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The Relationship Banking Stability, Exchange Rate, Foreign Direct Investment and Economic Growth in BRICS Countries: A Panel Data Evidence

A. Harits Fadilah[1], **Ariodillah Hidayat**[2*], **Siti Rohima**[3], **Rasyida Pertiwi**[4], **Anna Yulianita**[5] and **Xenaneira Shodrokova**[6]

[1] Department of Economic Development, Faculty of Economics, Sriwijaya University, Indonesia
e-mail: haritsfadilah23@gmail.com
https://orcid.org/0009-0000-4630-2301

[2] Department of Economic Development, Faculty of Economics, Sriwijaya University, Indonesia
https://orcid.org/0000-0002-6520-5985
e-mail: ariodillahhidayat@fe.unsri.ac.id

[3] Department of Economic Development, Faculty of Economics, Sriwijaya University, Indonesia
https://orcid.org/0000-0002-9196-7924
e-mail: sitirohima@unsri.ac.id

[4] Department of Economic Development, Faculty of Economics, Sriwijaya University, Indonesia
https://orcid.org/0000-0003-3427-9938
e-mail: rasyidapertiwi@fe.unsri.ac.id

[5] Department of Economic Development, Faculty of Economics, Sriwijaya University, Indonesia
e-mail: annayulia@unsri.ac.id
https://orcid.org/0000-0001-8744-3274

[6] Department of Economic Development, Faculty of Economics, Sriwijaya University, Indonesia
e-mail: xenaneira12@gmail.com
https://orcid.org/0009-0003-8034-6617

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Abstract: *This study aims to analyze the effect of banking stability, exchange rates, and external debt on economic growth in BRICS countries (Brazil, Russia, India, China, and South Africa) during the period 2011-2020. The data used in this study is panel data from five BRICS countries, obtained from the International Monetary Fund (IMF) and the World Bank. The method used is a panel data regression model using the Fixed Effect method. This model makes it possible to account for the fixed effects of time as well as the fixed effects of individual states in regression analysis. The results of the analysis show that banking stability has a significant negative influence on economic growth in BRICS countries. On the other hand, exchange rates and external debt have a significant positive impact on economic growth. These findings indicate that policies that promote banking stability, prudent exchange rate management, and effective use of external debt can support sustainable economic growth in BRICS countries. The results of the analysis show that banking stability has a significant negative influence on economic growth in BRICS countries. On the other hand, exchange rates and external debt have a significant positive impact on economic growth. These findings indicate that policies that promote banking stability, prudent exchange rate management, and effective use of external debt can support sustainable economic growth in BRICS countries.*

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G21; F21; O40.

Keywords: *Banking Stability; Exchange Rate; Foreign Direct Investment; Economic Growth; BRICS.*

* Corresponding author

Introduction

BRICS (Brazil, Russia, India, China and South Africa) are the top five developing countries in the world (Chen, 2022). The BRICS countries have very large and diverse populations. With a combined population of over 3 billion people or 40 percent of the world's total population, BRICS provide a broad home market and potentially a significant consumer base. The total GDP of BRICS member countries contributes about a quarter of global GDP. This consumer potential provides opportunities for strong economic growth, especially in sectors such as trade, industry, and services (Siddiqui, 2016). BRICS has abundant natural resources. These countries are rich in natural reserves such as oil, natural gas, metals, and other mineral resources. This wealth of resources provides great comparative advantages, opening up opportunities for the energy, mining, and heavy industry sectors. Efficient utilization of these resources can contribute significantly to economic growth and increased GDP (Rahim et al., 2021). These countries have demonstrated the ability to compete in international markets in a variety of sectors, including manufacturing, financial services, information technology and professional services (Luckhurst, 2013).

Fluctuating exchange rates can have an impact on uncertainty for business people and foreign investors (Hillier & Loncan, 2019). Not only that, exchange rate instability can push up import costs. The weak domestic currency causes the cost of importing goods and services to rise, as a weaker domestic currency is able to buy less foreign currency (Mirchandani, 2013). On the other hand, the rising cost of imports causes the country's trade balance to be minus, because the country will pay more in domestic currency for the same imports (Arize et al., 2017). Changes in exchange rate policies, including fixed or free-floating exchange rate systems can create fluctuations and uncertainty in BRICS exchange rates, ultimately affecting international trade, investment, and overall economic stability.

BRICS spans different levels of economic development plays a key role in the global economy and shows diverse responses to crises. The COVID-19 pandemic that hit in 2020 resulted in a significant decline in the economic growth of BRICS countries, with instability in the banking sector being one of the main factors. The effects of COVID-19 have had an impact on many foreign investors withdrawing their investments from the global market (Sheth et al., 2022). This is due to the too risky capital invested by investors due to the pandemic due to risky economic uncertainty (Conlon & McGee, 2020). The impact of the pandemic has expanded in global economic stability, money markets, and growth opportunities for a country (Bai et al., 2021); Andaiyani et al., (2022). Investors tend to reduce investments and even postpone investments, and save their funds for risk prevention. In BRICS countries with high competitiveness, investments are very attractive in infrastructure, industry, as well as other productive sectors. In addition, the implementation of different foreign exchange regimes in BRICS countries affects foreign investment in the country which ultimately affects economic growth.

In the face of the potential and uniqueness of BRICS countries, it is important to understand the factors that affect GDP in BRICS countries. Exchange rate fluctuations, changes in exchange rates, and FDI are some of the factors that need to be studied in depth whether they affect GDP. Through research into these factors, it can identify challenges, evaluate appropriate policies, and plan strategic measures that can boost economic growth and maximize the potential of BRICS countries.

Literature Review

Financial system stability is a state in which financial mechanisms work correctly in pricing, resource allocation and risk management, supporting economic growth (Demirguc-et al., 2017).

In the context of this study, the bank's Z-score is used as an indicator of banking stability. The bank Z-score measures the level of security and financial health of a bank by comparing the value of bank assets and the value of bank debt (Berglund & Mäkinen, 2019). The bank's Z-score also considers the bank's profitability ratio and the risk taken by the bank in making a profit (Elnahass et al., 2021).

Analysis of exchange rate and foreign exchange regimes in several countries became an important study by several previous studies. Jiménez-Rodríguez & Morales-Zumaquero (2020) examined the exchange rate pass-through (ERPT) of BRICS countries, showing that ERPT is higher for emerging markets with mostly floating exchange rates (Brazil, Russia and South Africa) than other BRICS countries. According to Jiang (2019) in facing various economic challenges, BRICS countries must choose and implement an exchange rate system that suits their respective economic needs and conditions, in order to achieve stability and sustainable economic growth. Another study by Klotz (2018) shows that floating exchange rates have become a better economic regime for sustainable economic growth in Nigeria.

In their study, Jayakumar et al. (2018) used a panel vector error correction (VECM) model to study the interplay between bank competition, bank stability and economic growth in a panel of 32 European countries over the period 1996-2014, focusing on the direction of Granger causality between variables. Empirical evidence shows that banking competition and banking stability are key drivers of long-term economic growth in European countries. Creel et al., (2015) Examining economic performance and financial stability in the EU using GMM panel data, found that financial instability has a negative effect on economic growth. Article Jokipii & Monnin (2013) Studying the relationship between sector stability levels banking and GDP with VAR panel method for 18 OECD samples. The results show that the stability (instability) of the banking sector resulted in significant overestimates of GDP growth in the following quarters.

The impact of exchange rates on GDP has been studied in various countries. Habib et al., (2017) explored the impact of exchange rate fluctuations on economic growth based on his five-year average data for a panel of over 150 countries, and found that both yen appreciation and depreciation have a significant impact on GDP growth. Using the Babubudjnauth & Seetanah (2021) autoregressive vector, it is clear that changes in the real exchange rate (RER) have a contractionary effect on GDP growth in the short term, but an expansionary effect in the long term.

Study Amri (2016) examining the relationship between energy consumption, FDI inflows and GDP in 75 countries during the period 1990-2010, these results show that there is evidence of a two-way relationship regarding FDI and GDP. Research Nosheen (2013) examining the effect of FDI on Pakistan's GDP, found that there is a long-term relationship between GDP and FDI. Szkorupová (2014) Analyzing the relationship between foreign direct investment, economic growth and exports in Slovakia, the results reveal the positive impact of foreign direct investment and the positive impact of exports on gross domestic product.

Data and Methods

The data used in forming the constituent variables of the research model were obtained from sources from the World Bank and the International Monetary Fund. The data in this study is in the form of secondary data, period from 2011-2020. This study covers 5 countries included in the BRICS group of countries, namely Brazil, Russia, India, China and South Africa. The operational variables definition in this study are explained in Table 1.

Table 1. Variable operational definition

Variable	Operational definition	Unit	Data sources
Gross Domestic Product (GDP)	Percentage change in the total value of a country's Gross Domestic Product (GDP) from year to year.	%	World Bank
Bank Z-Score (BZS)	Determines the likelihood that a country's commercial banking sector will fail.	Score	World Bank
Exchange Rate (ER)	The amount of one currency needed to earn or pay for units of another currency.	LCU per US$, period average	World Bank
Foreign Direct Investment (FDI)	The total amount of foreign direct investment that flows into a country. FDI is calculated as the sum of annual capital, long-term capital and short-term capital.	Million US$	International Monetary Fund (IMF)

Source: World Bank and International Monetary Fund (IMF), 2023.

The selection of the BRICS region as a sample for analysis is particularly relevant because these countries cover different levels of economic development and industrial structure, play a key role in the global economy, and show diverse responses to crises. Based on Figure 1, the economic growth trend of the BRICS region has changed over the past ten years (Wang & Luo, 2022). The pandemic that hit the world in 2019 resulted in a crisis that spread to various sectors, so that the economic growth rate of the five countries decreased significantly in 2020. Russia became the country with the lowest economic growth of -2.6 percent due to the economic crisis. In addition, Brazil saw a GDP decline of -3.8 percent, followed by the GDP levels of South Africa and India by -6.3 percent and -6.5 percent, respectively. China's GDP level is only 2.2 percent, GDP can fall because companies produce fewer goods and services (Boachie et al., 2021). One of the main factors contributing to the decline in GDP in BRICS countries is instability in the banking sector (Ntarmah et al., 2019). Global economic disruptions triggered by the COVID-19 pandemic have put significant pressure on financial institutions around the world, including in BRICS countries (Dunford & Qi, 2020). Economic uncertainty and declining revenues lead to increased credit risk and decreased availability of funds for companies and consumers (Didier et al., 2021).

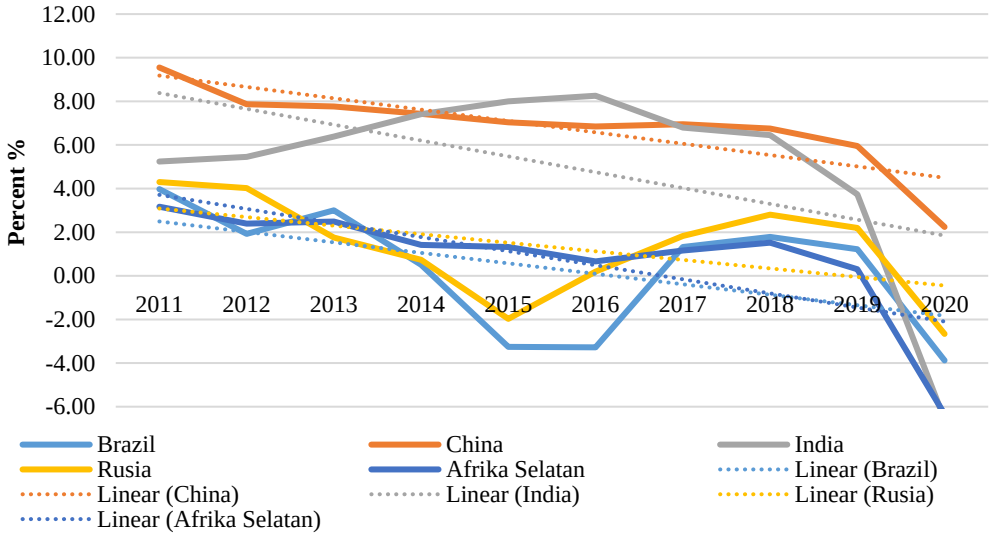

Fig 1. Gross Domestic Product growth of 5 BRICS countries

Source: World Bank (data processed), 2023.

The analysis method technique used is panel data regression studies combine cross-sectional and time series data, and thus have spatial and temporal dimensions (Koroma et al., 2023). Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) approaches are the three methods used in research estimation models. Of the three estimation approaches, the best will be selected and will be used in this study. Model selection tests, such as the Chow test, Hausman test, and Lagrange Multiplier, are used to determine the optimal estimation strategy. The following regression equation in this study is as follows:

$$GDP_{ti} = \beta 0 + \beta 1 BZS_{it} + \beta 2 ER_{it} + \beta 3 FDI_{it} + \varepsilon_{it} \quad (1)$$

Where GDP explains the dependent variable of gross domestic product growth, β0 describes the constant, β1, β2, β3 describes the regression coefficient of the study, BZS_{it} describes the z-score bank in country i year t, ER_{it} describes the exchange rate in country i year t, FDI_{it} explains Foreign Direct Investment in country i year t, and ε_{it} explains error in country i year t.

Results and Discussion

Trend of Gross Domestic Product BRICS Countries

Based on Figure 2, China is the country with the highest GDP growth rate in the BRICS countries. China has implemented pro-investment and pro-export economic policies (Liu et al., 2016). The Chinese government is increasing investment in strategic sectors such as manufacturing, technology, infrastructure, and energy. In addition, China is becoming a global manufacturing production center capable of producing goods exported in all parts of the world (Mancheri, 2015). The Chinese state is able to invest significant resources in research and development, and strengthen innovation capacity in various sectors, such as information technology, artificial intelligence, and green technology.

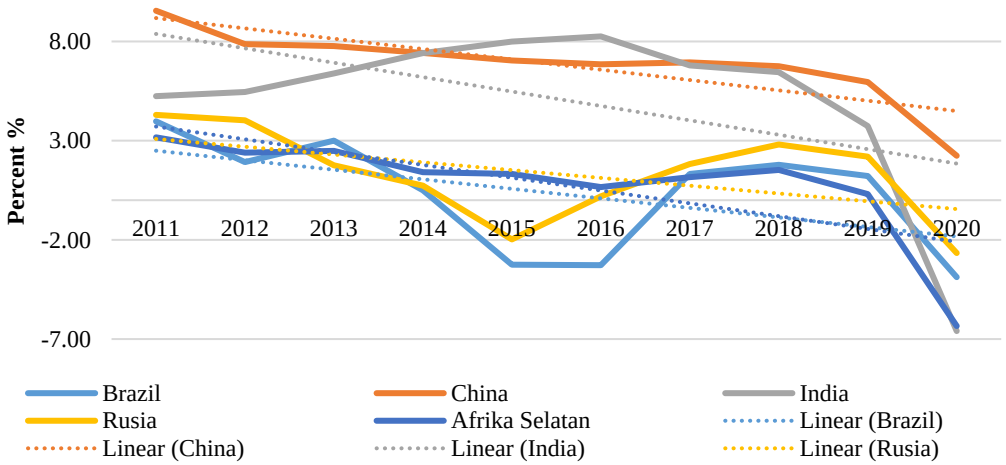

Fig 2. Trend of Gross Domestic Product in BRICS countries

Source: World Bank (data processed), 2011-2020.

India and South Africa were the most affected countries when Covid-19 hit the decline in economic growth. India and South Africa have considerable economic dependence on various sectors directly affected by the Covid-19 pandemic. For example, India has a large service sector, including tourism, retail, and the entertainment industry, all of which were severely affected by physical restrictions and lockdowns during the Covid-19 pandemic (Xiang et al., 2021). On the other hand, South Africa is experiencing serious impacts on the tourism sector as well as mining. India and South Africa are facing challenges in responding to the pandemic due to limited infrastructure and high levels of poverty. The large population in both countries is a

factor in the faster spread of the virus, especially in densely populated urban areas (Boterman, 2020).

Trend of Banking Stability in BRICS Countries

Based on Figure 3, BRICS countries have stable banking. Strict supervision by all BRICS member countries to maintain banking sector stability and financial system resilience in the region. India and China banking stability improved during Covid-19. China and India have taken steps to encourage banking digitalization to improve financial inclusion, efficiency, and accessibility for the public. China has become one of the global leaders in digital payments (Chorzempa, 2021). Government policies and support have resulted in an increase in the use of digital payment methods such as Alipay and WeChat Pay (Plantin & de Seta, 2019). The Chinese government is encouraging fintech innovation as well as developments in financial technology, including in payments, online lending, and digital wealth management. Technologies including machine learning, big data, and risk analysis have been utilized to provide more efficient and innovative financial services.

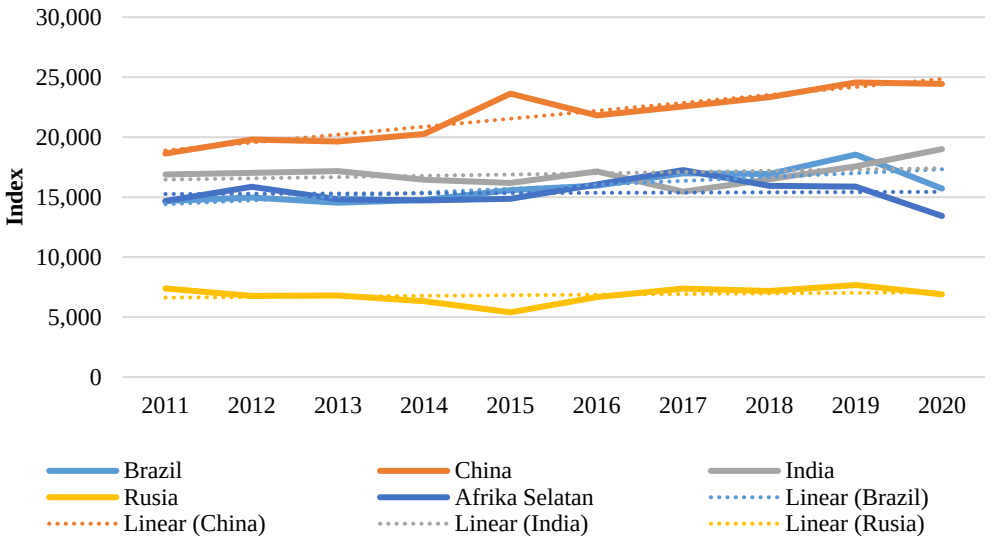

Fig 3. Trend of banking stability in BRICS countries

Source: World Bank (data processed), 2011-2020.

The improvement in banking stability in India during Covid-19 is the result of the implementation of several banking digitalization policies. The Jan Dhan Yojana program is an initiative of the Indian government to build financial inclusion by providing access to bank accounts to unbanked citizens (Barik & Sharma, 2019). The program has promoted increased accessibility and penetration of banking in India. The Government of India is implementing the adoption of the Unified Payments Interface (UPI) as an easy and secure means of digital payments (Saha & Kiran, 2022).

Trend of Exchange Rate BRICS Countries

The exchange rate is the value of a country's currency expressed in terms of another country's currency (Sari et al., 2023). Based on Figure 4, the Russian exchange rate depreciated significantly in 2015 and 2016. In 2014, Russia faced economic sanctions from Western countries in response to Russia's intervention in Ukraine (Bagheri & Akbarpour, 2016). These sanctions are in the form of banning access to international financial markets for a number of Russian banks and companies, which has an impact on the weakening of the ruble. In 2014-2015, the ruble experienced significant depreciation against foreign currencies, such as the US

dollar and the euro (Dreger et al., 2016). The depreciation of the ruble can affect the growth of the exchange rate.

The movement of the Brazilian exchange rate tends to fluctuate and show instability. Brazil implements a floating exchange rate by Brazil's central bank, namely "Banco Central do Brasil," aiming to provide flexibility in exchange rates for the Brazilian real currency (Filho, 2019). However, in 2015 and 2016 Brazil was hit by a continuous economic recession, even seen from the value of GDP showing minus growth (Serrano & Summa, 2015). In the midst of a recession, fluctuations in the exchange rate of the Brazilian real currency (BRL) became more unstable. The recession had an impact on the decline in demand for Brazilian assets, including the depreciating value of the BRL currency. In 2014, Brazil was also faced with unstable politics due to a corruption scandal known as Operation Capture Hands Lava Jato. The impact of this political impact for the following years (Barik & Sharma, 2019). Efforts to respond to the recession and weakening of the BRL exchange rate, the Central Bank of Brazil (Banco Central do Brasil), implemented several interventions as well as monetary policies.

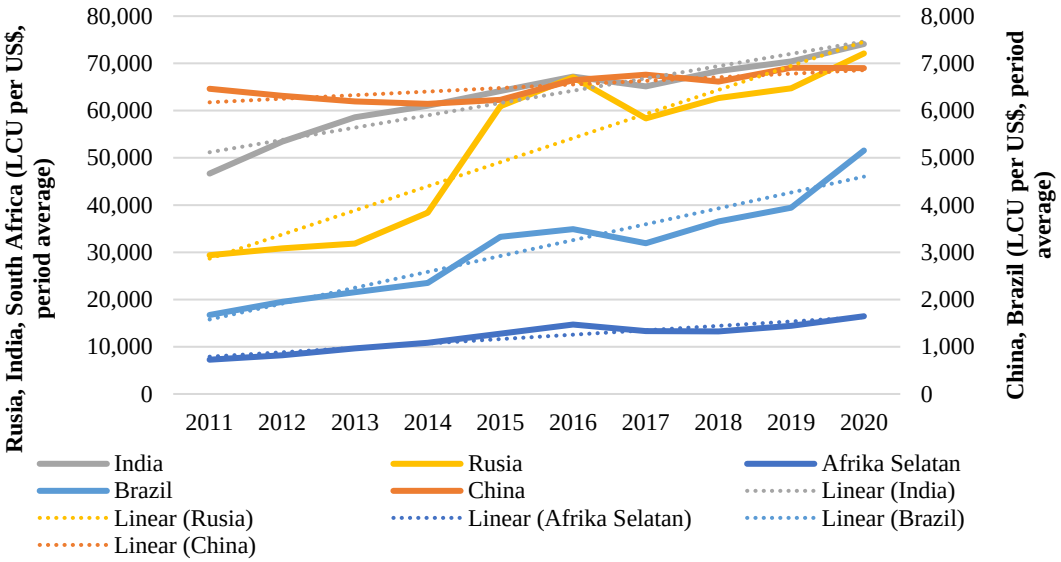

Fig 4. Trend of exchange rates in BRICS countries

Source: World Bank (data processed), 2011-2020.

China's currency exchange rate tends to be more stable than other BRICS countries. This happened because of the implementation of the Fixed Exchange Rate system in China by the People's Bank of China (PBOC) (Chkili & Khuong, 2014). By controlling the exchange rate, the Chinese government is able to control domestic inflation. As a major exporting country, sharp changes in exchange rates can affect the prices of imported goods and raw materials, which can affect the inflation rate in the country. The fixed exchange rate system also provides advantages for Chinese exports. Setting a low exchange rate against foreign currencies, has the effect that Chinese products can become cheaper on the international market, which increases the competitiveness of their products and can increase exports. When countries implement fixed exchange rates, it provides better resilience to international financial market shocks (Popescu et al., 2017). During the global financial crisis, countries with fixed exchange rates tend to have greater protection than countries with free-floating exchange rates such as Brazil, Russia, and South Africa.

Apart from China, fluctuations in India tend to be lower and stable. This is due to the exchange rate system applied by India using the Managed Float Exchange Rate. With a managed exchange rate, India can create relative external stability in the short term (Turner, 2014). The Reserve Bank of India (RBI) seeks to avoid sharp and unpredictable exchange rate fluctuations,

thereby helping to reduce the risk of instability in international trade and capital flows. The exchange rate floating with the intervention allowed the Indian rupee to adjust to changing economic conditions, including fluctuations in demand and supply of foreign exchange (Frankel, 2019). This is able to provide an opportunity in achieving trade balance by correcting external imbalances that may occur. Prudent exchange rate policy can control import inflation. With the depreciation of the rupee exchange rate, the price of imported goods tends to increase and has an impact on inflation. RBI intervention can help reduce inflationary pressures as a result of outsized fluctuations in the exchange rate.

Trend of Foreign Direct Investment (FDI) BRICS Countries

The trend of FDI movement in all BRICS countries shows an increase, especially Brazil and South Africa (Figure 5). Brazil is a country with abundant natural resources, including mines, oil, as well as agricultural products. The potential of the resource is an attraction for foreign investors. In 2014, Brazil hosted two FIFA World Cup events and in 2016 hosted the Olympics (Gursoy et al., 2017). The events attracted investors in infrastructure as well as the tourism sector, and introduced Brazil more broadly to the international world. Brazil also has a fairly strict foreign exchange regime to control capital flows. On the other hand, South Africa is the largest economy in Africa and a gateway for foreign companies to enter regional markets across the African continent (Alden & Schoeman, 2015). The South African government encourages pro-investment policies to encourage FDI, as well as fiscal incentives, uncomplicated licensing, and less stringent regulations. South Africa also has a relatively free foreign exchange policy (Boateng et al., 2020). The country does not impose strict foreign exchange controls, allowing businesses and individuals to transact with foreign currencies with relative ease. The South African Reserve Bank, however, is able to intervene in the foreign exchange market if necessary to maintain rand exchange rate stability (ZAR) and protect economic stability.

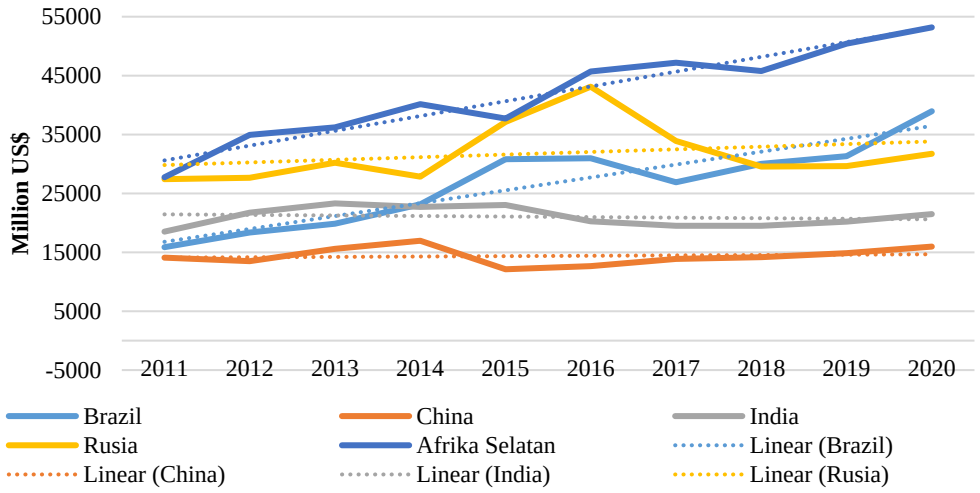

Fig 5. Trend of foreign direct investment (FDI) in BRICS countries

Source: International Monetary Fund (IMF), 2011-2020.

The FDI trend in India tends to fall, while the FDI trend in China tends to stagnate. India faces several bureaucratic challenges as well as complicated regulations in doing business. Despite some efforts to improve the investment climate, bureaucratic constraints and complex regulatory procedures may discourage foreign investors from investing in India and prefer other BRICS countries that offer easier and more efficient procedures. India's limited infrastructure, inadequate transport network and lack of electrical energy, can be an obstacle for foreign companies that need good infrastructure to run their business operations (Lall & Geetha, 2020). The downward trend in FDI in India is a result of the implementation of a strict foreign

exchange regime or lack of flexibility in the foreign exchange system that affects the interest of foreign investors (Mohanty & Bhanumurthy, 2014). If the process of converting foreign currency into Indian rupees is complicated, this hinders foreign investors who want to invest in India.

On the other hand, the stagnant movement that occurred in FDI in China was caused by several factors. Along with economic growth, labor costs in China have also increased (Jorgenson & Vu, 2016). As a result, some companies that previously relied on China as a production base to look for alternatives with lower labor costs in other countries. The trade conflict between China and the United States prompted uncertainty for companies looking to invest. Trade tensions and the threat of tariffs or trade restrictions may cause some companies to be cautious in making investment decisions (Chong & Li, 2019). The stagnant FDI in China is also a result of strict foreign exchange controls, known as the "Quota-based Capital Account Convertibility" system.

Regression Results

In selecting the regression model used in this research, researchers used the Chow, Hausman and LM tests. Based on the results of the Chow and Hausman probability tests in Table 2, it shows that the best model in this research is Fixed Effect Cross-Sectional Weight (GLS).

Table 2. Fixed Effect Cross-Sectional Weight (GLS) Regression Results

Dependent Variable: GDP			
Variable	Coefficient	t-Statistic	Prob
C	-151562.9	-7.284326	0.0000
BZS	-0.582968	-2.838924	0.0073
ER	16244.80	8.725278	0.0000
FDI	1.744295	2.765314	0.0088
Fixed Effects (Cross)			
_BRAZIL-C	24485.61		
_CHINA-C	10927.88		
_INDIA-C	-22236.11		
_RUSIA-C	-12545.54		
_SOUTH AFRICA-C	-865.4835		
R-squared	0.950447		
Adjusted R-squared	0.941072		
F-statistic	101.3827		
Prob(F-statistic)	0.000000		
Chow Test			0.0000
Hausman Test			0.0000

Source: Data processed, (2023).

Based on the results of the regression estimation in Table 2, a model of this research equation was formed:

$$\widehat{\mathrm{GDP}_{it}} = -151562.9 - 0.58968\mathrm{BZS}_{it} + 16244.80\mathrm{ER}_{it} + 1.77429\mathrm{FDI}_{it} + \varepsilon_{it} \quad (2)$$

Based on the Equation 2, bank variable z-scores have a negative and significant correlation in influencing economic growth, while the exchange rate and FDI variables show a positive and significant correlation. Then judging from the probability of F-statistics below α=1% indicates that the three independent variables simultaneously affect economic growth in BRICS countries.

The Effect of Banking Stability on GDP Growth

The results show that bank stability has a negative relationship and has a significant effect on GDP growth. This is not in line with the theory that increasing stability will have an impact on increasing economic growth. The difference in characteristics between countries in this relationship can be influenced by several factors. As in Brazil, increased banking stability

through tighter regulation and better supervision of the financial sector. Tight monetary policy and a large fiscal deficit have hampered credit to the real sector, hampering economic growth despite improved bank stability. In Russia, improved banking stability can be achieved through banking reforms and tighter supervision. However, economic sectors that depend on commodity prices, such as oil and natural gas, have an impact on significant economic fluctuations, especially economic growth. India includes improving banking stability through efforts to address the credit crunch and restructuring the financial sector. Tight fiscal policy or political uncertainty in implementing economic reforms may affect economic growth despite improved banking stability. Improved banking stability in China can be achieved through more effective financial reforms and supervision. A large and fragmented financial sector, as well as dependence on investment and exports, can create challenges for economic growth despite increased banking stability. South Africa could include improving banking stability through improved regulation and supervision of the financial sector. On the other hand, political instability and high unemployment rates can affect economic growth despite increased banking stability. This is in line with research by Morina et al., (2020); Rushchyshyn et al., (2021).

The Effect of Exchange Rates on GDP Growth

Based on the results of regression estimates, it shows that exchange rate depreciation is positively correlated and has a significant effect on GDP growth. Exchange rate depreciation against foreign currencies, such as the USD, has a significant impact on economic growth in BRICS countries. In Brazil, the depreciation of the real exchange rate against the USD encourages exports of agricultural products and commodities to become more competitive in the international market, as well as increasing revenues from the tourism sector. In Russia, the ruble's depreciation against the USD supports oil and natural gas exports that are becoming more affordable for international markets, as well as reducing dependence on imports. In India, the rupee's depreciation against the USD boosted manufacturing and service exports, as well as supporting the tourism sector at lower prices for foreign tourists. In China, the depreciation of the yuan against the USD increases the competitiveness of manufactured products in the international market, while in South Africa, the depreciation of the rand against the USD supports exports of commodities and mineral products that become more affordable for international markets. By utilizing exchange rate depreciation wisely, BRICS countries can boost economic growth through increased exports, increased revenues from the tourism sector, and reduced imports, which in turn can strengthen their economies. The Managed Float Exchange Rate exchange rate regime used by Brazil and India is able to provide exchange rate flexibility within a certain range. The free-floating exchange rate regime used by Russia and South Africa can also provide positive benefits to the economy. In a free-floating exchange rate system, the exchange rate is determined by demand and supply in the foreign exchange market. This can have an impact on realistic exchange rates as well as reflect actual market conditions. The fixed exchange rate regime gives China the advantage of exchange rate stability, which can give confidence to economic actors and investors. With a fixed exchange rate, China can create certainty for international trade and foreign investment flow. The results of this study are in line with research by Morgan & Pontines (2018); Adeniran et al., (2014); Khan (2021); and Aprilia et al., (2024).

The Effect of External Debt on GDP Growth

FDI is positively correlated and has a significant effect on GDP growth. Differences in FDI characteristics in each BRICS country are able to explain the positive and significant relationship between FDI and GDP growth. Brazil is a country rich in natural resources and has strong agricultural, mining, and energy sectors. FDI in these sectors, especially from foreign companies interested in Brazil's resource wealth, can increase production and exports, which has a positive impact on GDP growth. Russia has large oil and natural gas reserves, attracting

investment from international energy companies. FDI in the energy and mining sectors is able to encourage commodity production and exports, having a positive impact on economic growth. India represents a large population and a large consumer market. Foreign direct investment in manufacturing, information technology, or service sectors can expand production capacity and increase the competitiveness of domestic and foreign products, which can increase production and consumption, and support economic growth. China is one of the world's largest recipients of FDI. Foreign direct investment in the manufacturing sector and infrastructure expansion have contributed significantly to China's industrial and economic growth. South Africa is rich in mineral resources as well as one of the largest recipients of FDI in Africa. In free foreign exchange systems such as Russia, Brazil, and South Africa, foreign investors have the convenience of withdrawing their investments and sending their profits to their home countries. The ease of repatriation of such profits encourages incentives for investors who invest long-term in these countries. This is in line with research Morgan & Long (2020); Wong (2013); Rehman (2016).

Conclusions

The results showed that banking stability has a negative and significant relationship to GDP growth in the five BRICS countries, suggesting that increased banking stability does not necessarily mean increased economic growth. Differences in characteristics between countries affect this relationship. While the exchange rate and FDI are positively and significantly correlated in influencing GDP. In Brazil, strict regulation and supervision of the financial sector is necessary to maintain banking stability, while encouraging stable exchange rates and foreign investment in the agricultural and energy sectors. Russia, with its wealth of natural resources, needs to strengthen banking stability and encourage foreign investment in the energy and mining sectors to support economic growth. India, as a country with a large consumer market, must create a friendly investment climate and increase exchange rates and investment in infrastructure to support growth. China, although using a strict foreign exchange system, is the largest recipient of FDI, needs to carry out economic reforms and support exchange rate stability to improve competitiveness in the international market. As one of Africa's largest recipients of FDI, South Africa should strengthen cooperation with the private sector and diversify its economy to reduce dependence on the mining sector.

Close cooperation among BRICS countries can bring enormous benefits in overcoming global economic challenges and have a positive impact on the global economy as a whole. Through this cooperation, BRICS countries can share experiences, knowledge and best practices to address similar issues facing each other's countries. Implementing appropriate policies and actions is a key factor in enhancing economic growth and competitiveness on a global scale. BRICS countries are able to formulate policies according to their individual circumstances, based on an understanding of their individual characteristics. Banking stability and adequate exchange rates are two major issues that need attention. Good banking stability will provide investor confidence and encourage investment in productive sectors, which in turn will have a positive impact on economic growth. In addition, attracting relevant foreign investment also supports sustainable economic growth. BRICS countries have sectors that are attractive to foreign investors. By creating a favorable investment climate and attracting FDI in the sector, BRICS countries can increase production and exports and create new jobs.

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Ariodillah Hidayat, Dr. <ariodillahhidayat@fe.unsri.ac.id> Sel, 2 Apr 2024, 10.37
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Dear Editor in Chief
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I am Ariodillah Hidayat from Universitas Sriwijaya, Indonesia.
We are going to submit our article. The title is "**The Relationship Banking Stability, Exchange Rate, Foreign Direct In**
Economic Growth In BRICS Countries: A Panel Data Evidence. Attached File is our paper submission for Economic Insigh
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Looking forward to your comments and response.
Thank you.

Regards,

Corresponding Author
Ariodillah Hidayat

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The Relationship Banking Stability, Exchange Rate, Foreign Direct Investment and Economic Growth in BRICS Countries: A Panel Data Evidence

A. Harits Fadilah[1], Ariodillah Hidayat[2*], Siti Rohima[3], Rasyida Pertiwi[4], Anna Yulianita[5] and Xenaneira Shodrokova[6]

[1] Department of Economic Development, Faculty of Economics, Sriwijaya University, Indonesia
e-mail: haritsfadilah23@gmail.com
https://orcid.org/0009-0000-4630-2301

[2] Department of Economic Development, Faculty of Economics, Sriwijaya University, Indonesia
https://orcid.org/0000-0002-6520-5985
e-mail: ariodillahhidayat@fe.unsri.ac.id

[3] Department of Economic Development, Faculty of Economics, Sriwijaya University, Indonesia
https://orcid.org/0000-0002-9196-7924
e-mail: sitirohima@unsri.ac.id

[4] Department of Economic Development, Faculty of Economics, Sriwijaya University, Indonesia
https://orcid.org/0000-0003-3427-9938
e-mail: rasyidapertiwi@fe.unsri.ac.id

[5] Department of Economic Development, Faculty of Economics, Sriwijaya University, Indonesia
e-mail: annayulia@unsri.ac.id
https://orcid.org/0000-0001-8744-3274

[6] Department of Economic Development, Faculty of Economics, Sriwijaya University, Indonesia
e-mail: xenaneira12@gmail.com
https://orcid.org/0009-0003-8034-6617

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Abstract: *This study aims to analyze the effect of banking stability, exchange rates, and external debt on economic growth in BRICS countries (Brazil, Russia, India, China, and South Africa) during the period 2011-2020. The data used in this study is panel data from five BRICS countries, obtained from the International Monetary Fund (IMF) and the World Bank. The method used is a panel data regression model using the Fixed Effect method. This model makes it possible to account for the fixed effects of time as well as the fixed effects of individual states in regression analysis. The results of the analysis show that banking stability has a significant negative influence on economic growth in BRICS countries. On the other hand, exchange rates and external debt have a significant positive impact on economic growth. These findings indicate that policies that promote banking stability, prudent exchange rate management, and effective use of external debt can support sustainable economic growth in BRICS countries. The results of the analysis show that banking stability has a significant negative influence on economic growth in BRICS countries. On the other hand, exchange rates and external debt have a significant positive impact on economic growth. These findings indicate that policies that promote banking stability, prudent exchange rate management, and effective use of external debt can support sustainable economic growth in BRICS countries.*

JEL Classification:
G21; F21; O40.

Keywords: *Banking Stability; Exchange Rate; Foreign Direct Investment; Economic Growth; BRICS.*

* Corresponding author

Introduction

BRICS (Brazil, Russia, India, China and South Africa) are the top five developing countries in the world (Chen, 2022). The BRICS countries have very large and diverse populations. With a combined population of over 3 billion people or 40 percent of the world's total population, BRICS provide a broad home market and potentially a significant consumer base. The total GDP of BRICS member countries contributes about a quarter of global GDP. This consumer potential provides opportunities for strong economic growth, especially in sectors such as trade, industry, and services (Siddiqui, 2016). BRICS has abundant natural resources. These countries are rich in natural reserves such as oil, natural gas, metals, and other mineral resources. This wealth of resources provides great comparative advantages, opening up opportunities for the energy, mining, and heavy industry sectors. Efficient utilization of these resources can contribute significantly to economic growth and increased GDP (Rahim et al., 2021). These countries have demonstrated the ability to compete in international markets in a variety of sectors, including manufacturing, financial services, information technology and professional services (Luckhurst, 2013).

Fluctuating exchange rates can have an impact on uncertainty for business people and foreign investors (Hillier & Loncan, 2019). Not only that, exchange rate instability can push up import costs. The weak domestic currency causes the cost of importing goods and services to rise, as a weaker domestic currency is able to buy less foreign currency (Mirchandani, 2013). On the other hand, the rising cost of imports causes the country's trade balance to be minus, because the country will pay more in domestic currency for the same imports (Arize et al., 2017). Changes in exchange rate policies, including fixed or free-floating exchange rate systems can create fluctuations and uncertainty in BRICS exchange rates, ultimately affecting international trade, investment, and overall economic stability.

BRICS spans different levels of economic development plays a key role in the global economy and shows diverse responses to crises. The COVID-19 pandemic that hit in 2020 resulted in a significant decline in the economic growth of BRICS countries, with instability in the banking sector being one of the main factors. The effects of COVID-19 have had an impact on many foreign investors withdrawing their investments from the global market (Sheth et al., 2022). This is due to the too risky capital invested by investors due to the pandemic due to risky economic uncertainty (Conlon & McGee, 2020). The impact of the pandemic has expanded in global economic stability, money markets, and growth opportunities for a country (Bai et al., 2021); Andaiyani et al., (2022). Investors tend to reduce investments and even postpone investments, and save their funds for risk prevention. In BRICS countries with high competitiveness, investments are very attractive in infrastructure, industry, as well as other productive sectors. In addition, the implementation of different foreign exchange regimes in BRICS countries affects foreign investment in the country which ultimately affects economic growth.

In the face of the potential and uniqueness of BRICS countries, it is important to understand the factors that affect GDP in BRICS countries. Exchange rate fluctuations, changes in exchange rates, and FDI are some of the factors that need to be studied in depth whether they affect GDP. Through research into these factors, it can identify challenges, evaluate appropriate policies, and plan strategic measures that can boost economic growth and maximize the potential of BRICS countries.

Literature Review

Financial system stability is a state in which financial mechanisms work correctly in pricing, resource allocation and risk management, supporting economic growth (Demirguc-et al., 2017).

In the context of this study, the bank's Z-score is used as an indicator of banking stability. The bank Z-score measures the level of security and financial health of a bank by comparing the value of bank assets and the value of bank debt (Berglund & Mäkinen, 2019). The bank's Z-score also considers the bank's profitability ratio and the risk taken by the bank in making a profit (Elnahass et al., 2021).

Analysis of exchange rate and foreign exchange regimes in several countries became an important study by several previous studies. Jiménez-Rodríguez & Morales-Zumaquero (2020) examined the exchange rate pass-through (ERPT) of BRICS countries, showing that ERPT is higher for emerging markets with mostly floating exchange rates (Brazil, Russia and South Africa) than other BRICS countries. According to Jiang (2019) in facing various economic challenges, BRICS countries must choose and implement an exchange rate system that suits their respective economic needs and conditions, in order to achieve stability and sustainable economic growth. Another study by Klotz (2018) shows that floating exchange rates have become a better economic regime for sustainable economic growth in Nigeria.

In their study, Jayakumar et al. (2018) used a panel vector error correction (VECM) model to study the interplay between bank competition, bank stability and economic growth in a panel of 32 European countries over the period 1996-2014, focusing on the direction of Granger causality between variables. Empirical evidence shows that banking competition and banking stability are key drivers of long-term economic growth in European countries. Creel et al., (2015) Examining economic performance and financial stability in the EU using GMM panel data, found that financial instability has a negative effect on economic growth. Article Jokipii & Monnin (2013) Studying the relationship between sector stability levels banking and GDP with VAR panel method for 18 OECD samples. The results show that the stability (instability) of the banking sector resulted in significant overestimates of GDP growth in the following quarters.

The impact of exchange rates on GDP has been studied in various countries. Habib et al., (2017) explored the impact of exchange rate fluctuations on economic growth based on his five-year average data for a panel of over 150 countries, and found that both yen appreciation and depreciation have a significant impact on GDP growth. Using the Babubudjnauth & Seetanah (2021) autoregressive vector, it is clear that changes in the real exchange rate (RER) have a contractionary effect on GDP growth in the short term, but an expansionary effect in the long term.

Study Amri (2016) examining the relationship between energy consumption, FDI inflows and GDP in 75 countries during the period 1990-2010, these results show that there is evidence of a two-way relationship regarding FDI and GDP. Research Nosheen (2013) examining the effect of FDI on Pakistan's GDP, found that there is a long-term relationship between GDP and FDI. Szkorupová (2014) Analyzing the relationship between foreign direct investment, economic growth and exports in Slovakia, the results reveal the positive impact of foreign direct investment and the positive impact of exports on gross domestic product.

Data and Methods

The data used in forming the constituent variables of the research model were obtained from sources from the World Bank and the International Monetary Fund. The data in this study is in the form of secondary data, period from 2011-2020. This study covers 5 countries included in the BRICS group of countries, namely Brazil, Russia, India, China and South Africa. The operational variables definition in this study are explained in Table 1.

Table 1. Variable operational definition

Variable	Operational definition	Unit	Data sources
Gross Domestic Product (GDP)	Percentage change in the total value of a country's Gross Domestic Product (GDP) from year to year.	%	World Bank
Bank Z-Score (BZS)	Determines the likelihood that a country's commercial banking sector will fail.	Score	World Bank
Exchange Rate (ER)	The amount of one currency needed to earn or pay for units of another currency.	LCU per US$, period average	World Bank
Foreign Direct Investment (FDI)	The total amount of foreign direct investment that flows into a country. FDI is calculated as the sum of annual capital, long-term capital and short-term capital.	Million US$	International Monetary Fund (IMF)

Source: World Bank and International Monetary Fund (IMF), 2023.

The selection of the BRICS region as a sample for analysis is particularly relevant because these countries cover different levels of economic development and industrial structure, play a key role in the global economy, and show diverse responses to crises. Based on Figure 1, the economic growth trend of the BRICS region has changed over the past ten years (Wang & Luo, 2022). The pandemic that hit the world in 2019 resulted in a crisis that spread to various sectors, so that the economic growth rate of the five countries decreased significantly in 2020. Russia became the country with the lowest economic growth of -2.6 percent due to the economic crisis. In addition, Brazil saw a GDP decline of -3.8 percent, followed by the GDP levels of South Africa and India by -6.3 percent and -6.5 percent, respectively. China's GDP level is only 2.2 percent, GDP can fall because companies produce fewer goods and services (Boachie et al., 2021). One of the main factors contributing to the decline in GDP in BRICS countries is instability in the banking sector (Ntarmah et al., 2019). Global economic disruptions triggered by the COVID-19 pandemic have put significant pressure on financial institutions around the world, including in BRICS countries (Dunford & Qi, 2020). Economic uncertainty and declining revenues lead to increased credit risk and decreased availability of funds for companies and consumers (Didier et al., 2021).

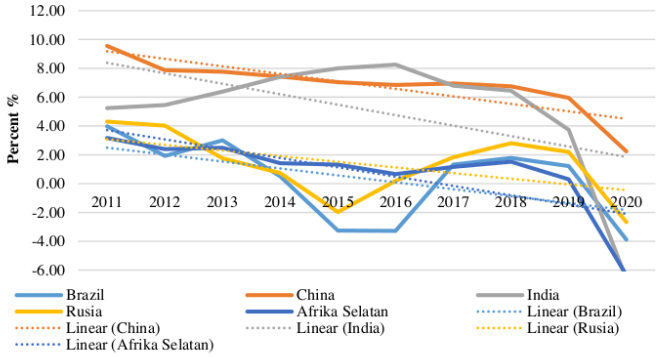

Fig 1. Gross Domestic Product growth of 5 BRICS countries

Source: World Bank (data processed), 2023.

The analysis method technique used is panel data regression studies combine cross-sectional and time series data, and thus have spatial and temporal dimensions (Koroma et al., 2023). Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) approaches are the three methods used in research estimation models. Of the three estimation approaches, the best will be selected and will be used in this study. Model selection tests, such as the Chow test, Hausman test, and Lagrange Multiplier, are used to determine the optimal estimation strategy. The following regression equation in this study is as follows:

$$GDP_{ti} = \beta 0 + \beta 1 \mathrm{BZS}_{\mathrm{it}} + \beta 2 \mathrm{ER}_{\mathrm{it}} + \beta 3 \mathrm{FDI}_{\mathrm{it}} + \varepsilon_{\mathrm{it}} \quad (1)$$

Where GDP explains the dependent variable of gross domestic product growth, β0 describes the constant, β1, β2, β3 describes the regression coefficient of the study, BZS_{it} describes the z-score bank in country i year t, ER_{it} describes the exchange rate in country i year t, FDI_{it} explains Foreign Direct Investment in country i year t, and ε_{it} explains error in country i year t.

Results and Discussion

Trend of Gross Domestic Product BRICS Countries

Based on Figure 2, China is the country with the highest GDP growth rate in the BRICS countries. China has implemented pro-investment and pro-export economic policies (Liu et al., 2016). The Chinese government is increasing investment in strategic sectors such as manufacturing, technology, infrastructure, and energy. In addition, China is becoming a global manufacturing production center capable of producing goods exported in all parts of the world (Mancheri, 2015). The Chinese state is able to invest significant resources in research and development, and strengthen innovation capacity in various sectors, such as information technology, artificial intelligence, and green technology.

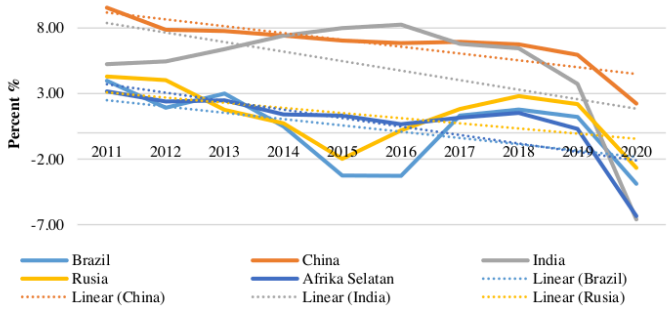

Fig 2. Trend of Gross Domestic Product in BRICS countries

Source: World Bank (data processed), 2011-2020.

India and South Africa were the most affected countries when Covid-19 hit the decline in economic growth. India and South Africa have considerable economic dependence on various sectors directly affected by the Covid-19 pandemic. For example, India has a large service sector, including tourism, retail, and the entertainment industry, all of which were severely affected by physical restrictions and lockdowns during the Covid-19 pandemic (Xiang et al., 2021). On the other hand, South Africa is experiencing serious impacts on the tourism sector as well as mining. India and South Africa are facing challenges in responding to the pandemic due to limited infrastructure and high levels of poverty. The large population in both countries is a

factor in the faster spread of the virus, especially in densely populated urban areas (Boterman, 2020).

Trend of Banking Stability in BRICS Countries

Based on Figure 3, BRICS countries have stable banking. Strict supervision by all BRICS member countries to maintain banking sector stability and financial system resilience in the region. India and China banking stability improved during Covid-19. China and India have taken steps to encourage banking digitalization to improve financial inclusion, efficiency, and accessibility for the public. China has become one of the global leaders in digital payments (Chorzempa, 2021). Government policies and support have resulted in an increase in the use of digital payment methods such as Alipay and WeChat Pay (Plantin & de Seta, 2019). The Chinese government is encouraging fintech innovation as well as developments in financial technology, including in payments, online lending, and digital wealth management. Technologies including machine learning, big data, and risk analysis have been utilized to provide more efficient and innovative financial services.

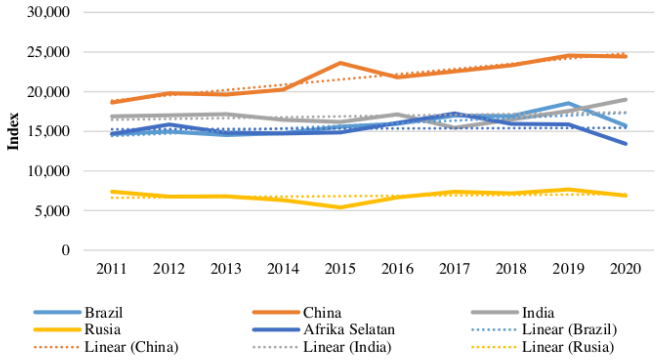

Fig 3. Trend of banking stability in BRICS countries

Source: World Bank (data processed), 2011-2020.

The improvement in banking stability in India during Covid-19 is the result of the implementation of several banking digitalization policies. The Jan Dhan Yojana program is an initiative of the Indian government to build financial inclusion by providing access to bank accounts to unbanked citizens (Barik & Sharma, 2019). The program has promoted increased accessibility and penetration of banking in India. The Government of India is implementing the adoption of the Unified Payments Interface (UPI) as an easy and secure means of digital payments (Saha & Kiran, 2022).

Trend of Exchange Rate BRICS Countries

The exchange rate is the value of a country's currency expressed in terms of another country's currency (Sari et al., 2023). Based on Figure 4, the Russian exchange rate depreciated significantly in 2015 and 2016. In 2014, Russia faced economic sanctions from Western countries in response to Russia's intervention in Ukraine (Bagheri & Akbarpour, 2016). These sanctions are in the form of banning access to international financial markets for a number of Russian banks and companies, which has an impact on the weakening of the ruble. In 2014-2015, the ruble experienced significant depreciation against foreign currencies, such as the US

dollar and the euro (Dreger et al., 2016). The depreciation of the ruble can affect the growth of the exchange rate.

The movement of the Brazilian exchange rate tends to fluctuate and show instability. Brazil implements a floating exchange rate by Brazil's central bank, namely "Banco Central do Brasil," aiming to provide flexibility in exchange rates for the Brazilian real currency (Filho, 2019). However, in 2015 and 2016 Brazil was hit by a continuous economic recession, even seen from the value of GDP showing minus growth (Serrano & Summa, 2015). In the midst of a recession, fluctuations in the exchange rate of the Brazilian real currency (BRL) became more unstable. The recession had an impact on the decline in demand for Brazilian assets, including the depreciating value of the BRL currency. In 2014, Brazil was also faced with unstable politics due to a corruption scandal known as Operation Capture Hands Lava Jato. The impact of this political impact for the following years (Barik & Sharma, 2019). Efforts to respond to the recession and weakening of the BRL exchange rate, the Central Bank of Brazil (Banco Central do Brasil), implemented several interventions as well as monetary policies.

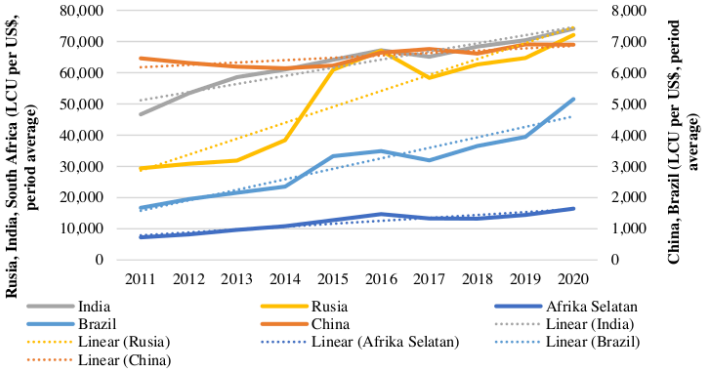

Fig 4. Trend of exchange rates in BRICS countries

Source: World Bank (data processed), 2011-2020.

China's currency exchange rate tends to be more stable than other BRICS countries. This happened because of the implementation of the Fixed Exchange Rate system in China by the People's Bank of China (PBOC) (Chkili & Khuong, 2014). By controlling the exchange rate, the Chinese government is able to control domestic inflation. As a major exporting country, sharp changes in exchange rates can affect the prices of imported goods and raw materials, which can affect the inflation rate in the country. The fixed exchange rate system also provides advantages for Chinese exports. Setting a low exchange rate against foreign currencies, has the effect that Chinese products can become cheaper on the international market, which increases the competitiveness of their products and can increase exports. When countries implement fixed exchange rates, it provides better resilience to international financial market shocks (Popescu et al., 2017). During the global financial crisis, countries with fixed exchange rates tend to have greater protection than countries with free-floating exchange rates such as Brazil, Russia, and South Africa.

Apart from China, fluctuations in India tend to be lower and stable. This is due to the exchange rate system applied by India using the Managed Float Exchange Rate. With a managed exchange rate, India can create relative external stability in the short term (Turner, 2014). The Reserve Bank of India (RBI) seeks to avoid sharp and unpredictable exchange rate fluctuations,

thereby helping to reduce the risk of instability in international trade and capital flows. The exchange rate floating with the intervention allowed the Indian rupee to adjust to changing economic conditions, including fluctuations in demand and supply of foreign exchange (Frankel, 2019). This is able to provide an opportunity in achieving trade balance by correcting external imbalances that may occur. Prudent exchange rate policy can control import inflation. With the depreciation of the rupee exchange rate, the price of imported goods tends to increase and has an impact on inflation. RBI intervention can help reduce inflationary pressures as a result of outsized fluctuations in the exchange rate.

Trend of Foreign Direct Investment (FDI) BRICS Countries

The trend of FDI movement in all BRICS countries shows an increase, especially Brazil and South Africa (Figure 5). Brazil is a country with abundant natural resources, including mines, oil, as well as agricultural products. The potential of the resource is an attraction for foreign investors. In 2014, Brazil hosted two FIFA World Cup events and in 2016 hosted the Olympics (Gursoy et al., 2017). The events attracted investors in infrastructure as well as the tourism sector, and introduced Brazil more broadly to the international world. Brazil also has a fairly strict foreign exchange regime to control capital flows. On the other hand, South Africa is the largest economy in Africa and a gateway for foreign companies to enter regional markets across the African continent (Alden & Schoeman, 2015). The South African government encourages pro-investment policies to encourage FDI, as well as fiscal incentives, uncomplicated licensing, and less stringent regulations. South Africa also has a relatively free foreign exchange policy (Boateng et al., 2020). The country does not impose strict foreign exchange controls, allowing businesses and individuals to transact with foreign currencies with relative ease. The South African Reserve Bank, however, is able to intervene in the foreign exchange market if necessary to maintain rand exchange rate stability (ZAR) and protect economic stability.

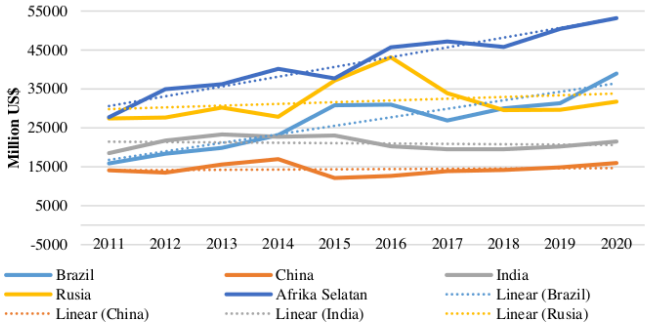

Fig 5. Trend of foreign direct investment (FDI) in BRICS countries

Source: International Monetary Fund (IMF), 2011-2020.

The FDI trend in India tends to fall, while the FDI trend in China tends to stagnate. India faces several bureaucratic challenges as well as complicated regulations in doing business. Despite some efforts to improve the investment climate, bureaucratic constraints and complex regulatory procedures may discourage foreign investors from investing in India and prefer other BRICS countries that offer easier and more efficient procedures. India's limited infrastructure, inadequate transport network and lack of electrical energy, can be an obstacle for foreign companies that need good infrastructure to run their business operations (Lall & Geetha, 2020). The downward trend in FDI in India is a result of the implementation of a strict foreign

exchange regime or lack of flexibility in the foreign exchange system that affects the interest of foreign investors (Mohanty & Bhanumurthy, 2014). If the process of converting foreign currency into Indian rupees is complicated, this hinders foreign investors who want to invest in India.

On the other hand, the stagnant movement that occurred in FDI in China was caused by several factors. Along with economic growth, labor costs in China have also increased (Jorgenson & Vu, 2016). As a result, some companies that previously relied on China as a production base to look for alternatives with lower labor costs in other countries. The trade conflict between China and the United States prompted uncertainty for companies looking to invest. Trade tensions and the threat of tariffs or trade restrictions may cause some companies to be cautious in making investment decisions (Chong & Li, 2019). The stagnant FDI in China is also a result of strict foreign exchange controls, known as the "Quota-based Capital Account Convertibility" system.

Regression Results

In selecting the regression model used in this research, researchers used the Chow, Hausman and LM tests. Based on the results of the Chow and Hausman probability tests in Table 2, it shows that the best model in this research is Fixed Effect Cross-Sectional Weight (GLS).

Table 2. Fixed Effect Cross-Sectional Weight (GLS) Regression Results

Dependent Variable: GDP			
Variable	Coefficient	t-Statistic	Prob
C	-151562.9	-7.284326	0.0000
BZS	-0.582968	-2.838924	0.0073
ER	16244.80	8.725278	0.0000
FDI	1.744295	2.765314	0.0088
Fixed Effects (Cross)			
_BRAZIL-C	24485.61		
_CHINA-C	10927.88		
_INDIA-C	-22236.11		
_RUSIA-C	-12545.54		
_SOUTH AFRICA-C	-865.4835		
R-squared	0.950447		
Adjusted R-squared	0.941072		
F-statistic	101.3827		
Prob(F-statistic)	0.000000		
Chow Test			0.0000
Hausman Test			0.0000

Source: Data processed, (2023).

Based on the results of the regression estimation in Table 2, a model of this research equation was formed:

$$\widehat{GDP}_{it} = -151562.9 - 0.58968BZS_{it} + 16244.80ER_{it} + 1.77429FDI_{it} + \varepsilon_{it} \quad (2)$$

Based on the Equation 2, bank variable z-scores have a negative and significant correlation in influencing economic growth, while the exchange rate and FDI variables show a positive and significant correlation. Then judging from the probability of F-statistics below α=1% indicates that the three independent variables simultaneously affect economic growth in BRICS countries.

The Effect of Banking Stability on GDP Growth

The results show that bank stability has a negative relationship and has a significant effect on GDP growth. This is not in line with the theory that increasing stability will have an impact on increasing economic growth. The difference in characteristics between countries in this relationship can be influenced by several factors. As in Brazil, increased banking stability

through tighter regulation and better supervision of the financial sector. Tight monetary policy and a large fiscal deficit have hampered credit to the real sector, hampering economic growth despite improved bank stability. In Russia, improved banking stability can be achieved through banking reforms and tighter supervision. However, economic sectors that depend on commodity prices, such as oil and natural gas, have an impact on significant economic fluctuations, especially economic growth. India includes improving banking stability through efforts to address the credit crunch and restructuring the financial sector. Tight fiscal policy or political uncertainty in implementing economic reforms may affect economic growth despite improved banking stability. Improved banking stability in China can be achieved through more effective financial reforms and supervision. A large and fragmented financial sector, as well as dependence on investment and exports, can create challenges for economic growth despite increased banking stability. South Africa could include improving banking stability through improved regulation and supervision of the financial sector. On the other hand, political instability and high unemployment rates can affect economic growth despite increased banking stability. This is in line with research by Morina et al., (2020); Rushchyshyn et al., (2021).

The Effect of Exchange Rates on GDP Growth

Based on the results of regression estimates, it shows that exchange rate depreciation is positively correlated and has a significant effect on GDP growth. Exchange rate depreciation against foreign currencies, such as the USD, has a significant impact on economic growth in BRICS countries. In Brazil, the depreciation of the real exchange rate against the USD encourages exports of agricultural products and commodities to become more competitive in the international market, as well as increasing revenues from the tourism sector. In Russia, the ruble's depreciation against the USD supports oil and natural gas exports that are becoming more affordable for international markets, as well as reducing dependence on imports. In India, the rupee's depreciation against the USD boosted manufacturing and service exports, as well as supporting the tourism sector at lower prices for foreign tourists. In China, the depreciation of the yuan against the USD increases the competitiveness of manufactured products in the international market, while in South Africa, the depreciation of the rand against the USD supports exports of commodities and mineral products that become more affordable for international markets. By utilizing exchange rate depreciation wisely, BRICS countries can boost economic growth through increased exports, increased revenues from the tourism sector, and reduced imports, which in turn can strengthen their economies. The Managed Float Exchange Rate exchange rate regime used by Brazil and India is able to provide exchange rate flexibility within a certain range. The free-floating exchange rate regime used by Russia and South Africa can also provide positive benefits to the economy. In a free-floating exchange rate system, the exchange rate is determined by demand and supply in the foreign exchange market. This can have an impact on realistic exchange rates as well as reflect actual market conditions. The fixed exchange rate regime gives China the advantage of exchange rate stability, which can give confidence to economic actors and investors. With a fixed exchange rate, China can create certainty for international trade and foreign investment flow. The results of this study are in line with research by Morgan & Pontines (2018); Adeniran et al., (2014); Khan (2021); and Aprilia et al., (2024).

The Effect of External Debt on GDP Growth

FDI is positively correlated and has a significant effect on GDP growth. Differences in FDI characteristics in each BRICS country are able to explain the positive and significant relationship between FDI and GDP growth. Brazil is a country rich in natural resources and has strong agricultural, mining, and energy sectors. FDI in these sectors, especially from foreign companies interested in Brazil's resource wealth, can increase production and exports, which has a positive impact on GDP growth. Russia has large oil and natural gas reserves, attracting

investment from international energy companies. FDI in the energy and mining sectors is able to encourage commodity production and exports, having a positive impact on economic growth. India represents a large population and a large consumer market. Foreign direct investment in manufacturing, information technology, or service sectors can expand production capacity and increase the competitiveness of domestic and foreign products, which can increase production and consumption, and support economic growth. China is one of the world's largest recipients of FDI. Foreign direct investment in the manufacturing sector and infrastructure expansion have contributed significantly to China's industrial and economic growth. South Africa is rich in mineral resources as well as one of the largest recipients of FDI in Africa. In free foreign exchange systems such as Russia, Brazil, and South Africa, foreign investors have the convenience of withdrawing their investments and sending their profits to their home countries. The ease of repatriation of such profits encourages incentives for investors who invest long-term in these countries. This is in line with research Morgan & Long (2020); Wong (2013); Rehman (2016).

Conclusions

The results showed that banking stability has a negative and significant relationship to GDP growth in the five BRICS countries, suggesting that increased banking stability does not necessarily mean increased economic growth. Differences in characteristics between countries affect this relationship. While the exchange rate and FDI are positively and significantly correlated in influencing GDP. In Brazil, strict regulation and supervision of the financial sector is necessary to maintain banking stability, while encouraging stable exchange rates and foreign investment in the agricultural and energy sectors. Russia, with its wealth of natural resources, needs to strengthen banking stability and encourage foreign investment in the energy and mining sectors to support economic growth. India, as a country with a large consumer market, must create a friendly investment climate and increase exchange rates and investment in infrastructure to support growth. China, although using a strict foreign exchange system, is the largest recipient of FDI, needs to carry out economic reforms and support exchange rate stability to improve competitiveness in the international market. As one of Africa's largest recipients of FDI, South Africa should strengthen cooperation with the private sector and diversify its economy to reduce dependence on the mining sector.

Close cooperation among BRICS countries can bring enormous benefits in overcoming global economic challenges and have a positive impact on the global economy as a whole. Through this cooperation, BRICS countries can share experiences, knowledge and best practices to address similar issues facing each other's countries. Implementing appropriate policies and actions is a key factor in enhancing economic growth and competitiveness on a global scale. BRICS countries are able to formulate policies according to their individual circumstances, based on an understanding of their individual characteristics. Banking stability and adequate exchange rates are two major issues that need attention. Good banking stability will provide investor confidence and encourage investment in productive sectors, which in turn will have a positive impact on economic growth. In addition, attracting relevant foreign investment also supports sustainable economic growth. BRICS countries have sectors that are attractive to foreign investors. By creating a favorable investment climate and attracting FDI in the sector, BRICS countries can increase production and exports and create new jobs.

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