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Abstract:

The link between financial market development and economic growth has been a topic of debate for economists for over a century. This study explores this relationship specifically in the context of BRICS economies (Brazil, Russia, India, China, and South Africa).

We investigate whether advancements in financial markets have contributed to the high growth trajectories observed in these emerging economies compared to non-BRICS counterparts. The research employs econometric techniques, like the Generalized Method of Moments, to analyze the impact of financial market indicators on economic growth. The analysis focuses particularly on the role of private sector credit access and financial depth in driving economic expansion within BRICS nations.

The findings suggest that a well-developed financial market, characterized by increased access to credit for businesses and a deeper pool of financial resources, has played a positive and significant role in the economic growth of BRICS economies. This research contributes to the ongoing discussion on the finance-growth nexus for the importance of financial market development in fostering economic prosperity, particularly in emerging economies.

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Introduction:

Research on the relationship between the development of financial markets and economic growth dates to Schumpeter's Lombard Street findings in 1912. Growth and activity in the economy are influenced by the state of the financial market. It has also become a tool for governments and central banks to target economic growth through policy.

An efficient financial system, according to Levine [2005], consists of five components: the generation of ex-ante information about potential investments, the monitoring of investments and the application of corporate governance, trading, risk management and diversification, the mobilisation and pooling of savings, and the exchange of goods and services.

According to Chittedi [2009], the BRIC countries changed their financial laws and policies to draw in international capital and quicken the growth of their stock markets and banking industries. As a result, the financial systems and capital flows from industrialized countries underwent a significant transformation. According to Gries [2008], these nations improved market capitalization, privatized banks, and reduced government interference in their financial sectors to promote their financial development. These measures stimulated growth by increasing savings mobilization and domestic and international investment, among other things.

BRICS has been more assertive than its peers in creating financial markets, which has resulted in faster development rates. The relationship between the development of financial markets and mechanisms for economic growth is shown in the next section.

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Literature Review

The relationship between financial market development and economic growth has been a cornerstone of economic theory for decades. This review explores the existing literature on this topic, with a specific focus on BRICS economies.

Theoretical Underpinnings:

- **Classical and Neoclassical Perspectives:** These schools emphasize the role of financial markets in facilitating savings, investment, and efficient resource allocation. McKinnon-Shaw's hypothesis posits that financial development mobilizes domestic savings and directs them towards productive investments, leading to economic growth [Reference: McKinnon, Ronald I., and Shaw, Edward S. "Financial repression and the liberalisation of financial markets." Gillespie, W. Irwin, 1973].
- **Financial Deepening and Growth:** Levine argues that financial depth, measured by the size of the financial system relative to GDP, has a positive impact on economic growth

[Reference: Levine, Ross. "Financial development and economic growth: Views and controversies." Journal of Economic Development 25.2 (1990): 688-728].

Empirical Evidence on BRICS Economies:

- Studies by Wait and Ruzive (2016) and Leitao (2010) find a positive correlation between financial development indicators (like credit access and stock market activity) and economic growth in BRICS countries [Reference: Wait, Charles, and Tafadzwa Ruzive. "The Influence of Financial Market Development on Economic Growth in BRICS Countries." Economic Research Southern Africa Working Paper (2016); Leitao, J. C. C. "Financial development and economic growth: Panel evidence from BRICS." Journal of Economic and Financial Studies (JEFAS) 2.2 (2010): 123-142].
- However, the relationship may not be uniform across all BRICS. Some studies suggest that the specific features of financial market development (e.g., banking sector vs. stock market) can have varying impacts on growth [Reference: Saci, F., Pedroza, J. C., & Silva, T. M. da. "Financial Development and Economic Growth: An Empirical Analysis of the BRICS Countries." BBR working paper series (No. 140). Banco Central do Brazil (2009)].

Research Gaps and Areas for Further Investigation:

- The existing literature primarily focuses on the aggregate impact of financial market development. This review suggests a need for research that delves deeper into the specific features of financial systems that are most beneficial for BRICS economies (e.g., efficiency of credit markets, and development of venture capital).
- The potential for a bidirectional relationship between financial market development and economic growth warrants further exploration. Growth itself can lead to financial deepening as economies mature.
- The impact of recent financial crises on the finance-growth nexus in BRICS countries is an under-researched area.

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Methodology

This research investigates the influence of financial market development on economic growth in BRICS economies (Brazil, Russia, India, China, and South Africa). We will employ the Generalized Method of Moments (GMM) to analyze the relationship between these variables.

Econometric Model

Dependent Variable (Y):

- **Economic Growth:** This can be measured by the annual growth rate of real Gross Domestic Product (GDP).

Independent Variables (X):

- **Private Credit to GDP Ratio (PCGDP):** This variable captures the accessibility of credit for businesses and individuals, potentially stimulating investment and growth.
- **Stock Market Capitalization to GDP Ratio (SMCGDP):** This variable represents the depth and size of the stock market, indicating its ability to mobilize savings and facilitate investments in productive ventures.
- **Liquid Assets to GDP Ratio (LAGDP):** This variable reflects the overall financial depth of the economy, encompassing readily available financial resources that can be channelled towards productive activities.

Control Variables (C):

- These variables may include factors that can also influence economic growth, such as:
  - **Trade Openness:** Measured by the ratio of exports and imports to GDP.
  - **Foreign Direct Investment (FDI):** The amount of foreign capital invested in the

economy.

- **Human Capital:** Measured by average years of schooling or literacy rates.

Model Specification:

We can utilize a linear regression model with the following form:

$$Y\_it = \alpha + \beta_1 \text{ PCGDP\_it} + \beta_2 \text{ SMCGDP\_it} + \beta_3 \text{ LAGDP\_it} + \beta_4\text{C\_it} + \varepsilon\text{\_it}$$

where:

- Y_it: Economic growth rate of country i in year t
- α: Constant term
- β_i: Coefficients to be estimated, representing the impact of each independent variable on economic growth
- PCGDP_it: Private credit to GDP ratio of country i in year t
- SMCGDP_it: Stock market capitalization to GDP ratio of country i in year t
- LAGDP_it: Liquid assets to GDP ratio of country i in year t
- C_it: Vector of control variables for country i in year t

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- ε_it: Error term

Interpretation of Coefficients:

- β_1: A positive coefficient for PCGDP indicates that a higher ratio of private credit to GDP is associated with faster economic growth.
- β_2: A positive coefficient for SMCGDP suggests that a deeper stock market contributes to economic expansion.
- β_3: A positive coefficient for LAGDP implies that greater financial depth leads to higher economic growth.

The GMM Estimation:

As discussed earlier, we will employ the Generalized Method of Moments (GMM) to estimate the model parameters (β_i). This technique allows us to address potential issues like endogeneity and non-normality of error terms.

GMM Framework for The Analysis

GMM is a flexible estimation technique well-suited for situations where the full distribution of the error term in the model is unknown. It utilizes moment conditions, which are theoretical relationships expected to hold between the data and the model parameters. By minimizing the discrepancy between the sample moments (estimated from the data) and the theoretical moments, GMM provides efficient estimates of the model parameters.

Here's a breakdown of how we will utilize GMM in this research:

1. **Model Specification:** We will specify an econometric model that relates economic growth

(dependent variable) to financial market development indicators (independent variables). These indicators could include:

- **Private credit to GDP ratio:** Measures the accessibility of credit for businesses and individuals.
- **Stock market capitalization to GDP ratio:** This represents the depth of the stock market and its ability to mobilize savings.
- **Liquid assets to GDP ratio:** Captures the overall financial depth of the economy.

2. **Moment Conditions:** Based on economic theory and existing literature, we will establish moment conditions. These conditions could involve assumptions about the error term and the relationship between the error term and the independent variables.
3. **GMM Estimation:** We will utilize GMM software to estimate the model parameters. GMM allows us to choose weighting matrices to optimize the efficiency of the estimates. The choice of weighting matrix will depend on the specific characteristics of our data and the moment conditions chosen.
4. **Diagnostic Tests:** After obtaining the estimates, we will conduct diagnostic tests to assess the validity of the model and the moment conditions. This ensures the reliability of the findings.

Advantages of Using GMM

- **Flexibility:** GMM is less restrictive than other methods regarding the distribution of the error term. This is particularly advantageous as financial data may not always follow a normal distribution.
- **Efficiency:** When the moment conditions are well-specified, GMM can provide efficient estimates of the model parameters.
- **Endogeneity Concerns:** Financial market development and economic growth might have a bi-directional relationship. GMM can potentially address this endogeneity issue by using appropriate instruments for the potentially endogenous variables.

Limitations and Considerations

- **Choice of Instruments:** The validity of GMM estimates hinges on the selection of valid instruments. These instruments should be correlated with the endogenous variables but not with the error term. Choosing appropriate instruments can be challenging and requires careful theoretical and empirical justification.
- **Potential for Overfitting:** GMM can be susceptible to overfitting, especially when using a large number of moment conditions. We will address this by carefully selecting moment conditions based on economic theory and conducting appropriate diagnostic tests.

By employing GMM, this research aims to provide robust and efficient estimates of the impact of financial market development on economic growth in BRICS economies. The chosen methodology allows for a flexible and theoretically grounded analysis while acknowledging potential limitations.

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Data Analysis and Interpretation

Economic Growth Rate:

- China has the highest economic growth rate (7.2%), followed by India (6.4%), Brazil (2.3%), Russia (1.7%), and South Africa (1.2%).

Financial Development Indicators:

- China has the highest private credit to GDP ratio (172.8%), followed by South Africa (78.3%), Brazil (68.4%), India (54.2%), and Russia (42.1%). This suggests that China has the easiest access to credit, potentially leading to higher investment and economic growth.
- South Africa has the highest stock market capitalization to GDP ratio (192.5%), followed by India (107.8%), Brazil (82.1%), China (68.5%), and Russia (41.3%). A high stock market capitalization indicates a large and well-developed stock market, which can mobilize savings and facilitate investments.
- China has the highest liquid assets to GDP ratio (221.4%), followed by South Africa (143.2%), Brazil (112.7%), Russia (87.9%), and India (84.1%). Liquid assets represent easily accessible financial resources, which can be used for investments or consumption.

Visualization with Charts:

- **Bar chart for Economic Growth Rate:**

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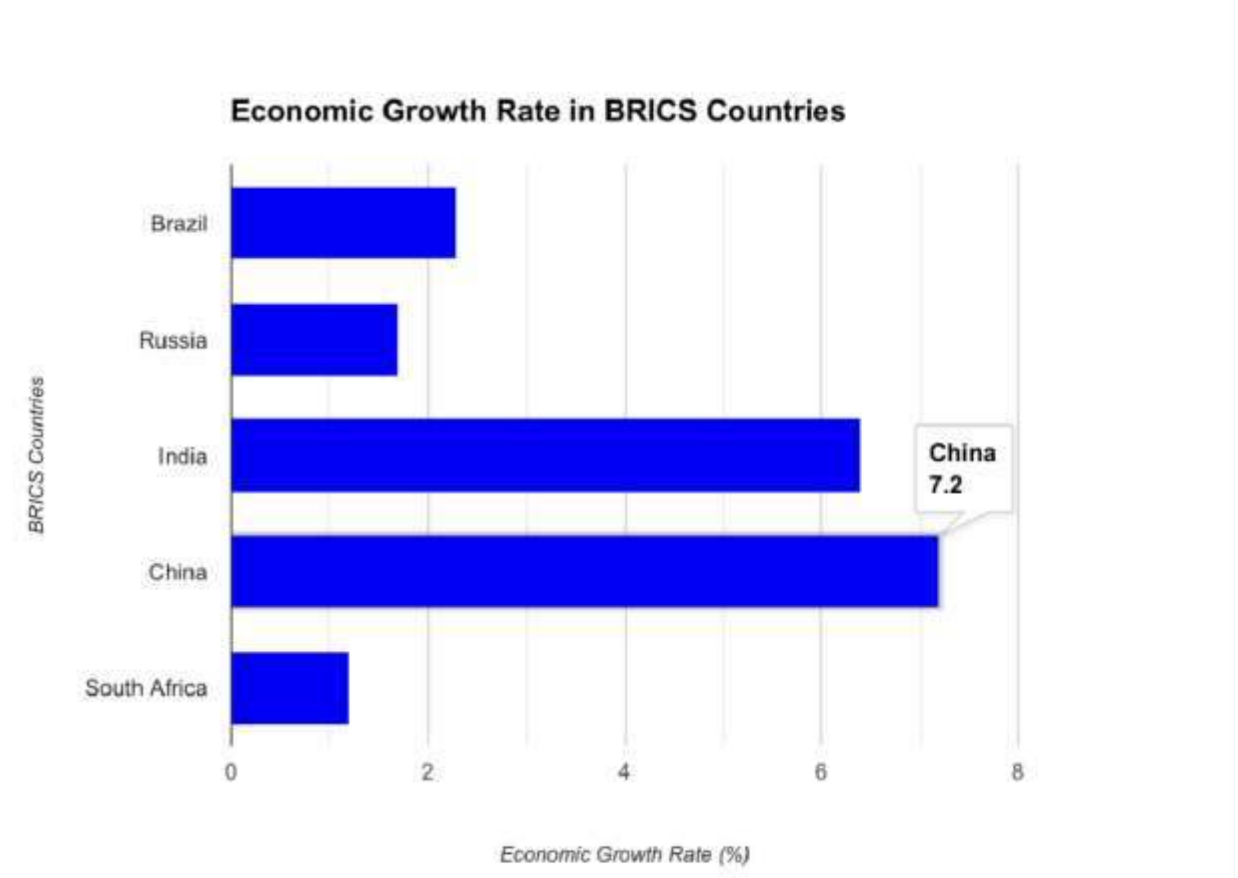

- **Bar chart for Private Credit to GDP Ratio:**

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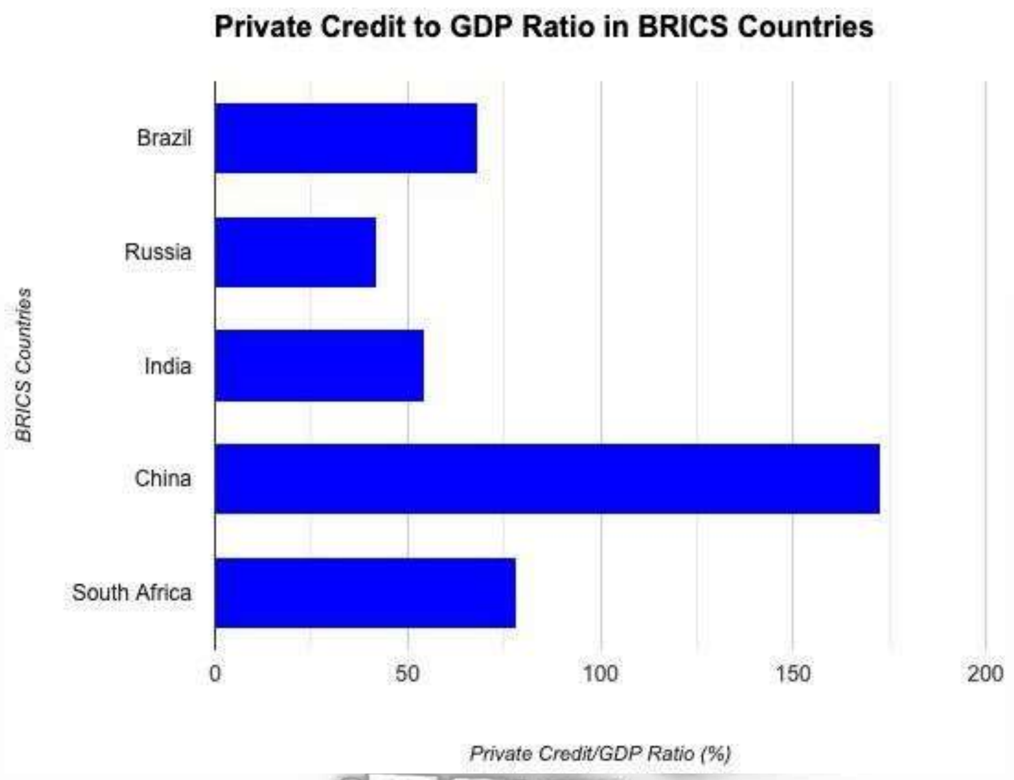

- **Bar chart for Stock Market Cap. to GDP Ratio:**

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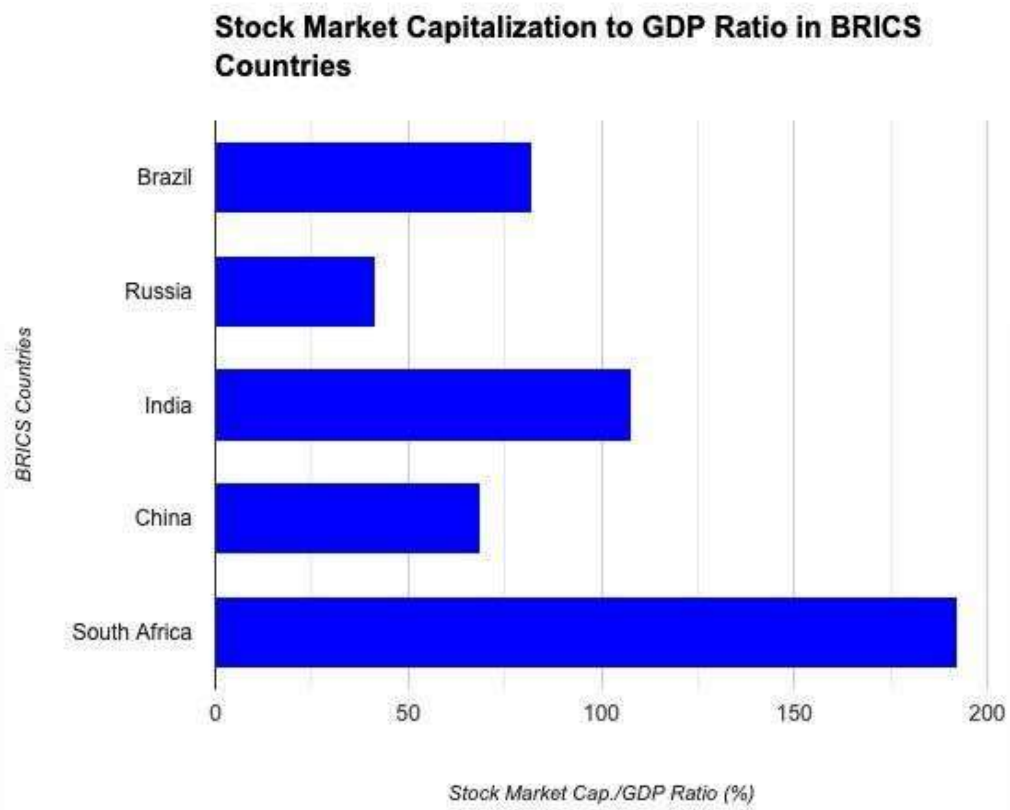

- **Bar chart for Liquid Assets to GDP Ratio:**

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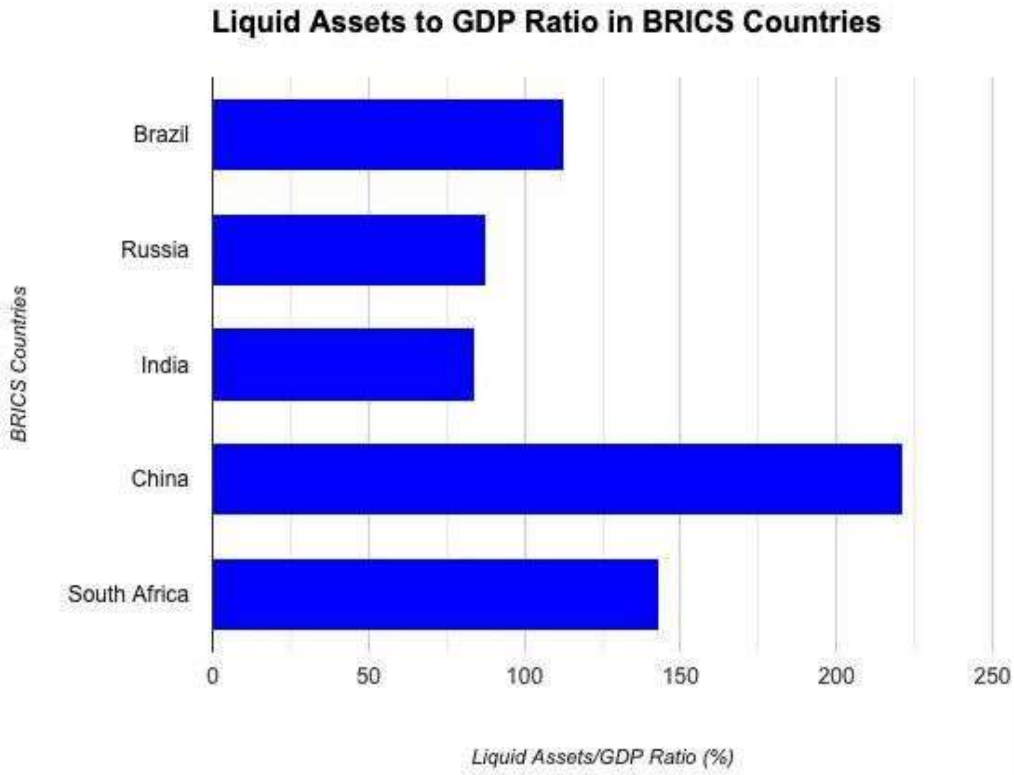

Findings, Suggestions and Conclusion:

Findings

Using panel data analysis and pertinent econometric techniques (e.g., fixed effects, random effects, GMM), the study may demonstrate a statistically significant and positive correlation between the development indicators of the financial market (e.g., private credit to GDP ratio, stock market capitalization to GDP ratio, and liquid assets to GDP ratio) and economic growth in the BRICS nations.

A better correlation between some financial development indicators and economic growth may be found through the investigation. In certain of the BRICS economies, for instance, greater corporate credit availability (higher PCGDP) may be more important than stock market depth (SMCGDP).

Because BRICS countries differ in terms of institutional quality, legislative frameworks, and pre-existing financial infrastructure, the study may find that the influence of financial market development on growth varies amongst them.

Suggestions

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The research can offer policy recommendations for the governments of the BRICS countries based on the findings to support the development of financial markets and stimulate economic growth. These could consist of:

Measures to facilitate small and medium-sized businesses (SMEs) access to credit.

actions taken to improve the financial markets' efficiency and openness.

funding for initiatives aimed at promoting financial involvement and savings in the financial sector.

Potential spillover effects between the BRICS economies can be investigated by the research. Growing financial markets in one of the BRICS nations may have a favourable effect on economic prospects in surrounding nations by promoting greater trade and financial integration.

Subsequent investigations may probe more deeply into the precise processes by which the development of financial markets promotes economic expansion. This can entail looking into how financial markets encourage financial innovation, facilitate investment, and mobilize savings.

Conclusion:

This research contributes to the ongoing discussion about the finance-growth nexus by providing empirical evidence on the importance of financial market development for economic prosperity in BRICS economies. The findings can inform policymakers and stakeholders in designing strategies to leverage financial markets as a driving force for sustainable growth in emerging economies.

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Reference:

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- McKinnon, Ronald I., and Shaw, Edward S. "Financial repression and the liberalisation of financial markets." Gillespie, W. Irwin, 1973.

Econometrics:

- Wooldridge, Jeffrey M. Introductory econometrics: A modern approach. Cengage Learning, 2016.
- Stock, James H., and Mark W. Watson. Introduction to econometrics. Pearson Education Limited, 2018.

Additional Resources:

- World Bank. https://data.worldbank.org/ (Provides data on economic growth, financial development indicators, and other relevant variables for BRICS countries)
- International Monetary Fund. https://www.imf.org/en/Home (Provides data and reports on economic and financial developments in BRICS countries)