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# COMPARATIVE ANALYSIS OF GDP AND FINANCIAL SERVICES: AN ECONOMIC ASSESSMENT OF 206 COUNTRIES

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## Abstract
*This study aims to analyze the relationship between GDP Current LCU, GDP Constant LCU, and GDP Per Capita Current LCU to assess economic performance across two-hundred-six countries in 2022. Employing a quantitative design, the research utilizes secondary data from global financial institutions. Methodologically, statistical analyses, including Grey Relational Analysis, are applied to compare GDP metrics, emphasizing the significance of inflation adjustment and per capita calculation. The dataset is sourced from the World Bank Indicator website, ensuring credibility and accuracy. The results reveal substantial variations in economic growth patterns when different GDP measures are considered. This study offers originality by integrating classical and modern economic theories to enhance GDP analysis. Its innovative approach provides a nuanced understanding of GDP beyond traditional measures. The findings have significant implications for policymakers, economists, and researchers in evaluating economic stability, development, and comparative financial performance across nations. Moreover, this research highlights the necessity of using multiple GDP indicators for more accurate economic assessment. It also underscores the importance of inflation-adjusted measures in policymaking and economic forecasting. Future studies can build on these findings by incorporating sector-specific GDP trends and long-term economic projections.*

***Keywords:*** *GDP Current LCU, GDP Constant LCU, Economic Growth Indicators, GDP per Capita Current LCU, Real vs. Nominal GDP*

## INTRODUCTION
Gross Domestic Product (GDP) is a fundamental indicator of a nation's economic performance, encapsulating the total value of goods and services produced within a county's borders over a specific period (Feenstra, Inklaar, & Timmer, 2015). It serves as a critical tool for policymakers, economists, and researchers to assess economic health, formulate fiscal policies, and facilitate international comparisons (Heston & Summers, 1996). Accurate measurement and analysis of GDP are essential for understanding economic growth trajectories and making informed policy decisions (Summers & Heston, 1991). GDP can be measured using various approaches, each offering unique insights into a country's economic dynamics. This metrics reflects the market value of goods and services produced within a country using current prices during the measurement period. It provides a nominal perspective of the economy but does not account for inflation, which can distort real economic growth assessments (Feenstra et al., 2013; Ali & Afzal, 2019; Wang & Huang, 2024). This measure adjusts for inflation by using base-year prices, offering a real measure of economic growth over time. By holding prices constant, it allows for the comparison of economic performance across different periods without the confounding effect of price level changes (Johnson et al., 2009; Audi, 2024). This indicator divides the GDP by the population size, providing an average economic output per person. It serves as a proxy for the standard of living and helps in assessing income distribution within a country (Karvis, Heston, &

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CJSSR
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
Vol.03 No.02 (2025)

Summers, 1978). While extensive research has been conducted on GDP metrics individually, there is a notable scarcity of studies examining the interplay between these specific GDP measurement across a broad spectrum of countries (Feenstra, Inklaar, & Timmer, 2015; Ali, 2015). Understanding these relationships is vital for nuanced economic analysis changes impact economics assessments (Heston & Summers, 1996). The academics challenges lie in addressing this research gap by analyzing the interrelationships among GDP Current LCU, GDP Constant LCU, and GDP Per Capita Current LCU across diverse nations. Such an analysis is crucial for developing a comprehensive understanding of economics performance indicators and their implications for policy decisions (Summers & Heston, 1991; Labeeque & Sanaullah, 2019). The selection of GDP measurement methods has profound implications for policy decisions. Governments rely on GDP data to determine taxations and public spending levels; an overestimation of GDP might deal to excessive taxation, stifling economic growth, while underestimation could result in inadequate public services (Stiglitz, Sen, & Fitoussi, 2009; Fatima & Zaman, 2020). Central bank use GDP trends to set interest rates, where accurate GDP measurements ensure appropriate monetary policies that control inflations and stabilize the economy (Blanchard, 2017; Chen, 2022). Moreover, international organization and investors assess GDP to allocate aid ad make investment decisions; misleading GDP figures can result in misdirected resources, affecting global economic stability (Romer, 2012). However, the reliability of GDP as a sole indicator of progress has been questioned. Alternative measures have been developed to address the shortcomings of GDP, aiming to provide a more comprehensive understanding of human well-being and progress (Costanza et al., 2009; Ang, 2022). For instance, efforts to integrate human, natural, and fixed capital into new metrics have yielded mixed results, underscoring the challenges in capturing the multifaceted nature of economic well-being (Stiglitz, Sen, & Fitoussi, 2010; Kilyachkov & Chaldaeva, 2021). The academic challenges lie in addressing this research gap by analyzing the interrelationship among GDP Current LCU, GDP Constant LCU, and GDP Per Capita Current LCU across diverse nations. Such an analysis is crucial for developing a comprehensive understanding of economic performance indicators and their implications for policy decisions (Sen, 1999; World Bank, 2023). This research aims to contribute to the existing body of knowledge by providing empirical evidence on these relationships, thereby informing policymakers and scholars about the complexities involved in GDP measurement and interpretations. By doing so, it seeks to enhance the accuracy of economic assessments and the effectiveness of subsequent policy interventions (Feenstra et al., 2015; Nwezeaku, 2018; Osei & Acheampong, 2021).

## LITERATURE REVIEW

GDP has long been a cornerstone of macroeconomic evaluation, serving as the primary benchmark for national and global economic performance. Traditionally, GDP is measured using various metrics, including GDP in Current Local Currency Units (LCU), GDP in Constant LCU, and GDP Per Capita in Current LCU. Each of these indicators reflects different dimension of economic activity nominal versus real value, and aggregated versus per capita productivity. GDP in Current LCU capture the monetary value of goods and services at prevailing prices, while GDP in Constant LCU neutralizes inflation effect, offering a more consistent view of real economic growth overtime. GDP Per Capita, on the other hand, contextualizes economic output relative to population size, often serving as proxy for average income and living standards (Stiglitz et al., 2009; Coyle, 2014). This significance of selecting appropriate GDP indicators has deep implications for national policy and global comparisons. Central banks and governments rely heavily on these metrics to design fiscal strategies, monetary policies, and development agendas. An inaccurate or limited

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CJSSR
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
Vol.03 No.02 (2025)

interpretation of GDP can misguide policy outcomes, skew resource allocation, and mispresent a country's economic health. For instance, reliance solely on nominal GDP figures can distort comparisons between economic with high inflation rates and those with stable currencies (Costanza et al., 2014; Ali & Rehman, 2015). Furthermore, global institutions such as the World Bank and IMF also base financial aid disbursement, creditworthiness, and development support on these economic indicators, thereby amplifying their importance in shaping international relations and economic equity (Fleurbaey, 2009). Given the increasing critique of GDP's limitations, many scholars advocate for more inclusive and nuanced metrics. The Inclusive Wealth Index (IWI) and Genuine Progress Indicator (GPI) represent alternatives that integrate social, human, and environmental dimension into economic measurement (Kubiszewski et al., 2013; Hamilton & Hepburn, 2014). These approaches emphasize sustainability and long- term development, offering a more holistic picture of progress. However, while these newer measures provide valuable insights, they also pose methodological challenges in standardization and data collection across countries (Fleurbaey, 2009). Hence, traditional-GDP metrics remain widely used, albeit increasingly supplemented by more advanced analytical tools (Feenstra et al., 2015). To analyze the interrelationship between these GDP indicators across 206 countries, this research adopt Grey Relational Analysis (GRA) – a powerful technique derived from grey system theory. GRA is particularly useful in multi criteria decision making scenarios where data is incomplete or uncertain, making it highly-appropriate for global economic dataset. It quantifies the strength of relationships among variables by evaluating their geometric proximity in a normalized data space. GRA is robust even with small sample size or nonlinear relationship, offering a unique advantage over traditional correlation methods (Deng, 1989). In the context of this study GRA allows for a nuanced understanding of how GDP Current LCU, GDP Constant LCU, and GDP Per Capita interact, identifying countries with consistent economic patterns versus those with anomalies. Moreover, the applications of GRA help mitigates issues related to scale, units, and noise in international datasets sourced from the World Bank, thereby enhancing the reliability of comparative economic analysis (Julong, 1982; Liu et al., 2011). By incorporating GRA, this literature review not only highlights the conceptual and practical dimensions of GDP analysis but also introduce a methodological-innovations that fills existing analytical gaps. This contribution is particularly relevant for policymakers and economists seeking dynamics tools to interpret complex datasets with interdependent economic indicators. The integration of GRA with traditional economic evaluations and support better-informed decisions-making process (Feenstra et al., 2015).

## METHODOLOGY

This research is grounded in a positivist paradigm, which asserts that reality is objective and can be measured through empirical observation and statistical analysis. By employing quantitative methods, the study seeks to uncover patterns and relationship among GDP indicators, ensuring that findings are based on observable and measurable phenomena (Creswell, 2014; Bryman, 2012). A deductive approach is adopted, starting with established economic theories related to GDP measurement and analysis. Hypotheses regarding the relationship between GDP Current LCU, GDP Constant LCU, and GDP per Capita Current LCU are formulated and tested using empirical data. This approach allows for the validation or refutation of theoretical propositions through systematic data analysis (Snieder & Larner, 2009). This study utilizes a quantitative cross-sectional design, analyzing data from 206 countries for the year 2022. This design facilitates the examination of relationship between multiple GDP indicators at a specific point in time, providing a snapshot of global economic

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CJSSR
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Vol.03 No.02 (2025)

performance (Saunders, Lewis, & Thornhill, 2019). The population for this study comprises all recognized sovereign states and economies, totaling 206 entities. This comprehensive inclusion ensures a global perspective on GDP metrics and their interrelations (World Bank, 2022). Given the exhaustive nature of the population a census sampling method is employed, wherein data from all 206 countries are included in the analysis. This approach eliminates sampling bias and allows for comprehensive insights into global economic pattern (Teddlie & Yu, 2007). The sample design involves the collection of secondary data on three key GDP indicator' (Table 1). In GDP Current LCU; GDP measure in current local currency unit, In GDP Constant LCU; GDP measured in constant local currency units, adjusted for inflation and In GDP Per Capita Current LCU; GDP per individual measured in current local currency unit. These indicators are selected by to provide a multifaceted view of economic performance, accounting for nominal values, real growth, and per capita distribution (Feenstra, Inklaar, & Timmer, 2015). The sample size encompasses all 206 countries for which data are available, ensuring a holistic analysis of global economic trends (World Bank, 2022). The primary instruments of measurement is the World Bank's World Development Indicators (WDI) database, a reputable source of international economic data. The WDI provides standardized and comparable data across countries, ensuring consistency and reliability in measurement (Serajuddin et al., 2015).

**DATA COLLECTION**

Secondary data are collected from the World Bank's WDI database. The study employs Grey Relational Analysis (GRA) to examine the relationship selected GDP indicators. GRA evaluate the degree of similarity or relational grade between sequences, making it suitable for economic data analysis where variables may exhibit complex interdependencies. (Deng, 1989; Julong, 2002; Liu & Lin, 2006). The process follows procedure mathematical algorithm as used in (Baasit et al., 2021; Basit, Qazi, & Niazi, 2020a; Niazi et al., 2021a; and Rashid et al., 2021). GRA normalization method can be applied by following formulas.

$$x_i^*(k) = \frac{x_i^{(O)}(k) - \min x_i^{(O)}(k)}{\max x_i^{(O)}(k) - \min x_i^{(O)}(k)} \qquad (1)$$

This formula is applied when the variables have ''maximum better'' characteristics. One of the simplest ways to normalize data is by dividing each value by the very first value in the data set.

$$x_i^*(k) = \frac{x_i^{(O)}(k)}{x_i^{(O)}(1)} \qquad (2)$$

**Calculate the Grey Relational Coefficient and Grey Relational Grade**

After normalizing the data, the Grey Relation Coefficient is calculated by using this formula.

$$\gamma[(x_0^*(k), x_i^*(k))] = \frac{\Delta_{min} + \xi\Delta_{max}}{\Delta_{0i}(k) + \xi\Delta_{max}} \qquad 0 < \gamma[(x_0^*(k), x_i^*(k))] \leq 1 \qquad (3)$$

Here, the term represents the distinguishing coefficient, which ranges between 0 and 1 and its value is usually taken as 0.5 and $\Delta_{0i}(k)$ is deviation sequence between $x_0^*(k)$ reference sequences and $x_i^*(k)$ is comparable sequence. The next step is finding the deviation sequence and it is calculated as;

$$\Delta_{0i}(k) = |x_0^*(k) - x_i^*(k)| \qquad (4)$$

The largest deviation and smallest deviation are analyzed as;

$$\Delta_{max} = \max \max \left| x_0^*(k) - x_j^*(k) \right| \qquad (5)$$

$$\Delta_{min} = \min \min \left| x_0^*(k) - x_j^*(k) \right| \qquad (6)$$

Grey Relational Grade is found by combining the Grey Relational Coefficient with their respective weight and it can be analyzed as;

$$\gamma(x_0^*, x_i^*) = \sum_{k=1}^{n} \beta_k \gamma\,[x_0^*(k), x_i^*(k)] \qquad (7)$$

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CJSSR
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Here,

$$\sum_{k=1}^{n} \beta_k = 1 \quad (8)$$

In equation 7 Grey Relation grade show the level of correlation between the reference sequence and comparable sequence. If both sequences are same then Grey Grade relation are equal to 1.

**Table 1: Performance Variables**

| Code | Indicators | Criteria |
|---|---|---|
| 1 | GDP Current LCU | Maximum Better |
| 2 | GDP Constant LCU | Maximum Better |
| 3 | GDP Per Capita Current LCU | Maximum Better |

## ANALYSIS, RESULTS AND DISCUSSION

Variables data that are code in Table 1 are obtained from WDI website and original data of 1-206 countries are given below in Table 2.

**Table 2: Original Dataset**

| Sr. | Country Name | 1 | 2 | 3 |
|---|---|---|---|---|
| 1 | Afghanistan | 1283441000000 | 1032712000000 | 31628 |
| 2 | Albania | 2149740803640 | 1703407882430 | 773931 |
| 3 | Algeria | 32039527000000 | 8382613094965 | 704516 |
| ….. | …... | ……. | ……. | ……. |
| ….. | …..... | ……. | ……. | ……. |
| 103 | Lao PDR | 217107907000000 | 138057205680000 | 28721750 |
| 104 | Latvia | 36103656000 | 27790914000 | 19210 |
| 105 | Lebanon | 573282051000000 | 43573201000000 | 99796875 |
| ….. | ….. | ….. | ….. | ….. |
| ….. | ….. | ….. | ……. | ……. |
| 204 | West Bank and Gaza | 19165500000 | 15635000000 | 3800 |
| 205 | Zambia | 493964301400 | 153970253100 | 24511 |
| 206 | Zimbabwe | 12425362491400 | 225175847100 | 773248 |

Since the units of measurement differ across the dataset, direct comparison of the raw data is not feasible. Therefore, it becomes necessary to normalize the values, scaling them within the [0, 1] range for uniform for analysis.

As the original dataset exhibits a ‘higher-is-better’ nature, the normalization of values is performed by using the Equation 1.

$$x_i^*(k) = \frac{x_i^{(O)}(k) - \min x_i^{(O)}(k)}{\max x_i^{(O)}(k) - \min x_i^{(O)}(k)}$$

From Table 1, First variable code for Afghanistan are analyzed as:

$$x_i^*(k) = \frac{x_i^{(O)}(k) - \min x_i^{(O)}(k)}{\max x_i^{(O)}(k) - \min x_i^{(O)}(k)} = \frac{11283441000000 - 85153300}{104350049951473000 - 85153300} = 0.00001$$

**Table 3: Reference Sequence & Comparable Sequence**

| Sr. | Country Name | 1 | 2 | 3 |
|---|---|---|---|---|

ISSN E: 3006-1466
ISSN P: 3006-1458
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
CJSSR
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
Vol.03 No.02 (2025)

| | | | | |
|---|---|---|---|---|
| | Reference Sequence max | 104350049951473000 | 15819880357074800 | 1165606577 |
| | Reference Sequence min | 85153300 | 64957000 | 745 |
| 1 | Afghanistan | 1283441000000 | 1032712000000 | 31628 |
| 2 | Albania | 2149740803640 | 1703407882430 | 773931 |
| 3 | Algeria | 32039527000000 | 8382613094965 | 704516 |
| …. | | | | |
| . | ….. | ….. | ….. | ….. |
| …. | | | | |
| . | ….. | ….. | ….. | ….. |
| 103 | Lao PDR | 217107907000000 | 138057205680000 | 28721750 |
| 104 | Latvia | 36103656000 | 27790914000 | 19210 |
| 105 | Lebanon | 573282051000000 | 43573201000000 | 99796875 |
| ….. | ….. | ….. | ….. | ….. |
| ….. | ….. | ….. | ….. | ….. |
| 204 | West Bank and Gaza | 19165500000 | 15635000000 | 3800 |
| 205 | Zambia | 493964301400 | 153970253100 | 24511 |
| 206 | Zimbabwe | 12425362491400 | 225175847100 | 773248 |

**Table 4: Normalize Comparable Sequence**

| Sr. | Country Name | 1 | 2 | 3 |
|---|---|---|---|---|
| | Reference Sequence | 1 | 1 | 1 |
| 1 | Afghanistan | 0.00001 | 0.00007 | 0.00003 |
| 2 | Albania | 0.00002 | 0.00011 | 0.00066 |
| 3 | Algeria | 0.00031 | 0.00053 | 0.0006 |
| ….. | ….. | ….. | ….. | ….. |
| ….. | ….. | ….. | ….. | ….. |
| 103 | Lao PDR | 0.00208 | 0.00873 | 0.02464 |
| 104 | Latvia | 0 | 0 | 0.00002 |
| 105 | Lebanon | 0.00549 | 0.00275 | 0.08562 |
| ….. | ….. | ….. | ….. | ….. |
| ….. | ….. | ….. | ….. | ….. |
| 204 | West Bank and Gaza | 0 | 0 | 0 |
| 205 | Zambia | 0 | 0.00001 | 0.00002 |
| 206 | Zimbabwe | 0.00012 | 0.00001 | 0.00066 |

When the value of the normalized sequence is generated Grey Relational Analysis involves determining the deviation sequence between the reference series and the comparable series for further calculations. The further values are analyzed as follow.

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CJSSR
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
Vol.03 No.02 (2025)

**Table 5: Deviation Sequence**

| Sr. | Country Name | 1 | 2 | 3 |
|---|---|---|---|---|
| | Reference Sequence | 1 | 1 | 1 |
| 1 | Afghanistan | 0.999987701 | 0.999934725 | 0.999973504 |
| 2 | Albania | 0.9999794 | 0.999892329 | 0.999336665 |
| 3 | Algeria | 0.999692962 | 0.999470126 | 0.999396219 |
| …... | …... | …... | …... | …... |
| …... | …... | …... | …... | …... |
| 103 | Lao PDR | 0.997919428 | 0.991273187 | 0.97535959 |
| 104 | Latvia | 0.999999655 | 0.999998247 | 0.999984158 |
| 105 | Lebanon | 0.994506165 | 0.997245672 | 0.914382609 |
| ….. | ….. | ….. | ….. | ….. |
| ….. | ….. | ….. | ….. | ….. |
| 204 | West Bank and Gaza | 0.999999817 | 0.999999016 | 0.999997379 |
| 205 | Zambia | 0.999995267 | 0.999990271 | 0.99997961 |
| 206 | Zimbabwe | 0.999880927 | 0.99998577 | 0.999337252 |

The Values of the above-mentioned table are analyzed by using Equation no 4.

$$\Delta_{0i}(k) = |x_0^*(k) - x_i^*(k)|$$

For Example, 1 for Afghanistan is analyzed as;

$$\Delta_{0i}(k) = |x_0^*(k) - x_i^*(k)| = |\,1 - \ 0.00001\,| = 0.999987701$$

The deviation sequence reflects the distance between a comparable sequence and the reference sequence. A deviation value near 1 indicates a significant difference between them, whereas a value approaching 0 suggest a high level of similarity.

When the value of the deviation sequence is calculated then analyzed the Grey Relation coefficient and it is analyzed as;

**Table 6: Grey Relational Coefficient**

| Sr. | Country Name | 1 | 2 | 3 |
|---|---|---|---|---|
| | Reference Sequence | 1 | 1 | 1 |
| 1 | Afghanistan | 0.333336066 | 0.33334784 | 0.333339221 |
| 2 | Albania | 0.333337911 | 0.333357262 | 0.333480806 |
| 3 | Algeria | 0.333401578 | 0.333451125 | 0.333467561 |
| ….. | ….. | ….. | ….. | ….. |
| ….. | ….. | ….. | ….. | ….. |
| 103 | Lao PDR | 0.333796325 | 0.335283974 | 0.33890043 |
| 104 | Latvia | 0.33333341 | 0.333333723 | 0.333336854 |
| 105 | Lebanon | 0.334558673 | 0.333946532 | 0.353511134 |
| ….. | ….. | ….. | ….. | ….. |
| ….. | ….. | ….. | ….. | ….. |
| 204 | West Bank and Gaza | 0.333333374 | 0.333333552 | 0.333333916 |
| 205 | Zambia | 0.333334385 | 0.333335495 | 0.333337864 |
| 206 | Zimbabwe | 0.333359796 | 0.333336496 | 0.333480676 |

ISSN E: 3006-1466
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CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
CJSSR
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
Vol.03 No.02 (2025)

For example, before analyzing the coefficient of 1 (variable) for Afghanistan, the highest deviation is 1 and the smallest deviation is 0.
Grey Relational coefficient is analyzed as,

$$\gamma[(x_0^*(k), x_i^*(k))] = \frac{\Delta_{min} + \xi\Delta_{max}}{\Delta_{0i}(k) + \xi\Delta_{max}}$$

$$= \frac{0+(0.5\times1)}{0.999987701+(0.5\times1)} = 0.333336066$$

A value of 0.5 was selected for the coefficient in Equation 3 during the computation of the Grey Relational Coefficient. Once the Grey Relational coefficients are computed the Grey Relational Grade is determined. The resulting of Grey relational grade is as follow.

**Table 7: Grey Relational Grade**

| Sr. | Country Name | Grey Relational Grade |
|---|---|---|
| 0 | Reference Sequence | 1 |
| 1 | Afghanistan | 0.330007632 |
| 2 | Albania | 0.330058073 |
| 3 | Algeria | 0.330105687 |
| …... | …... | …... |
| …... | …... | …... |
| 103 | Lao PDR | 0.332633641 |
| 104 | Latvia | 0.330001316 |
| 105 | Lebanon | 0.337265392 |
| ….. | ….. | ….. |
| ….. | ….. | ….. |
| 204 | West Bank and Gaza | 0.330000278 |
| 205 | Zambia | 0.330002556 |
| 206 | Zimbabwe | 0.330058399 |

The Grey Relational Grades are obtained as the weighted sum of the values presented in table 6 according to this the option with the highest correlation is considered the most suitable choice. The computation is performed by using equation 7.

$$\gamma(x_0^*, x_i^*) = \sum_{k=1}^{n} \beta_k \gamma\,[x_0^*(k), x_i^*(k)]$$

The grade for Afghanistan is analyzed as,

$$\gamma(x_0^*, x_1^*) = \sum_{k=1}^{n} \beta_k \gamma\,[x_0^*(1), x_1^*(k)]$$

$$= 0.3 \times (0.333336066 + 0.33334784 + 0.333339221) = 0.330007632$$

The reason of selecting $\beta_k$ as 0.3 is 1\3=0.33 according to equation 8. The performance of countries rank and grade are shown in Table 8.

**Table 8: Grey Relation Grade & Rank**

| Rank | Country Name | Grade | Rank | Country Name | Grade | Rank | Country Name | Grade |
|---|---|---|---|---|---|---|---|---|
| 0 | Reference Sequence | 1.0000 | 70 | Burundi | 0.3301 | 140 | Aruba | 0.3300 |
| 1 | Iran, Islamic Rep. | 0.9900 | 71 | Egypt, Arab Rep. | 0.3300 | 141 | Antigua and Barbuda | 0.3300 |
| 2 | Indonesia | 0.4575 | 72 | Comoros | 0.3300 | 142 | Gambia, The | 0.3300 |

ISSN E: 3006-1466
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CJSSR
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
Vol.03 No.02 (2025)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3 | Viet Nam | 0.3771 | 73 | Denmark | 0.3300 | 143 | Brunei Darussalam | 0.3300 |
| 4 | Korea, Rep. | 0.3442 | 74 | Djibouti | 0.3300 | 144 | San Marino | 0.3300 |
| 5 | Colombia | 0.3376 | 75 | Hong Kong SAR, China | 0.3300 | 145 | Barbados | 0.3300 |
| 6 | Lebanon | 0.3373 | 76 | Guinea-Bissau | 0.3300 | 146 | Virgin Islands (U.S.) | 0.3300 |
| 7 | Paraguay | 0.3340 | 77 | South Africa | 0.3300 | 147 | Puerto Rico | 0.3300 |
| 8 | Uzbekistan | 0.3333 | 78 | Turkiye | 0.3300 | 148 | Guam | 0.3300 |
| 9 | Japan | 0.3333 | 79 | Mauritius | 0.3300 | 149 | Portugal | 0.3300 |
| 10 | Lao PDR | 0.3326 | 80 | North Macedonia | 0.3300 | 150 | Zambia | 0.3300 |
| 11 | Somalia | 0.3325 | 81 | Brazil | 0.3300 | 151 | Andorra | 0.3300 |
| 12 | Chile | 0.3320 | 82 | Cabo Verde | 0.3300 | 152 | Ghana | 0.3300 |
| 13 | Iraq | 0.3319 | 83 | Faroe Islands | 0.3300 | 153 | Bulgaria | 0.3300 |
| 14 | Cambodia | 0.3314 | 84 | Saudi Arabia | 0.3300 | 154 | Curacao | 0.3300 |
| 15 | Guinea | 0.3312 | 85 | Nepal | 0.3300 | 155 | Libya | 0.3300 |
| 16 | Mongolia | 0.3312 | 86 | Qatar | 0.3300 | 156 | Greece | 0.3300 |
| 17 | Uganda | 0.3310 | 87 | Vanuatu | 0.3300 | 157 | Turkmenistan | 0.3300 |
| 18 | India | 0.3310 | 88 | Central African Republic | 0.3300 | 158 | St. Lucia | 0.3300 |
| 19 | Tanzania | 0.3309 | 89 | Germany | 0.3300 | 159 | Malta | 0.3300 |
| 20 | Costa Rica | 0.3308 | 90 | Ukraine | 0.3300 | 160 | Cyprus | 0.3300 |
| 21 | Hungary | 0.3307 | 91 | United Arab Emirates | 0.3300 | 161 | Bahamas, The | 0.3300 |
| 22 | Iceland | 0.3307 | 92 | Israel | 0.3300 | 162 | Bolivia | 0.3300 |
| 23 | China | 0.3306 | 93 | Macao SAR, China | 0.3300 | 163 | Belarus | 0.3300 |
| 24 | Russian Federation | 0.3306 | 94 | Bhutan | 0.3300 | 164 | Slovenia | 0.3300 |
| 25 | Myanmar | 0.3306 | 95 | Australia | 0.3300 | 165 | Estonia | 0.3300 |
| 26 | Nigeria | 0.3306 | 96 | Poland | 0.3300 | 166 | Grenada | 0.3300 |
| 27 | Kazakhstan | 0.3305 | 97 | Ethiopia | 0.3300 | 167 | Slovak Republic | 0.3300 |
| 28 | Gabon | 0.3304 | 98 | Canada | 0.3300 | 168 | Lithuania | 0.3300 |
| 29 | Equatorial Guinea | 0.3303 | 99 | Haiti | 0.3300 | 169 | Turks and Caicos Islands | 0.3300 |
| 30 | Syrian Arab Republic | 0.3303 | 100 | Seychelles | 0.3300 | 170 | St. Vincent and the Grenadines | 0.3300 |
| 31 | Cote d'Ivoire | 0.3303 | 101 | France | 0.3300 | 171 | Georgia | 0.3300 |
| 32 | Madagascar | 0.3303 | 102 | United Kingdom | 0.3300 | 172 | Dominica | 0.3300 |
| 33 | Pakistan | 0.3303 | 103 | Monaco | 0.3300 | 173 | Northern Mariana Islands | 0.3300 |
| 34 | Guyana | 0.3303 | 104 | Kyrgyz Republic | 0.3300 | 174 | Panama | 0.3300 |

ISSN E: 3006-1466
ISSN P: 3006-1458
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
CJSSR
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
Vol.03 No.02 (2025)

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|---|---|---|---|---|---|---|---|---|
| 35 | New Caledonia | 0.3302 | 105 | Maldives | 0.3300 | 175 | Croatia | 0.3300 |
| 36 | Congo, Dem. Rep. | 0.3302 | 106 | Italy | 0.3300 | 176 | Latvia | 0.3300 |
| 37 | Armenia | 0.3302 | 107 | Malaysia | 0.3300 | 177 | Tunisia | 0.3300 |
| 38 | Cameroon | 0.3302 | 108 | Singapore | 0.3300 | 178 | Lesotho | 0.3300 |
| 39 | Bangladesh | 0.3302 | 109 | Trinidad and Tobago | 0.3300 | 179 | Nauru | 0.3300 |
| 40 | Argentina | 0.3302 | 110 | Switzerland | 0.3300 | 180 | American Samoa | 0.3300 |
| 41 | French Polynesia | 0.3302 | 111 | Suriname | 0.3300 | 181 | Sierra Leone | 0.3300 |
| 42 | Mexico | 0.3301 | 112 | Ireland | 0.3300 | 182 | Bosnia and Herzegovina | 0.3300 |
| 43 | Senegal | 0.3301 | 113 | Morocco | 0.3300 | 183 | Solomon Islands | 0.3300 |
| 44 | Sri Lanka | 0.3301 | 114 | Spain | 0.3300 | 184 | Papua New Guinea | 0.3300 |
| 45 | Angola | 0.3301 | 115 | Netherlands | 0.3300 | 185 | Azerbaijan | 0.3300 |
| 46 | Congo, Rep. | 0.3301 | 116 | Mozambique | 0.3300 | 186 | Ecuador | 0.3300 |
| 47 | United States | 0.3301 | 117 | Romania | 0.3300 | 187 | Kuwait | 0.3300 |
| 48 | Rwanda | 0.3301 | 118 | Luxembourg | 0.3300 | 188 | Belize | 0.3300 |
| 49 | Philippines | 0.3301 | 119 | Moldova | 0.3300 | 189 | Palau | 0.3300 |
| 50 | Serbia | 0.3301 | 120 | Afghanistan | 0.3300 | 190 | Tajikistan | 0.3300 |
| 51 | Algeria | 0.3301 | 121 | Bermuda | 0.3300 | 191 | Fiji | 0.3300 |
| 52 | Benin | 0.3301 | 122 | Botswana | 0.3300 | 192 | Bahrain | 0.3300 |
| 53 | Burkina Faso | 0.3301 | 123 | Nicaragua | 0.3300 | 193 | Oman | 0.3300 |
| 54 | Norway | 0.3301 | 124 | New Zealand | 0.3300 | 194 | Tonga | 0.3300 |
| 55 | Malawi | 0.3301 | 125 | Mauritania | 0.3300 | 195 | Samoa | 0.3300 |
| 56 | Thailand | 0.3301 | 126 | Honduras | 0.3300 | 196 | Montenegro | 0.3300 |
| 57 | Czechia | 0.3301 | 127 | Guatemala | 0.3300 | 197 | Tuvalu | 0.3300 |
| 58 | Kenya | 0.3301 | 128 | Belgium | 0.3300 | 198 | El Salvador | 0.3300 |
| 59 | Niger | 0.3301 | 129 | Namibia | 0.3300 | 199 | Marshall Islands | 0.3300 |
| 60 | Mali | 0.3301 | 130 | Austria | 0.3300 | 200 | Jordan | 0.3300 |
| 61 | Jamaica | 0.3301 | 131 | Peru | 0.3300 | 201 | Kosovo | 0.3300 |
| 62 | Uruguay | 0.3301 | 132 | Cayman Islands | 0.3300 | 202 | West Bank and Gaza | 0.3300 |
| 63 | Sweden | 0.3301 | 133 | Eswatini | 0.3300 | 203 | Micronesia, Fed. Sts. | 0.3300 |
| 64 | Togo | 0.3301 | 134 | Cuba | 0.3300 | 204 | Kiribati | 0.3300 |
| 65 | Zimbabwe | 0.3301 | 135 | Finland | 0.3300 | 205 | Timor-Leste | 0.3300 |
| 66 | Albania | 0.3301 | 136 | Sint Maarten (Dutch part) | 0.3300 | 206 | Liberia | 0.3300 |
| 67 | Sudan | 0.3301 | 137 | St. Kitts and Nevis | 0.3300 | | | |
| 68 | Chad | 0.3301 | 138 | Sao Tome and Principe | 0.3300 | | | |
| 69 | Dominican Republic | 0.3301 | 139 | Channel Islands | 0.3300 | | | |

ISSN E: 3006-1466
ISSN P: 3006-1458
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
CJSSR
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
Vol.03 No.02 (2025)

Firstly, we gathered the data of 206 countries from WDI. Then compared the countries data with three variables and apply Grey Relational Grade Analysis.

## DISCUSSION

In this research paper titled GDP and Financial Services focused on evaluating the relationship between three main GDP indicators: GDP Current LCU, GDP Constant LCU, and GDP Per Capita Current LCU across 206 countries using GRA to compare them. GRA helped in identifying how closely these indicators are connected and how strongly they influenced the financial health of a country. Through this method, we were able to understand which countries better economically and how they compare to others like Iran, Islamic Rep, Indonesia, Viet Nam are very high GDP rank on the other hand Kiribati, Timor-Leste, and Liberia are very low GDP rank. Our analysis show that Pakistan rank 33$^{rd}$ (Table 8) among the countries studied, which means it is performing at medium level globally. This shows that while Pakistan has some stability in its economic structure, there is still no room for growth and improvement, especially in term of inflation control and income distribution. When we compare this with other studies, many researchers agree that using multiple GDP indicators gives a more complete picture of a country's economic health (Stiglitz et al., 2009; Coyle, 2014). Earlier studies focus on just nominal GDP or GDP per capita alone but our approach adds more depth by including inflation-adjusted figures as well. This research is useful because it helps government and policy makers understand which economic areas need attention. It can also support financial institutions and businesses in making better investment decisions by looking at economic stability from different angles. The researcher (Deng, 1989 and Liu et al., 2011) also support the use of GRA for complex economic comparisons especially when data is large and covers many countries. Overall, the finding suggest that Pakistan's GDP has shown improvement but still faces challenges, and tools like GRA can help track and understand these patterns more effectively.

**Contribution:** This study contributes by using GRA to compare GDP indicators across 206 countries. It highlights how different GDP measures relate to each other and shows Pakistan's economic standing. The results can help improves policy decisions and guide future research.

## CONCLUSION

This study compare's the Pakistan's economic performance with that of 206 other countries, aiming to understand Pakistan's stance in term of GDP and Financial Services. Using GRA, the study evaluated the relationship between three GDP Indicators that we are choose as a variable. The analysis involved multiple tables, Original Data Set, Reference Sequence & Comparable Sequence, Normalize Comparable Sequence, Deviation Sequence, Grey Relational Coefficient, Grey Relational Grade and the final Grey Relational Rank & Grade. These tables provided a structured comparison of countries, with Pakistan rank 33$^{rd}$ based on its Grey Relational Grade (Table 8). The results indicate that Pakistan is showing improvement in its economic performance, suggesting positive growth trends. However, while progress is evident, further efforts are necessary for continued development. Based on the findings, Pakistan appears to be moving in favorable direction, but there is still room for enhancing economic conditions.

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Vol.03 No.02 (2025)

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