., & Yurchenko, N. (2023). Is increasing a share of R&D expenditure in GDP a factor in strengthening the level of innovation development in Ukraine compared with GII's top countries? Problems and Perspectives in Management, 21(4), 713.

3. Dutta, S., Lanvin, B., & Wunsch-Vincent, S. (2019). The global innovation index 2017. Cornell University, INSEAD, & WIPO (Eds.), Global innovation index, 1-39.

4. Howitt, P. (2010). Endogenous growth theory. In Economic growth (pp. 68-73). London: Palgrave Macmillan UK.

5. Lanvin, B., Wunsch-Vincent, S., & GUADAGNO, F. (2017). The Global Innovation Index 2017: Innovation Feeding the World. The Global Innovation Index 2017, 3.

6. Lazarov, D., & Petreski, G. (2019). The role of innovations in fostering economic growth: an empirical analysis for selected CEE countries. International Journal of Business and Globalisation, 22(4), 716-728.

7. Leogrande, A., Massaro, A., & Galiano, A. M. (2020). The Determinants of Innovation in European Countries in the period 2010-2019. American Journal of Humanities and Social Sciences Research (AJHSSR), 4(8), 91-126.

8. Oturakci, M. (2023). Comprehensive analysis of the global innovation index: statistical and strategic approach. Technology Analysis & Strategic Management, 35(6), 676-688.

9. Rajput, N., Khanna, M. A., & Oberoi, S. (2012). Global innovation index and its impact on GDP of BRICS nations-innovation linkages with economic growth: An empirical study. Global journal of enterprise information system, 4(2), 35-44.

10. Solow, R. M. (1996). Growth theory. In A guide to modern economics (pp. 229-247). Routledge.

# ADAMBAŞINA ÜDM-in ARTIM SƏRƏFİNİN ÜMİV VƏ ONUN SUBİNDEKSİNİN ARTIM SƏRİMİNDƏN ASLILIĞI

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**Xülasə**: Bu tədqiqat Qlobal İnnovasiya İndeksinin (GII) genişlənməsi ilə adambaşına düşən ÜDM-in inkişafının proqnozlaşdırıcıları kimi komponent indeks elementləri arasında əlaqəni araşdırır. Korrelyasiya və reqressiya modelləri vasitəsilə aparılan statistik təhlil göstərdi ki, adambaşına düşən ÜDM artımı ÜDM artımı ilə orta dərəcədə müsbət əlaqə qurur, biznesin təkmilləşməsi alt indeksi isə ən güclü qüvvə tətbiq edir. Reqressiya təhlilindən əldə edilən məlumatlara əsasən, innovasiyadan başqa iqtisadi amillər ÜDM-in artımına təkan verir. İnnovasiyaya əsaslanan inkişaf yolu ilə iqtisadi tərəqqiyə nail olmaq üçün sabit institutlar yaratmaq və maliyyə çərçivələrini inkişaf etdirməklə yanaşı, sərmayələri tədqiqata əsaslanan R&D səylərinə yönəltmək çox vacibdir.

**Açar sözlər:** İqtisadi İnkişaf, Qlobal İnnovasiya İndeksi (GII), İnnovasiya Performansı, Bilik və Texnologiya Nəticələri, Maliyyə Bazarına Çıxış, R&D İnvestisiyaları, İnstitusional Sabitlik, Rəqəmsal Transformasiya, Texnoloji İnkişaf, İnnovasiyaya əsaslanan Artım, Makroiqtisadi Göstəricilər, Davamlı İnkişaf.

# ЗАВИСИМОСТЬ ТЕМПОВ РОСТА ВВП НА ДУШУ НАСЕЛЕНИЯ ОТ ТЕМПОВ РОСТА ИНДЕКСА ВАЛОВОЙ ПРИБЫЛИ И ЕГО СУБИНДЕКСОВ

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**Резюме:** В этом исследовании изучается взаимосвязь между расширением Глобального инновационного индекса (GII) и его компонентными элементами индекса как предикторами развития ВВП на душу населения. Статистический анализ с использованием корреляционных и регрессионных моделей показал, что рост ВВП на душу населения устанавливает умеренную положительную связь с ростом GII, в то время как субиндекс развитости бизнеса применяет самую сильную силу. Экономические факторы, помимо инноваций, стимулируют рост ВВП согласно данным регрессионного анализа. Для достижения экономического прогресса посредством инновационного развития жизненно важно направлять инвестиции в научно-исследовательские и опытно-конструкторские работы, одновременно создавая стабильные институты и развивая финансовые структуры.

**Ключевые слова:** Экономический рост, Глобальный инновационный индекс (GII), Инновационная эффективность, Результаты знаний и технологий, Доступ к финансовым рынкам, Инвестиции в НИОКР, Институциональная стабильность, Цифровая трансформация, Технологический прогресс, Рост за счет инноваций, Макроэкономические показатели, Устойчивое развитие.