

# Impact of intra-BRICS trade on the share of United States dollar in international reserve composition

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## Abstract

The study examines the impact of the BRICS countries' trade on the composition of their US dollar reserves using dynamic panel data analysis. The research aims to determine if the trade between the BRICS countries promotes currency diversification or reinforces their reliance on the dollar.

The paper adopts a dynamic panel data model using the Mean Group (MG), Pooled Mean Group (PMG), and Dynamic Fixed Effect (DFE) estimators for annual data from 2006 to 2022.

The empirical results reveal a short-term currency diversification away from the dollar, which may be caused by intra-BRICS non-dollar trade agreements. Yet, the analysis gave no conclusive evidence of currency diversification in the long term. The Hausman test points to the PMG estimator as the most efficient, confirming robust model reliability. These findings indicate a complex interaction between trade and reserve dynamics, driven in part by the BRICS efforts to reduce dependency on the dollar as a vehicle currency.

This study is among the first to apply dynamic panel data models to explore the impact of BRICS trade on the member countries' US dollar reserves. It combines MG, PMG, and DFE estimators to assess the short-term and long-term effects of the trade, thus offering new insights into the dual nature of trade impacts on currency reserves and emphasizing the strategic role of BRICS in the global financial landscape.

## Keywords

BRICS, China, currency diversification, de-dollarization, foreign reserves, intra-BRICS trade, reserve currency, Russia, trade, US dollar.

**JEL:** F31, F36, F55.

## Introduction

The US dollar has been the world's dominant currency for over three quarters of a century thanks to the size and strength of the US economy, its stability, openness to trade and capital flows, strong property rights and the rule of law (Eichengreen, 2011). The dollar is widely used for transactions, pricing, settlement and investment by governments and private actors outside the United States; it accounts for about 60 % of the globally disclosed official foreign currency reserves (Bertaut et al., 2021). Its history is long and fascinating, when the Federal Reserve System (FRS) was created, with its exclusive right to issue US dollar notes (Bertaut et al., 2021). The role of the world's dominant currency confers the USA economic, political, and social privileges. But the US dollar has not always been stable; it has faced several challenges from other countries' currencies. One of the main challenges is the rise of China as a global economic and political power, and its efforts to make the Renminbi (RMB) a competitive alternative to the dollar and, chance permitting, the most popular international currency. China has been promoting the use of the RMB in trade, investment, and financial transactions with its partners, especially in Asia and Africa. It has also been developing its own digital currency, the e-CNY, which could facilitate cross-border payments avoiding the dollar-based SWIFT system (Mehta, 2023). The RMBs share of global reserves has increased from zero to 2 percent in the past six years, and it is expected to grow further as China liberalizes its capital account and expands its financial activities.

There have been attempts to create economic blocs to diminish the role of the dollar (Bastian et al., 2021). These include the European Union (EU), the Association of Southeast Asian Nations (ASEAN), the African Continental Free Trade Area (AfCFTA), and BRICS (Brazil, Russia, India, China, and South Africa) (Ndwaru, 2022). These blocs aim to enhance economic integration and cooperation among their members, thus reducing their dependence on the dollar and the US-led global order (Ndwaru, 2022). For example, the EU introduced the euro as its common currency; today it accounts for about 20% of the global reserves. The euro is widely used for trade and financial transactions within the EU and with some of its neighbors, such as Switzerland and Turkey. The EU has pursued strategic autonomy and resilience in the face of US sanctions and trade wars, developing its own digital euro project (Ndwaru, 2022). Another reason why most countries seek alternative currencies is the weaponization of the dollar through financial sanctions, like those imposed on Iran and Russia. This raised the question of a new vehicle currency with minimal risk of sanctions.

The BRICS countries, which represent around one-fifth of the world's economy, influence the global economic dynamics because of their joint economic power. With their large populations, abundant natural resources and rapid economic growth,

the BRICS countries massively contribute to the world economic growth and play a role in shaping the global policy. Today, they are expanding the intra-group trade using national currencies to reduce their dependence on the US dollar. These de-dollarization efforts reveal the intention of the BRICS association to overhaul the existing international financial structure and decrease the dominance of the US dollar in the global trade. One of the ways to achieve this goal might be the creation of a new currency.

Russia has abundant reserves of natural resources, especially oil and gas; it is also one of the world-largest energy producers that can support the global energy needs and promote energy cooperation between the BRICS member countries. Russia's technological and industrial achievements, its potential and expertise in the defense, aerospace, and nuclear technology sectors allow it to assist the other BRICS countries in their development (Kristensen et al. 2023). Russia supports currency diversification in bilateral trade with the BRICS countries, which is an important step towards de-dollarization (Reagan, 2024). China, in its turn, is a major contributor to the BRICS economic growth owing to its huge infrastructure investment, large exports and strong domestic consumption. As a country with a giant consumer market, it has a significant impact on the exports and economic growth of the other BRICS countries. Via the New Development Bank (NDB), BRICS provide funds to support infrastructure projects in the BRICS member countries (Araujo, 2023). The bank also can grant loans in local currencies.

These developments present an obvious threat to the dollar's dominance in the global trade, as they may reduce the demand for and supply of dollar-denominated assets, increase diversification of national currency baskets and intensify the competition between currencies. No other currency, however, can be expected to replace the dollar in the near future because none of the USA's rivals has the same degree of economic size, stability, openness, and institutional strength. Moreover, the dollar network effects and inertia make it difficult for other currencies to gain widespread acceptance (Weiss, 2022). The only serious risk is posed by the developing African and Eastern countries. For several years they have been trying to conduct their trade in Yuan and they still don't have any treaties or agreements with the USA related to dollar payments. The dominant role of the dollar will certainly diminish, but there is no need to create a new currency: the impact of other currencies will automatically increase, and BRICS will be able to beat the dollar through their economic power. (Sullivan, 2021)

Trade among the BRICS countries has grown rapidly over the years, reaching US \$422 billion in 2020, a 56% increase from 2017 (Intra-BRICS Trade, 2023). China is the largest trading partner for all the other BRICS countries, accounting for more than half of the intra-BRICS trade. India and South Africa have the highest trade intensity with the BRICS group, while Brazil and Russia have the lowest. The main products traded within the BRICS group are mineral fuels, machinery, electrical equipment, vehicles and iron and steel (Rosstat, 2022). The sizable USD reserve holdings of the BRICS countries, i.e. the percentage of their foreign exchange reserves denominated

in the US dollars held by central banks or monetary authorities, are used to manage their exchange rates, intervene in the foreign exchange market, maintain liquidity and encourage confidence in their currencies. According to the International Monetary Fund the US dollar continues to cede ground to nontraditional currencies in global foreign exchange reserves, but it remains the preeminent reserve currency (Arslanap et al., 2024). This could indicate that the BRICS countries may have diversified their reserve portfolios to include other currencies, such as the euro, the yen, the pound, and their own currencies.

The main objective of this research is to identify factors that determine changes in reserve holdings of the BRICS countries. It will allow us to understand the true role of the USD currency. The paper's contributions to the extant body of knowledge are as follows: first, by identifying the factors influencing reserve holdings in the BRICS countries, the study addresses the gap in the literature on how emerging economies manage their reserves amid shifting global financial landscapes; this may help optimize reserve portfolios and enhance economic stability. Secondly, it provides empirical evidence on the impacts of de-dollarization initiatives within BRICS. By examining the intra-group trade in national currencies, it offers insights into the practicalities of reducing dollar dependence. Highlighting the role of economic blocs in the attempts to challenge the dollar's dominance, it adds to the literature on how regional cooperation can influence financial structures and the use of the global currency.

## Literature review

Research into the global distribution of reserve currency has established the factors that determine this distribution. These include the currency's global influence, economic size of the country, its involvement in international trade and finance, and potential "network effects" (Li & Liu, 2008; Eichengreen et al., 2016; Aizenman et al., 2020). National policies can facilitate or hinder currency internationalization (Eichengreen et al., 2016). Chinn & Frankel (2008) analyzed the perceived security and efficiency of reserve currencies by examining their relationship with the depth and liquidity of both domestic and international financial markets.

Inertia and credibility also play a role. Triffin (1959) and Frankel (2012) discuss the so-called inertial bias, i.e. how a higher proportion of a specific reserve currency in the past reliably predicts its future share. Inertial effects increased after 1971 when President Nixon ended the convertibility of the dollar to gold but network effects became less significant, possibly due to the advancements in financial and transactional technology (Eichengreen et al., 2016). McDowell (2023) finds that the increasing reliance on sanctions implies significant political risks for the countries holding dollar-denominated assets. Arslanap et al. (2022) observes a subtle yet persistent decrease in the U.S. dollar share of global foreign reserves over the recent years. Sanusi et al. (2025) finds that sanctions have a measurable impact on the composition of foreign exchange reserves.

Truman and Wong (2006) express concerns about the significant shifts in the currency composition of major reserve holders in emerging markets, which could lead to substantial exchange rate fluctuations affecting other financial market segments and overall macroeconomic stability. They advocate for an international reserve diversification standard, highlighting the risks associated with holding the bulk of reserves in the US dollars. The standard they propose should oblige countries to diversify their reserves across different currencies. Lim (2007) finds a negative correlation between fluctuations in the proportion of the US dollar adjusted for valuation effects and the dollar exchange rate, based on IMF COFER data from 1999 to 2005. Arrasyid (2023) explores the economic potential of BRICS and their impact on de-dollarization, highlighting the importance of currency diversification. The study emphasizes that the BRICS countries' role in global economic development increases as the trade among them is expanding and their national currencies are getting stronger. Forouheshfar and Bénassy-Quéré (2015) examine the impact of yuan's internationalization on the stability of the international monetary system. They discuss the dominance of the US dollar as a savings currency, the demand for risky and non-risky assets, and the need to address the mismatch between a unipolar international monetary system (IMS) and a multipolar real economy. McKinnon (2013) looks into the history of the US dollar prevalence from Bretton Woods to the rise of China. The study discusses the currencies that could serve as international exchange instruments and explains why the US dollar remains powerful. Schenk (2010) analyzes the decline of the pound sterling as an international currency, focusing on factors like devaluation, capital controls, changes in interest rates, and the floating exchange rate system. The study also considers the impact of international events and the creation of the European Economic Union. Wong (2007) extends this discussion by proposing a new method for measuring reserve diversity based on portfolio theory. The study uses statistical analysis to compare the diversity of reserves across countries. Dominguez et al. (2012) examine the role of international reserves during global financial crises. They point out that reserves can protect the national economy against currency attacks and generally contribute to financial stability; countries should therefore accumulate sufficient reserves to handle potential crises. Eichengreen (2010) discusses the concept of a world with multiple reserve currencies, suggesting that this development could offer advantages but must be managed carefully to avoid risks. Engel (2013) investigates the relationship between exchange rates and interest rates, noting that percentage parity is not always achieved, due to factors like transaction costs and government influence.

Fratzscher and Mehl (2009) studied the influence of oil-exporting countries on major currency configurations, particularly the dollar and euro. They found a negative correlation between oil prices and sizes of US dollar shares and a positive, though less significant, correlation between oil prices and sizes of the euro shares. Chung (2016) uses a theoretical model based on transaction data from the UK to explain why firms choose specific currencies for invoicing imports, showing that the choice aims to reduce economic risk. Chinn and Frankel (2008) argued that the US dollar would

continue to compete with the euro, citing the United States' economic size and the inherent advantages of its currency in view of economic challenges. Behar et al. (2018) discuss the need to account for uncertainties in macroeconomic policy development driven by rapid technological advancements, globalization, and climate change. They call for flexible policies and adequate institutional frameworks. Chahrour and Valchev (2017) explore the privileges of using a national currency as an international medium of exchange (IME), including the ability to set long-term nominal interest rates and reduce currency depreciation risks. These privileges enhance the issuing country's global economic and financial status.

Our review indicates that there is a gap in the literature on factors that determine global reserve currency shares, especially in the BRICS countries; the impact of economic size, network effects, and policy decisions on currency internationalization are also underexplored. Historical shifts from one dominant currency to another and theoretical underpinnings of reserve diversification together with its implications for financial stability also require careful consideration.

## **Methodology**

### **Theoretical framework**

This study is anchored on the Portfolio diversification theory stemming from modern portfolio theory, introduced by Harry Markowitz in 1952. Its fundamental premise is that investors, in this case central banks, can optimize their portfolios by diversifying their holdings to maximize returns for a given level of risk (Markowitz, 1952). As a result of holding a variety of assets that are not perfectly correlated, the overall portfolio risk is minimized. This is because losses on one asset can be offset by gains from another. Also, diversification may result in higher returns without a proportional increase in risk. Central banks manage foreign exchange reserves in order to meet international obligations, intervene in currency markets if necessary, safeguard the value of reserves against market volatility and achieve a reasonable return on reserve assets without compromising safety. Traditionally, the US dollar dominates reserves due to its stability, liquidity and the depth of US financial markets. However, holding reserves in a single currency exposes central banks to fluctuations in the value of this currency, which can affect the real value of reserves. As concerns the US dollar, there is also political risk caused by the dependence on the US monetary policy and possibility of sanctions.

The BRICS countries' economies are growing and so is their contribution to the global GDP, which results in greater economic power. Increased trade among BRICS nations leads to accumulating reserves in each other's currencies that may not move in tandem with the US dollar, providing diversification benefits, higher yields or growth prospects in emerging markets. Also, this can reduce overexposure to the dollar and

mitigate potential losses from dollar depreciation. Hence the central banks' policy of holding a portion of reserves in the BRICS currencies and gradual decline of the dollar holdings.

## Analytical technique

The study uses a panel model analysis with annual data from the BRICS countries spanning the years from 2006 to 2022. The choice of the period was determined by the availability of balanced data essential for robust analysis. To examine the short- and long-term relationships between reserve composition and trade, we employed the panel autoregressive distributed lag (ARDL) model, which was preferred to fixed effects or random effects models for several reasons. Firstly, the panel ARDL is inherently dynamic, effectively capturing both short-term fluctuations and long-term equilibrium relationships without losing essential long-run information. Secondly, it allows for individual heterogeneity in slope parameters, acknowledging that each of the BRICS countries may exhibit unique characteristics influencing the variables. Lastly, the model accommodates variables that are stationary at different levels of integration (i.e.,  $I(0)$  or  $I(1)$ ), eliminating the need for uniform stationarity among variables. The analysis was carried out using dynamic estimators, specifically the Mean Group (MG), Pooled Mean Group (PMG), and Dynamic Fixed Effects (DFE) estimators. The baseline model is specified as follows:

$$\Delta Y_{it} = \alpha_i + \sum_{p=1}^p \beta_{1ip} \Delta Y_{it-p} + \sum_{q=1}^q \beta_{2iq} \Delta X_{it-q} + \gamma_i (Y_{it-1} - \rho_i X_{it-1}) + \varepsilon_{it} \dots \quad (1)$$

where  $\Delta$  denotes the first difference operator,  $Y_{it}$  is the dependent variable for country  $i$  at time  $t$ ,  $X_{it}$   $\alpha_i$  is the country-specific fixed effect,  $\beta_{1ip}$  and  $\beta_{2ip}$  are the short-run coefficients.  $\theta_i$  is the error correction term, indicating the speed at which variables return to equilibrium after a shock,  $\pi_i$  represents the long-run relationship between the variables,  $\varepsilon_{it}$  is the error term. The functional equation is given as:

$$res_{it} = \beta_0 + \beta_1 trade_{it} + \beta_2 exch_{it} + \beta_3 GDP_{it} + \varepsilon_{it} \dots \quad (2)$$

where  $res_{it}$  is the reserve held in dollars,  $trade_{it}$  is the trade volume;  $exch_{it}$  is exchange rate; and  $GDP_{it}$  is the gross domestic product. Trade volume is added as a key determinant of reserve holdings because it reflects the level of international trade activities. A higher trade volume typically requires larger reserves to manage trade-related transactions, mitigate risks associated with trade imbalances, and ensure smooth international payments. This is especially important for the BRICS countries, as they often engage in large-scale international trade. Exchange rate also impacts reserve holdings as it affects the value of the domestic currency compared to foreign currencies. For instance, a volatile or depreciating exchange rate may prompt a country to hold more reserves to stabilize the currency, intervene in the foreign exchange market and maintain investor confidence. The BRICS countries that value exchange rate stability use their

foreign currency reserves to protect the economy from adverse currency movements, which makes it an essential factor in reserve holding. Lastly, GDP that measures an economy's total output is an indicator of its size and performance. A higher GDP suggests a larger and more robust economy, which may necessitate more reserves to support economic activity, manage external shocks, and maintain financial stability. That is why countries with larger economies often hold more reserves to use them as buffers against potential economic shocks and ensure they can meet international obligations.

**Table 1.** Data sources

Variables	Definition	Description	Source
Trade	Trade (% of GDP)	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	World Bank, World Development Indicator
Reserves	Total reserves minus gold (current US\$)	Total reserves minus gold comprise special drawing rights, reserves of IMF members held by the IMF, and holdings of foreign exchange under the control of monetary authorities.	
GDP	GDP (constant 2015 US\$)	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.	
Exchange rate	Official exchange rate (LCU per US\$, period average)	The official exchange rate refers to the exchange rate determined by national authorities or to the rate determined in the legally sanctioned exchange market.	

## Data

Details on trade, exchange rate, reserves holding in dollar, and GDP are presented in Table 1 below.

## Results

Table 2 presents descriptive statistics for the variables used in this study. The overall mean of 44.44% indicates a moderate level of trade activity among the BRICS countries. This moderate average trade volume and relatively high variability could suggest that

**Table 2.** Descriptive statistics

Variable		Mean	Std. Dev.	Min	Max
trade	overall	44.43612	11.74491	22.10598	68.09391
	between		10.52724	27.32552	53.90615
	within		6.96469	27.55517	62.71087
exch	overall	23.69067	23.4592	1.672829	78.60449
	between		23.79231	2.90033	55.76807
	within		9.66966	6.169927	54.9714
lgdp	overall	28.02143	1.077681	26.12456	30.42373
	between		1.138418	26.4438	29.64764
	within		.3398614	27.0237	28.79752
reserve	overall	6.28e+11	1.01e+12	5.90e+09	3.86e+12
	between		9.21e+11	3.32e+10	2.26e+12
	within		5.82e+11	-1.47e+12	2.22e+12

Source: Author's computation using STATA

while trade is substantial, it varies significantly across the BRICS countries and over time periods. For the exchange rate, the average value is 23.69, with minimum and maximum value of 1.67 and 78.6 respectively. This significant variability in exchange rates means that the BRICS countries have different levels of exchange rate volatility. For GDP, we use the log value, which shows comparatively low variability, reflecting

**Table 3.** Correlation test

	Trade	Exch	lgdp	Reserve
Trade	1.0000			
Exch	0.1894	1.0000		
lgdp	-0.2603	-0.0176	1.0000	
Reserve	-0.0486	-0.2228	0.8088	1.0000

Source: Author's computation using STATA

similar economic performance of the BRICS countries and possibility to harmonize their economic policies.

Our correlation analysis revealed no evidence of multicollinearity among the independent variables. Multicollinearity refers to a situation in regression analysis where independent variables are highly correlated with each other, leading to unreliable coefficient estimates. It can inflate standard errors, making it difficult

**Table 4.** Cross-sectional dependence

Variable	CD-test	value	corr	abs(corr)
Reserve	13.37	0.000	0.882	0.882
Trade	-0.65	0.514	-0.043	0.332
Exch	0.61	0.000	0.370	0.727
lgdp	14.60	0.000	0.963	0.963

Source: Author's computation using STATA

to determine the individual effect of each independent variable on the dependent variable. (See Table 3).

The cross-sectional dependence test showed that all variables, except trade, exhibited cross-sectional dependence (see Table 4). The stationarity test was conducted using the Im-Persaran-Shin (IPS) unit-root test, as shown in Table 5. The findings indicate that both reserve and GDP exhibited stationarity at levels, whereas trade and exchange rate displayed stationarity at first difference. The assumption is that the model is a dynamic model with a period greater than 20 (i.e.  $T > 20$ ) and the variables have different levels of integration.

The unit root test evaluates whether variables in a dataset are stationary, i.e. their statistical properties such as mean and variance are constant over time, or non-

**Table 5.** Unit Root Test

Variable	IPS		Comment
	Level	First diff	
reserve	2.0744***		Stationary at level
lgdp	-4.5357***		Stationary at level
trade	-1.0087	-2.9419***	Stationary at the first difference
exch	1.2007	-4.0738***	Stationary at the first difference

Source: Author's computation using STATA

stationary. Stationarity is crucial for ensuring valid regression analysis and avoiding spurious results.

**Table 6.** Slope homogeneity test

Delta	p-value
24.747	0.000
27.973	0.000

Source: Author's computation using STATA

The table shows the results of the Im, Pesaran, and Shin (IPS) test for stationarity, conducted at the variable's level and first difference. The significance is denoted by \*\*\*, typically indicating a 1% significance level. Reserve: At the level, the IPS statistic is 2.0744, significant at the 1% level (\*\*\*). Log GDP (lgdp): At the level, the IPS statistic is -4.5357, significant at the 1% level (\*\*\*). Trade: At the level, the IPS statistic is -1.0087, not significant. At the first difference, the IPS statistic is -2.9419, significant at the 1% level (\*\*\*). Exchange Rate (exch): At the level, the IPS statistic is 1.2007, not significant. At the first difference, the IPS statistic is -4.0738, significant at the 1% level (\*\*\*).

**Table 7.** Dynamic panel result

VARIABLES	Mg (longrun)	Mg (shortrun)	Pmg (longrun)	Pmg (shortrun)	Dfe (longrun)	Dfe (shortrun)
Errorcorrection		-0.205 (0.147)		-0.0944*** (0.0309)		-0.0924*** (0.0284)
D.Exch		-0.0227 (0.0369)		-0.0115 (0.0388)		-0.00885* (0.00497)
D.Trade		-0.00502 (0.00516)		-0.0155** (0.00633)		-0.00496 (0.00343)
D.lgdp		0.701 (1.020)		1.764* (1.009)		1.422** (0.557)
Exch	-0.723 (0.756)		0.0316 (0.0217)		0.000523 (0.0170)	
Trade	-0.0417 (0.0275)		0.0370** (0.0167)		-0.00319 (0.0253)	
lgdp	4.402** (1.918)		-0.109 (0.818)		-0.427 (0.967)	
Constant		-19.07 (21.52)		2.608*** (0.844)		3.590** (1.698)
Observations	110	110	110	110	.	.

Standard errors in parentheses\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Source: Author's computation using STATA

The slope homogeneity test reveals homogenous slope according to the p.values (see Table 6).

We employed the panel ARDL model with the mean group, pooled-mean group, and dynamic fixed effect estimators (see Table 7). We also used the Hausman test to determine the most effective estimator (see Table 8); according to this test, the PMG estimator is the most efficient. Table 7 shows a negative statistically insignificant relationship between the variables. At the same time, trade exhibits a negative and statistically significant relationship, and GDP demonstrates a positive and significant relationship. In the long term, however, the exchange rate shows a positive trend that is not statistically significant; trade exhibits a positive and statistically significant relationship, and GDP displays a negative trend that is not statistically significant. In the short term, increases in trade lead to decreases in the dollar reserves of the BRICS

**Table 8.** Hausman test

	MG vs PMG	Decision
Chi-square	3.98	PMG is better
P.value	0.26	
	PMG vs DFE	Decision
Chi-square	0.02	PMG is better
P.value	0.999	

Source: Author's computation using STATA

countries, as expected. This could be explained by intra-trade or bilateral agreements that obviate the necessity of using the US dollars. It may have a positive impact in the future, because trade can potentially augment the BRICS countries' reserve accumulation in the long term. However, the estimates of the alternative estimator (*mg and dfe*) differ, indicating a negative relationship in both the short and long term. The rate of adjustment is found to be approximately 9.4%, meaning that the short-term imbalance is rectified at the rate of 9.4 percent. In the short term, an increase in trade leads to an increase in reserves as the BRICS countries use their respective currencies. The opposite situation occurs when these reserves are being used over longer periods.

The discovered negative short-term relationship exists probably because the BRICS countries rely less on the US dollar as they engage more in trade, particularly intra-BRICS trade. This reflects the efforts of the BRICS countries to de-dollarize their activities and use local currencies in trade to reduce dependency on the US dollar. For instance, China and Russia have entered into bilateral agreements to engage in trade using their own currencies. The BRICS Contingent Reserve Arrangement (CRA) also serves as a framework for providing liquidity and protection against global liquidity pressures without relying on the US dollar. In the long term, however, increased trade leads to a need for more dollar reserves, possibly because global trade outside BRICS

relies on the US dollar. Despite all de-dollarization efforts, the USA's currency still dominates international trade, and countries have to accumulate US dollars. Thus, India's expanding trade with the US and European countries requires dollar reserves for transactions and as a buffer against currency volatility. South Africa's trade in commodities like gold and platinum often involves dollar-denominated contracts.

Economic growth boosts confidence and generates surplus funds, allowing countries to accumulate reserves. In the short term, policies that stimulate GDP growth can enhance a country's financial stability through increased reserves. Over the long term, as economies develop and diversify, there might be less emphasis on holding large dollar reserves. Developed economies may prefer to invest reserves into assets that yield higher returns or diversify into other currencies and commodities. Hence, a shift towards investing in infrastructure projects under the Belt and Road Initiative (BRI), rather than solely accumulating reserves. Although exchange rates are important for trade competitiveness, they do not appear to have any significant influence on reserve accumulation.

## Summary and Conclusion

The study analyses the impact of the BRICS countries' trade on the share of the US dollar in their reserve composition. The influence of trade volume, exchange rates, and GDP on reserve holdings in BRICS countries is assessed using dynamic panel data estimators: mean group (MG), pooled mean group (PMG), and dynamic fixed effects (DFE). It has been found that, on average, the reserve holding across BRICS countries is 23.7%, while the trade-to-GDP ratio averages 44.4%. Variability within and between countries is caused by diverse economic conditions. There is no significant multicollinearity among variables, implying reliable regression estimates. GDP and reserves are stationary at levels, while trade and exchange rates are stationary at first difference. All the variables, except trade, show cross-sectional dependence, indicating interconnected economies. Trade has a statistically significant negative effect on reserves, suggesting that increased trade initially reduces dollar reserves, possibly due to currency swaps or trade agreements. Trade may show a positive and statistically significant effect, as persistent trade relationships eventually boost reserves. GDP has a positive impact in the short term but insignificant negative long-term effect. The error correction term suggests that short-term imbalances are corrected at a 9.4% rate in each period. The Hausman test results confirm PMG as the preferred model. These findings suggest that in the short term, the BRICS countries may reduce reserves owing to intra-trade dynamics, but long-term trade positively impacts reserves as economies adjust and accumulate assets.

The study provides insights into the impact of trade, GDP and exchange rates on the BRICS countries' dollar reserves, using dynamic panel data analysis. While increased trade initially reduces dollar reserves, due to currency swaps or trade agreements, it positively impacts reserve accumulation in the long term. This suggests that intra-

BRICS trade bypassing the US dollar can enhance reserves as trade relationships mature. Short-term fluctuations point to GDP as a key driver of reserve growth, while exchange rate impacts are minimal and statistically insignificant. The PMG estimator, found to be the most efficient through the Hausman test, reveals a 9.4% adjustment rate, indicating that short-term imbalances gradually adjust over time. The findings underscore the strategic role of sustained trade relations and economic integration among the BRICS nations, as well as the potential benefits of reducing reliance on the US dollar for reserve stability.

The study suggests that increased intra-BRICS trade may reduce reliance on the US dollar for transactions, especially in the short term. First, bilateral agreements and trade in local currencies can help diversify reserve compositions and decrease dependence on the dollar. Next, currency swaps among the countries can further reduce reliance on the US dollar as they facilitate transactions in local currencies, which can stabilize the dollar share in reserves by reducing the need for dollar liquidity in trade. Third, the strengthening of the long-term trade partnerships will certainly be most beneficial. In the long term, trade has shown a positive impact on reserve accumulation. The BRICS countries' stable trade partnerships are expected to support reserve growth, expand the use of regional currencies or trade-weighted baskets to further diversify their reserves. To achieve these goals, it may be necessary to implement strategies that mitigate exchange rate volatility in trade transactions. Exchange rate stability should help maintain a balanced reserve composition without having to increase the dollar-based assets. Finally, enhanced economic integration mechanisms within BRICS should be most beneficial: deeper economic integration could promote currency harmonization through regional currency arrangements serving as an alternative to the dollar in the trade among the BRICS countries. This strategy will further reduce the share of the US dollar in their reserves and ensure intra-BRICS economic stability.

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