

Compare the Indian Financial System with other BRIC Nations



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List of Abbreviations

A

ASTS+	- Automated Trading System Plus
ANOVA	- Analysis of Variance

B

BRIC	- Brazil, Russia, India, China
BRI	- Belt and Road Initiative
BCB	- Brazilian Central Bank
BSE	- Bombay Stock Exchange
BOVESPA	- Brazil Stock Exchange and Over-the-Counter Market
BOLT+	- Powerful real time trading solution provided by BSE
BRL	- Brazilian real
bp	- Basis Points
B vs I	- Brazil vs India

C

CIBIL	- Credit Information Bureau (India) Limited
COVID-19	- Coronavirus disease 2019
CSRC	- China Securities Regulatory Commission
CMIE	- Centre for Monitoring Indian Economy
CPI	- Consumer Price Index
CBR	- Central Bank of Rusia
CVM (Brazil)	- Brazilian Securities and Exchange Commission
CMN (Brazil)	- National Monetary Council
CBRC	- China Banking Regulatory Commission
CIRC	- China Insurance Regulatory Commission
CRAR	- Capital to Risk (Weighted) Assets Ratio
CAR	- Capital Adequacy Ratio
CNY	- Chinese Yuan
CICC	- China International Capital Corporation
CITIC	- China International Trust Investment Corporation

CBIRC - China Banking and Insurance Regulatory Commission

CRR - Cash Reserve Ratio

CAGR - Compound Annual Growth Rate

C vs I - China vs India

D

DREX - Digital Form of the Brazilian Currency

df - Degree of Freedom

E

EAEU - Eurasian Economic Union

ETF - Exchange-Traded Funds

F

FDI - Foreign Direct Investment

FRBM Act - Fiscal Responsibility and Budget Management Act

FMC - Forward Market Commission

G

GST - Goods and Services Tax

GDP - Gross Domestic Product

G-Secs - Government Securities

H

HFT - High-Frequency Trading

I

IBC - Insolvency and Bankruptcy Code

IT - Information Technology

ILO - International Labour Organization

IMF - International Monetary Fund

IRDAI - Insurance Regulatory and Development Authority of India

IFSC - Indian Financial System Code

INR	- Indian Rupee
IPO	- Initial Public Offerings

L

LIC	- Life Insurance Corporation of India
LPG (1991)	- Liberalization, Privatization, Globalization
LCR	- Liquidity Coverage Ratio
LTN	- Brazilian Fixed-Rate Bonds
LFT	- Brazilian Floating-Rate Bonds

M

MSMED Act	- Micro, Small and Medium Enterprises Development Act
MSPs	- Minimum Support Prices
MGNREGA	- Mahatma Gandhi National Rural Employment Guarantee Act
MOEX	- Moscow Exchange
MSF	- Marginal standing facility
MS	- Mean Square

N

NIP	- National Infrastructure Pipeline
NEP (Russia)	- New Economic Policy
NPAs	- Non-Performing Assets
NPCI	- National Payments Corporation of India
NPL	- Non-Performing Loan
NSE	- National Stock Exchange
NTN-B	- Brazilian Inflation-Linked Bonds
NII	- Net Interest Income
NBFC	- Non-Banking Financial Companies

O

OECD	- Organisation for Economic Co-operation and Development
OFZs	- coupon-bearing federal loan bonds issued by the Russian government

OMOs - Open Market Operations

P

per capita - Per person

PLI - Production-Linked Incentive

PBOC - The People's Bank of China

PERVIC (Brazil) - The national superintendence of complementary social security

PFRDA - Pension Fund Regulatory Development Authority

PMJDY - Pradhan Mantri Jan Dhan Yojana

PUMA - Platform Unified Multi Asset-class electronic trading platform

R

RBI - Reserve Bank of India

RMB - Renminbi

ROA - Return on Assets

ROE - Return on Equity

RUB - Russian Ruble

RRR - Reserve Requirement Ratio

R vs I - Russia vs India

S

SEBI - Securities and Exchange Board of India

SMEs - Small and Medium Enterprises

SEZs - Special Economic Zones

SOEs - State-Owned Enterprises

SUSEP - Superintendence of Private Insurance

SSE - Shanghai Stock Exchange

STAR - Shanghai Stock Exchange Science and Technology Innovation Board

S&P - Standard and Poor

SLR - Statutory Liquidity Ratio

SWOT - Strength, Weakness, Opportunity, Threats

SWIFT - Society for Worldwide Interbank Financial Telecommunications

SS - Sum of Squares

U

UTI - Unit Trust of India

UPI - Unified Payments Interface

USD - United States Dollar

UNCTAD - United Nations Conference on Trade and Development

W

WTO - World Trade Organization

WACR - Weighted Average Call Rate

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Chapter 1: Introduction

The financial systems of nations serve as the backbone of their economies, influencing growth, development, and stability. In the case of emerging markets like the BRIC nations—Brazil, Russia, India, and China—financial systems are particularly critical as these countries navigate complex global markets while dealing with internal economic challenges. Each of these nations exhibits a unique approach to financial governance, shaped by their historical, political, and economic contexts. India, in particular, has seen significant transformations over the past decade, driven by domestic reforms and global pressures, positioning it as a dynamic player within the BRIC bloc.

This study aims to explore and compare the financial systems of the BRIC nations with a special emphasis on India's evolving economic landscape. The period from 2013 to 2023 has been particularly crucial for India, marked by key economic reforms, shifts in macroeconomic indicators, and the impact of global events like the COVID-19 pandemic. By analyzing India's financial system in the context of the broader BRIC framework, the study seeks to identify patterns of growth, resilience, and the factors driving economic performance.

The objective of this research is to examine the critical macroeconomic variables—Gross Domestic Product (GDP), Foreign Direct Investment (FDI), inflation, unemployment, and fiscal policies—and assess their role in shaping India's financial structure. Additionally, the study investigates the interplay between these variables to understand how they contribute to economic growth and stability. A core focus is placed on the fiscal health of India, given the increasing significance of government spending, fiscal deficits, and their long-term implications on growth.

Throughout the study, a comparative analysis is conducted between India and its BRIC counterparts to highlight differences in financial governance, market structures, and responses to external shocks. While India has pursued a blend of liberalization and fiscal discipline, Brazil, Russia, and China have taken distinct paths—ranging from state-controlled economic mechanisms to navigating through high inflation and geopolitical instability. By exploring these differences, the study seeks to contextualize India's performance and its position within the BRIC grouping.

This research also delves into India's labor market dynamics, exploring the challenges of structural unemployment, labor reforms, and skill development. Additionally, inflation control mechanisms, the role of FDI in development, and the broader implications of India's integration into the global financial system are key areas of focus. By studying these elements, the research aims to provide a nuanced understanding of the strengths, weaknesses, and opportunities in India's financial system compared to its BRIC peers.

Chapter 2: Historical Evolution

The financial systems of BRIC nations—Brazil, Russia, India, and China—have undergone significant evolution, shaped by unique historical, political, and economic contexts. Brazil's financial system developed through periods of hyperinflation in the 1980s and 1990s, stabilizing after the implementation of the Real Plan in 1994, which brought inflation under control and strengthened banking regulations. Russia transitioned from a centrally planned economy to a market-oriented financial system after the fall of the Soviet Union in 1991, characterized by the privatization of state assets and subsequent banking crises in the 1990s, leading to more robust regulatory frameworks in the 2000s. India's financial system evolved post-independence with major reforms in the 1990s, including liberalization, deregulation, and increased foreign investment, which modernized its banking sector and capital markets. China's financial system has transformed from state-controlled mechanisms to a more market-driven approach since the late 1970s, marked by gradual reforms, the establishment of stock exchanges in the early 1990s, and an ongoing process of liberalization and integration with global markets. Each nation's financial evolution reflects a blend of stabilization, regulatory improvements, and openness to international markets, positioning BRIC countries as significant players in the global financial landscape.

2.1 India: Evolution from colonial times to liberalization and current status

The Indian financial system's evolution began during colonial times, driven by British reforms. The British East India Company laid the foundation with the establishment of the Presidency Banks—Bank of Bengal (1806), Bank of Bombay (1840), and Bank of Madras (1843)—which merged into the Imperial Bank of India in 1921, now the State Bank of India. The Bombay Stock Exchange was founded in 1875, facilitating equity trading. The insurance sector developed with Oriental Life Insurance Company (1818) and Bombay Mutual Life Assurance Society (1870). Indigenous banking by 'Seths' and 'Shroffs' played a significant role in local credit. Important commissions like the Indian Industrial Commission (1916-1918), Indian Fiscal Commission (1921-1922), and the Royal Commission on Indian Currency and Finance (1926) recommended the establishment of the Reserve Bank of India, while the cooperative banking movement supported farmers and small businesses. These developments laid the groundwork for post-independence reforms.

From 1947 to 1991, India focused on building a strong financial infrastructure. The nationalization of 14 major banks in 1969 and six more in 1980 aimed at extending services to rural areas. The Unit Trust of India (1963) and Life Insurance Corporation of India (1956)

expanded financial services. Regulatory bodies like SEBI (1988) enhanced capital market regulation, setting the stage for liberalization.

The 1991 reforms, driven by Liberalization, Privatization, and Globalization (LPG), addressed economic crises and integrated India into global markets. Key initiatives included deregulating interest rates, reducing the fiscal deficit, and encouraging FDI. SEBI strengthened market regulation, and private banks were introduced in the 1990s. The 2000s saw governance improvements through the FRBM Act (2003), CIBIL (2004), and MSMED Act (2006). Post-2008, stricter banking regulations were enforced, and in the 2010s, demonetization (2016), UPI, and GST (2017) reformed payments and taxation. The Insolvency and Bankruptcy Code (IBC) streamlined corporate insolvency, while the National Infrastructure Pipeline (2019) boosted infrastructure. Recent measures like Aatmanirbhar Bharat addressed COVID-19 recovery.

2.2 Brazil: Historical context from import substitution to modern reform

In the early 20th century, Brazil's financial system was underdeveloped, with minimal regulation and a focus on agrarian exports like coffee and rubber. Recognizing the need for modernization, the government established state-controlled institutions in the 1930s to promote industrialization. The creation of the Central Bank of Brazil in 1964 provided a structured approach to monetary policy and currency stabilization during political upheaval, fostering a more stable financial environment.

In the 1980s, economic instability led to the Cruzado Plan (1986), aimed at curbing hyperinflation with a new currency and price controls, followed by the Bresser Plan (1987) for additional reforms. The introduction of the Plano Real in 1991, and the adoption of the Real in 1994, was pivotal in stabilizing the economy and controlling inflation.

In the 2010s, Brazil faced an economic downturn, prompting fiscal reforms, including a 2016 spending cap to manage public expenditure. In response to the COVID-19 pandemic, emergency measures were introduced to support businesses and individuals, alongside ongoing reforms to streamline the tax system and improve regulatory efficiency.

2.3 Russia: Transition from Soviet-era planned economy to market-based reforms

In the early 1900s, Russia's financial system was agrarian-based under Imperial rule. The 1917 Bolshevik Revolution shifted the economy to central planning, with the state controlling all resources. The New Economic Policy (NEP) in the 1920s briefly reintroduced market elements, but the 1930s saw a return to strict central planning under Stalin, which lasted through the Soviet era, marked by inefficiencies.

The collapse of the Soviet Union in 1991 triggered a transition with "shock therapy" reforms under Boris Yeltsin, involving rapid privatization and price liberalization. These reforms led to hyperinflation, economic disruption, and the rise of oligarchs. The 1998 financial crisis further weakened the economy, leading to a ruble collapse and recession.

In the 2000s, Vladimir Putin's administration focused on economic stabilization, benefiting from high oil prices, creating the Stabilization Fund in 2004, and implementing banking reforms. Though the 2008 global financial crisis caused disruptions, government stimulus measures helped stabilize the economy.

The 2014 annexation of Crimea led to Western sanctions and an economic downturn, prompting Russia to adopt import substitution policies and reduce reliance on Western financial systems. Recent challenges, including the COVID-19 pandemic and sanctions following the 2022 Ukraine invasion, have led Russia to focus on economic resilience through increased state control, digital financial innovations, and efforts to de-dollarize the economy.

2.4 Economic reforms since 1978 and the establishment of a unique socialist market economy

After the establishment of the People's Republic of China in 1949, the financial system was centrally planned and state-controlled, reflecting a socialist model aimed at stabilizing and rebuilding the economy. Financial institutions were consolidated under state control with limited market mechanisms to ensure economic stability.

By the late 1970s, economic stagnation led to the Reform and Opening Up policy of 1978, introducing Special Economic Zones (SEZs) and gradually liberalizing trade and investment. This shift spurred rapid economic growth and increased global integration.

In the 1990s and early 2000s, China deepened market reforms with the establishment of stock exchanges in Shanghai (1990) and Shenzhen (1991), and the China Securities Regulatory Commission (1992), fostering transparency and modernization.

During the 2010s, China focused on controlling financial risks and promoting the Renminbi's internationalization. Key measures included regulating shadow banking and launching the Belt and Road Initiative, which helped stabilize the financial system and enhance China's global influence.

Chapter 3: Macroeconomic Landscapes

3.1 INDIA

3.1.1. Gross Domestic Product (GDP)

Gross Domestic Product (GDP) represents the total value of all goods and services produced over a specific time period within a country. India, being the world's fifth largest economy, has seen significant changes in its GDP over the past few decades. The adoption of the LPG policy in the 1990s initiated transformative reforms that redefined India's economic landscape, enhancing market efficiency and global integration. These reforms marked a departure from the protectionist policies of the past, paving the way for increased foreign investment, privatization, and deregulation.

According to the Economic Survey of India 2024-25, these changes have had a profound impact on India's economic trajectory. For instance, the GDP growth rate averaged around 6-7% annually during the first two decades of the 21st century. However, this growth trajectory faced disruptions due to global financial crises and domestic challenges, including policy bottlenecks and socio-economic disparities.

The Indian GDP has shown a steady growth trajectory over the past decades, with significant increases in certain periods due to economic reforms and global market conditions. For instance, in 2020-21, despite the global economic downturn caused by the COVID-19 pandemic, India's GDP contracted by 7.3%, which was a stark contrast to the average annual growth rate of 6-7% observed in the preceding years.

From 2013-2014 to 2015-2016, India experienced robust GDP growth, driven by a global economic recovery and significant domestic reforms. The growth rate rose from 6.4% to 8.0%, supported by measures aimed at improving business sentiment and reducing fiscal deficits. The election of Prime Minister Narendra Modi in 2014 brought political stability and optimism, bolstered by initiatives like "Make in India" which aimed to boost manufacturing and attract foreign direct investment. Additionally, a sharp drop in global oil prices reduced import bills and improved fiscal health, while public investments in infrastructure projects further fuelled economic expansion.

However, from 2016-2017 to 2019-2020, growth began to slow due to a combination of domestic disruptions and global uncertainties. The GDP growth rate peaked at 8.2% in 2016-2017 despite the short-term effects of demonetization aimed at curbing black money. The rollout of the Goods and Services Tax (GST) in 2017 initially disrupted business operations, and rising non-performing assets in the banking sector tightened credit conditions. By 2019-2020, the growth rate had fallen to 4.2%, impacted by weak

agricultural performance, declining consumer spending, and escalating global trade tensions.

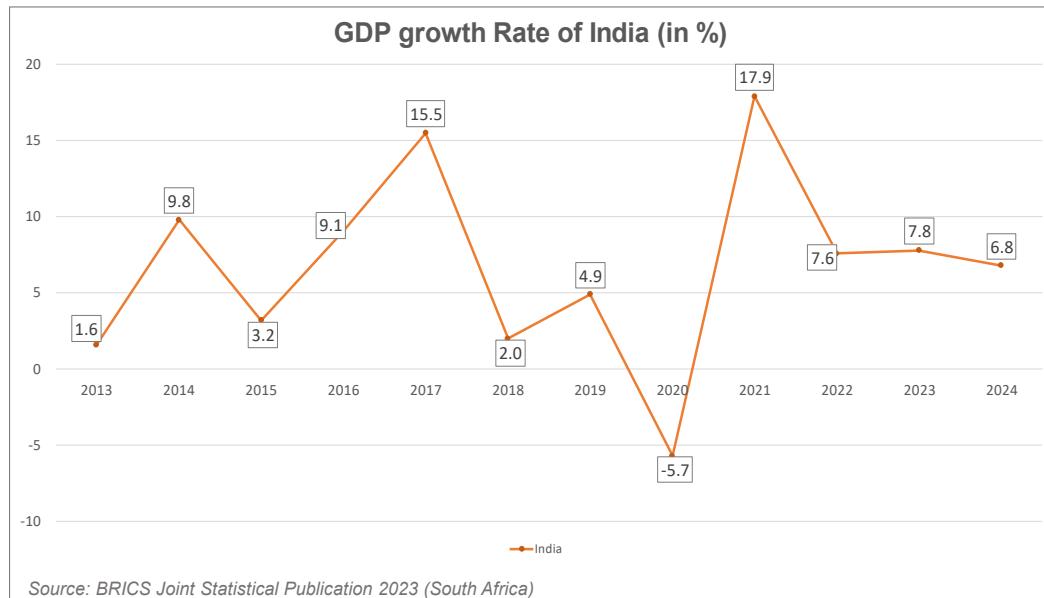


Figure 3.1 - GDP growth rate of India

The COVID-19 pandemic led to a severe contraction of -7.3% in 2020-2021 due to nationwide lockdowns and widespread economic disruptions. However, a strong recovery is projected for 2021-2022 with a growth rate of 9.5%, driven by government stimulus measures, accelerated vaccination efforts, and the resumption of economic activities. This recovery is expected to continue with an estimated growth of 7.0% in 2022-2023 and 6.8% in 2023-2024, supported by strong domestic demand, public investment in infrastructure, and rapid expansion in the digital economy and technology sectors.

GDP per capita

Between 2013 and 2016, India's GDP per capita saw a consistent upward trend, rising from roughly \$1,440 to about \$1,800. This growth was propelled by the global post-crisis economic recovery and robust domestic reforms aimed at enhancing business climate and fiscal discipline. The ascension of Prime Minister Narendra Modi in 2014 infused political stability and economic optimism, bolstered by the "Make in India" initiative targeting a resurgence in manufacturing and foreign direct investment.

Additionally, plummeting global oil prices slashed the import bill, bolstering fiscal health, while significant public investments in infrastructure further catalysed growth.

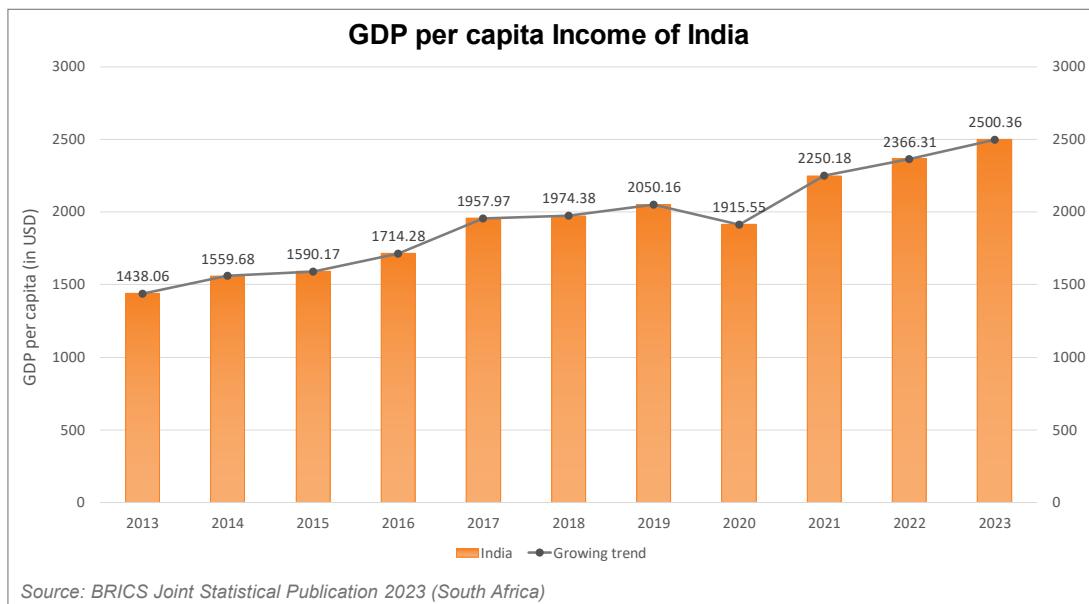


Figure 3.2 - GDP per capita Income of India

From 2017 to 2021, however, India's economic trajectory encountered headwinds. GDP per capita climbed to around \$2,100 by 2019 but contracted to approximately \$1,900 in 2020 due to the COVID-19 pandemic. The rollout of the Goods and Services Tax (GST) in 2017 initially disrupted economic activities, and rising non-performing assets in the banking sector tightened credit availability. The pandemic compounded these challenges, triggering severe economic disruptions, widespread unemployment, and a slump in consumer spending. Nevertheless, a robust recovery was forecasted for 2021-2022, with GDP per capita expected to rebound to around \$2,100, driven by government stimulus, accelerated vaccination efforts, and the resumption of economic activities. This recovery trajectory is anticipated to extend into 2022-2023, with GDP per capita projected to reach approximately \$2,300, supported by strong domestic demand and sustained public investment in infrastructure.

3.1.2. FDI

Foreign Direct Investment (FDI) is an investment by an entity or individual in one country into business interests in another. It typically involves acquiring a substantial ownership stake or controlling interest in a foreign company, including assets like factories or equipment, rather than just financial investments

Foreign Direct Investment' (FDI) is the investment through equity instruments by a person resident outside India (a) in an unlisted Indian company; or (b) in 10 percent or more of the post issue paid-up equity capital on a fully diluted basis of a listed Indian company.

FDI is crucial for emerging economies like India as it creates jobs through new business ventures and expansions, introduces advanced technologies and practices that enhance productivity, and strengthens the balance of payments by injecting foreign capital into the economy.

FDI Trends in India (Last 10 Years)

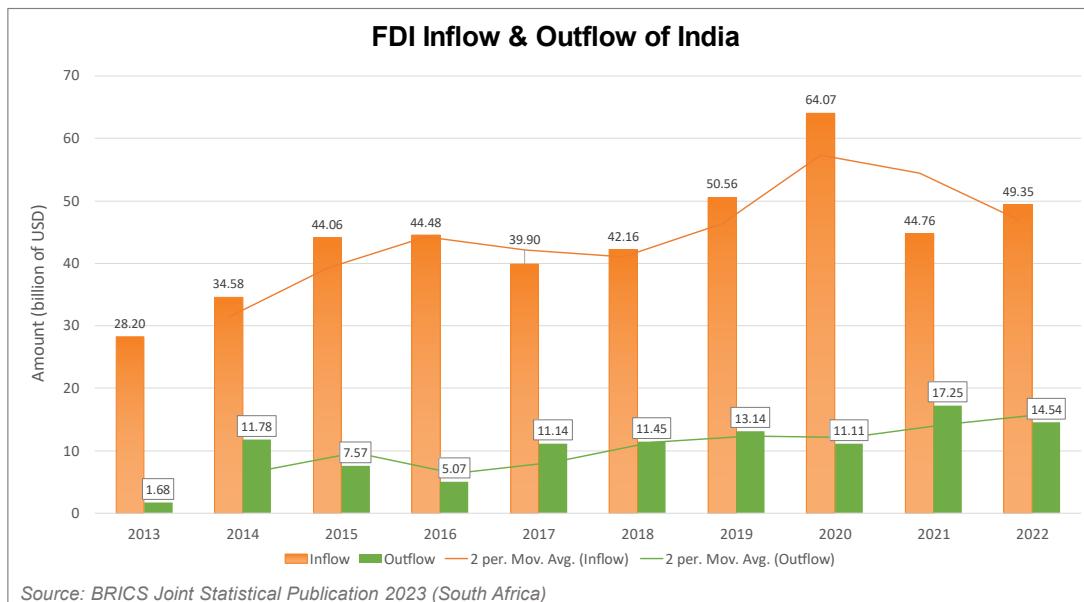


Figure 3.3 - FDI Inflow & Outflow of India

The FDI inflows in India from 2013 to 2022 show a general upward trend with significant fluctuations. The inflow peaked in 2020 at nearly \$65 billion, driven by liberalized FDI policies, major investments from global tech firms like Google and Meta, and India's positioning as an alternative to China during pandemic-induced supply chain disruptions¹. However, in 2021, FDI dropped to around \$50 billion, largely due to global economic uncertainty, the impact of India's second wave of COVID-19, and increased scrutiny on investments from neighbouring countries. By 2022, FDI remained stable at approximately \$50 billion, reflecting a steady recovery as investor confidence returned in the post-pandemic period, supported by continued economic reforms and government initiatives to attract foreign investment

The FDI outflows from India between 2013 and 2022 indicate a rising trend with occasional fluctuations. The outflow reached its first peak in 2014 at \$11 billion, driven by Indian firms expanding abroad, particularly in energy and infrastructure sectors. However, outflows declined in the following years, stabilizing around \$6-7 billion from 2015 to 2016, reflecting global economic uncertainty and reduced cross-border investment activity. A consistent increase started from 2017, as Indian companies pursued global growth opportunities. The outflow peaked again in 2021 at \$17 billion,

influenced by post-pandemic economic recovery and Indian firms' expansion in global markets, especially in IT and pharmaceuticals. In 2022, FDI outflows slightly dropped to \$15 billion, largely due to global economic challenges, but remained robust as Indian businesses continued investing abroad for strategic growth

Leading FDI Destinations in India

India's FDI is led by the tertiary sector, with IT, financial services, and other services attracting the most investment. Services and technology account for one-third of all FDI inflows. Despite the "Make in India" campaign, manufacturing (excluding automobiles) remains outside the top five sectors.

In 2022, sectoral FDI in India, as reported by CMIE Economic Outlook, was led by Computer Software and Hardware, attracting \$14.5 billion (24.6% of total FDI). The Services Sector followed with \$7.1 billion (12.1%), while the Automobile Industry received \$7.0 billion (11.9%). Trading secured \$4.5 billion (7.7%), and Infrastructure Construction attracted \$3.2 billion (5.5%). These figures highlight key sectors driving foreign investment in India

The tertiary sector in India leads FDI, as evidenced by:

- i. Amazon: \$2B in 2014 and \$3B in 2016 for e-commerce operations
- ii. Walmart: \$16B investment in Flipkart in 2018
- iii. Google & Meta: \$4.5B and \$5.7B investments in Jio Platforms in 2020
- iv. Foxconn: \$600M commitment to production facilities in 2023
- v. Singapore Airlines: \$267M purchase of a 25.1% stake in the Air India group in 2023

Origins of Foreign Direct Investment

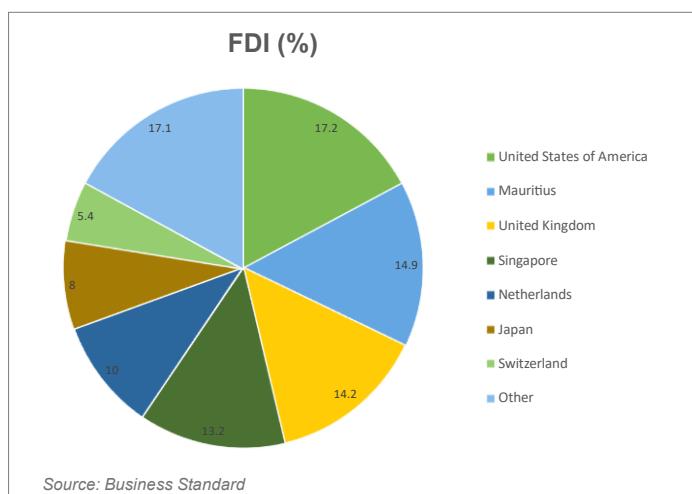


Figure 3.4 - FDI (%)

Over the past decade, FDI inflows into India have fluctuated, with a notable shift toward high-value investments from developed economies. Mauritius, once the largest contributor due to favourable tax treaties, has seen a decline following tax law amendments, while the United States has emerged as the dominant investor, driven by expansions in technology and manufacturing. Singapore and Japan have remained stable contributors, focusing on infrastructure and financial services. Meanwhile, post-Brexit, the UK's FDI has reduced, and countries like the Netherlands and Switzerland have increased investments, particularly in industrial and renewable energy sectors. In 2022-2023, the U.S. accounted for 17.2% of total inflows, closely followed by Mauritius (17.1%) and Singapore (14.9%), reflecting India's growing diversification of FDI sources

3.1.3. INFLATION RATE

Inflation, defined as the sustained increase in the general price level of goods and services over time, is a critical economic indicator that reflects the purchasing power of consumers and the overall health of an economy. In India, inflation has been a significant concern over the past decade, with consumer price index (CPI) averaging 5.5% from 2012 to 2022, notably above the Asia-Pacific regional average of 2.1%. The inflation dynamics in India are influenced by various factors, including domestic economic activities, monsoon patterns affecting agricultural output, and policy decisions made by the Reserve Bank of India (RBI)

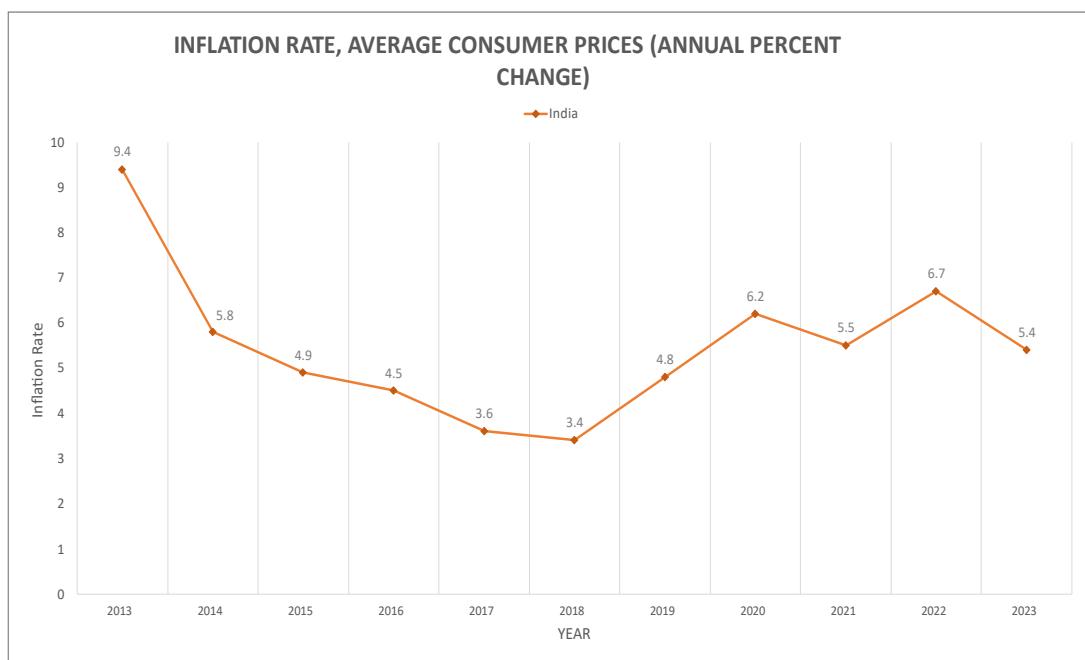


Figure 3.5 – India's Inflation

India experienced a peak inflation rate of 12.17% in November 2013, largely driven by high food prices and supply-side constraints. Food inflation is particularly significant in India, as it constitutes about 46% of the CPI basket, making it a major driver of overall inflation. The high weight of food in the CPI basket, coupled with its susceptibility to supply shocks and government interventions, poses unique challenges for monetary policy in achieving the inflation target. Following this peak, inflation began to decline steadily from 2014 onwards, reaching 3.54% in July 2024. This decrease was largely attributed to a combination of declining global commodity prices, particularly crude oil, which fell from around \$100 per barrel in 2013 to approximately \$57 per barrel by the end of 2014. This significant reduction in oil prices lowered transportation and production costs, contributing to a decrease in overall prices

Favourable monsoons in subsequent years further boosted agricultural production, leading to a sharp correction in food prices and a decline in food inflation from around 10% in 2013-14 to below 5% by 2018. The government also implemented several measures to stabilize food prices, including increased procurement of essential commodities, moderating increases in Minimum Support Prices (MSPs), and allowing the free movement of fruits and vegetables. Additionally, the RBI's adoption of an inflation-targeting framework in 2016 provided a clear mandate to prioritize inflation control, while a stable exchange rate against the US dollar helped contain imported inflation

However, inflation began to rise again in 2019, reaching 4.8%, largely driven by supply chain disruptions and increased food prices. In 2020, inflation further increased to 6.2%, primarily due to the COVID-19 pandemic, which caused significant supply chain disruptions and heightened demand for certain goods. The pandemic's impact led to shortages of essential products, further exacerbating inflationary pressures. In 2021, inflation dipped to 5.5% as the economy started to recover, aided by improved supply chains and a gradual return to normalcy

Nonetheless, inflation surged again in 2022, averaging 6.7%, influenced by rising global commodity prices, particularly energy and food, exacerbated by the Russia-Ukraine war. This conflict caused oil prices to skyrocket from around \$76 per barrel at the start of January 2022 to over \$110 per barrel by early March 2022. The sharp increase in oil prices further fuelled inflation expectations, as higher energy costs contributed to increased prices of virtually all goods and services. In 2023, inflation moderated to 5.4% as the effects of previous price hikes began to stabilize, and the government implemented measures to control food prices and improve supply chain

efficiency. This moderation was also supported by a stable exchange rate and favourable monsoon conditions that positively impacted agricultural output.

Overall, the inflationary trends in India from 2013 to 2023 reflect a complex interplay of external shocks, domestic economic conditions, and government interventions aimed at maintaining price stability in a challenging economic environment. The high focus on food inflation in the CPI calculation underscores the importance of agricultural productivity and supply chain management in influencing overall inflation rates in India.

3.1.4. FISCAL POLICIES

Trends in India's Fiscal Deficit

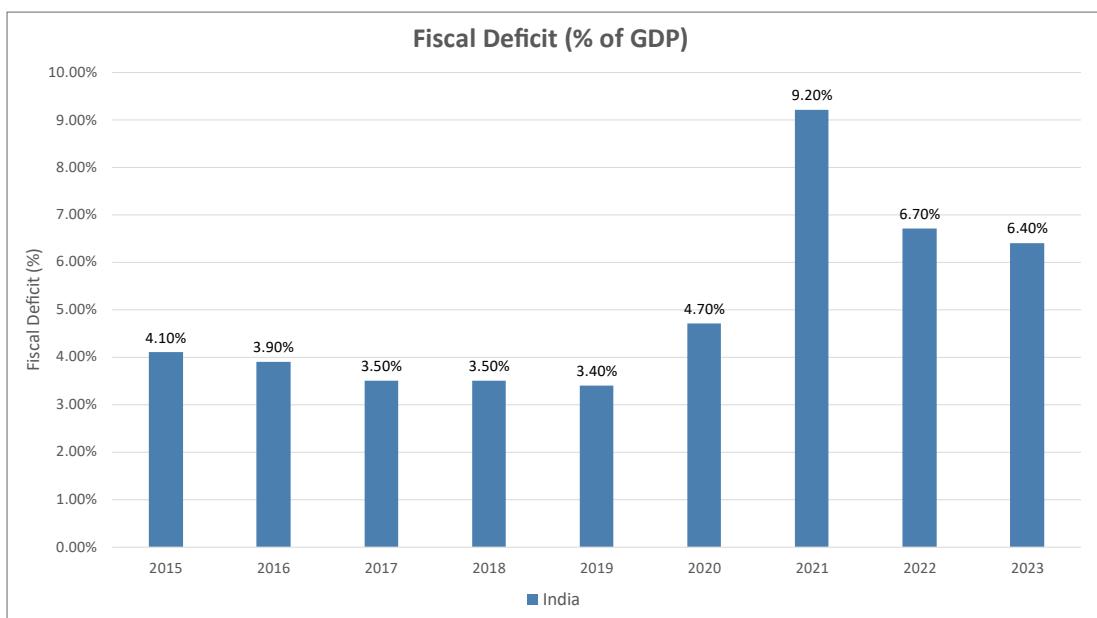


Figure 3.6 – Fiscal Deficit (% of GDP)

Source: [India: gross fiscal deficit in relation to GDP 2014-2024 | Statista](#)

From 2015 to 2019, India's fiscal deficit remained stable between 3% and 4% of GDP, reflecting fiscal discipline under the FRBM Act. The graph illustrates the quarterly tax revenue as a percentage of nominal GDP in India from 2015 to 2024. The data shows a fluctuating trend, with tax revenue ranging from approximately 3% to 11%.

Tax revenue reached a peak of 11.1% in 2015, driven by strong economic growth and government policies aimed at increasing tax collections. Following the peak, tax revenue declined to 7.9% in 2016 and 8.1% in 2017, potentially due to factors such as economic slowdown, demonetization, and changes in tax policies. Tax revenue recovered to 8.8% in 2018 and 8.9% in 2019, likely due to economic recovery, reforms, and increased tax compliance efforts. The COVID-19 pandemic led to a significant

decline in tax revenue to 6.0% in 2020, primarily due to economic slowdown, business disruptions, and government stimulus measures. Tax revenue gradually recovered in 2021, reaching 7.7%, and continued to grow in 2022 (8.0%), 2023 (7.8%), and 2024 (8.3%)

India's Tax Revenue as a Percentage of GDP

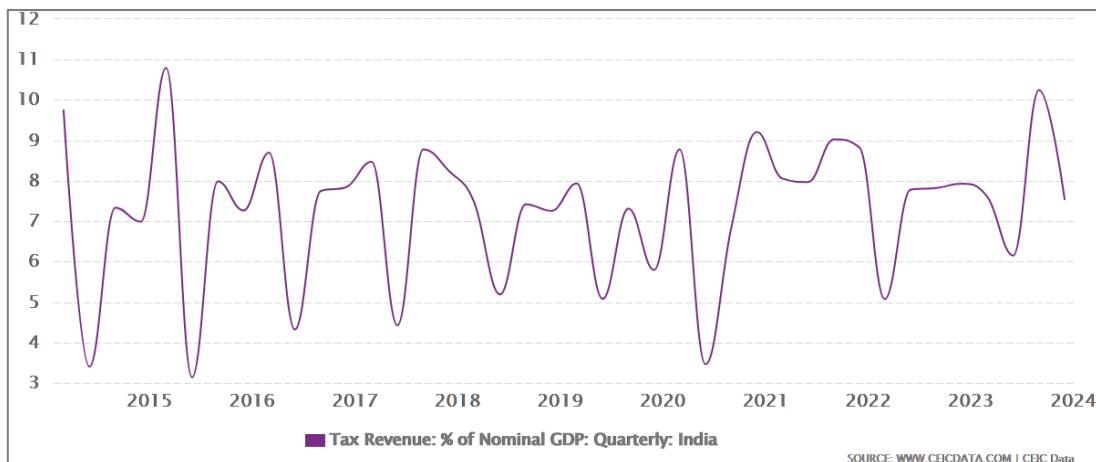


Figure 3.7 – Tax Revenue

Source: [India Tax Revenue: % of GDP, 1997 – 2024 | CEIC Data](#)

The graph illustrates the quarterly tax revenue as a percentage of nominal GDP in India from 2015 to 2024. The data shows a fluctuating trend, with tax revenue ranging from approximately 3% to 11%.

Several factors contribute to these fluctuations, including economic growth, government policies, and external factors. Economic growth drives tax revenue by increasing consumption and investment, generating more taxable income and transactions. Government policies, such as changes in tax rates, also significantly influence tax revenue. Additionally, external factors, like global economic conditions and geopolitical events, can impact tax revenue by affecting economic activity and trade.

Tax revenue reached a peak of 11.1% in 2015, driven by strong economic growth and government policies aimed at increasing tax collections. Following the peak, tax revenue declined to 7.9% in 2016 and 8.1% in 2017, potentially due to factors such as economic slowdown, demonetization, and changes in tax policies. Tax revenue recovered to 8.8% in 2018 and 8.9% in 2019, likely due to economic recovery, reforms, and increased tax compliance efforts. The COVID-19 pandemic led to a significant decline in tax revenue to 6.0% in 2020, primarily due to economic slowdown, business

disruptions, and government stimulus measures. Tax revenue gradually recovered in 2021, reaching 7.7%, and continued to grow in 2022 (8.0%), 2023 (7.8%), and 2024 (8.3%)

3.1.5. Unemployment and Labor market dynamics of India

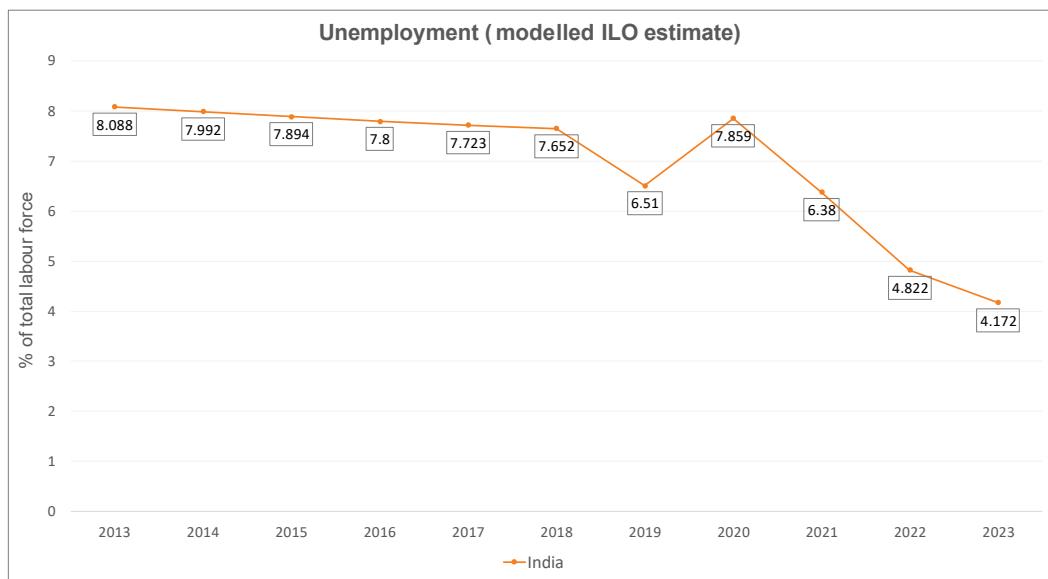


Figure 3.8 – Unemployment (modelled ILO estimate)

The Indian labour market has undergone significant transformation over the past decade, driven by a combination of economic policies, demographic shifts, technological advancements, and global economic trends. Understanding the causes behind the fluctuations in unemployment rates from 2013 to 2023 requires a multi-faceted analysis that considers both macroeconomic indicators and sector-specific developments. This period includes several key events, such as the implementation of the Goods and Services Tax (GST), demonetization, the COVID-19 pandemic, and global economic slowdowns, each of which has had a profound impact on employment in India.

The period from 2013 to 2014 was largely characterized by stabilization efforts following the global financial crisis of 2008-2009. The unemployment rate in 2013 stood at approximately 8.1%, showing a gradual decline to 8% in 2014. This decrease was supported by steady economic growth, driven by strong performances in the services and manufacturing sectors, along with a boost in foreign direct investments (FDI). India's GDP growth during this period averaged around 6.9%, which helped sustain job creation, particularly in urban areas. The continuation of welfare schemes like the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)

also played a vital role in reducing unemployment, especially in rural areas, by providing a safety net for the rural workforce.

The election of a new government in 2014 marked a shift towards aggressive economic reforms aimed at revitalizing the Indian economy. The "Make in India" initiative, launched in September 2014, was a key policy aimed at boosting manufacturing and creating jobs. However, the effects of these reforms were not immediately felt in the labour market. Unemployment showed a slight decrease, with the rate dropping from 8% in 2014 to 7.9% in 2015, driven by robust GDP growth of 7.5%. However, challenges such as slow infrastructure development and regulatory bottlenecks limited the immediate impact of these reforms on job creation. The formal sector struggled to absorb the large number of new entrants to the labour market, resulting in only a marginal reduction in the unemployment rate.

The introduction of the Goods and Services Tax (GST) in 2016 was a significant structural reform aimed at simplifying India's tax regime and improving the business environment. However, its initial implementation led to disruptions, particularly in the informal sector, which employs a large portion of India's workforce. The unemployment rate, which had been declining, stagnated at around 7.8% in 2016, as SMEs struggled to adapt to the new tax structure. Global economic conditions, including the slowdown in China and volatility in oil prices, also created external pressures that affected investment and job creation in India. Despite these challenges, the services sector continued to grow, albeit at a slower pace, providing some cushion to the labour market.

In November 2016, the Indian government implemented demonetization, invalidating 86% of the currency in circulation. This move aimed to combat black money, counterfeit currency, and corruption. However, it led to a severe cash crunch, particularly affecting the informal sector, which relies heavily on cash transactions. The unemployment rate increased to 7.7% in 2017, reflecting the disruptions caused by demonetization. Sectors such as agriculture, construction, and small-scale manufacturing were particularly hard hit, leading to widespread job losses. The formal sector, however, showed resilience, partially offsetting the overall impact on unemployment through continued growth in IT and services sectors.

By 2018, the Indian economy began to recover from the twin shocks of GST implementation and demonetization. The unemployment rate decreased slightly to 7.7% as businesses adjusted to the new tax regime and cash liquidity improved. The urban labour market showed signs of recovery, driven by growth in the services sector, while rural areas continued to face challenges due to agricultural distress and slow wage

growth. Skill mismatches became more pronounced, as the economy transitioned towards higher value-added sectors that demanded different skill sets.

The year 2019 saw a significant decline in the unemployment rate to 6.5%, the lowest in several years. This was largely due to strong economic growth, with GDP expanding at 6.1%. The labour market benefited from increased investment in infrastructure and a booming services sector. Additionally, government initiatives aimed at promoting start-ups and entrepreneurship began to show positive effects on job creation. However, structural issues such as underemployment and low labour force participation rates persisted, particularly among women and youth. The informal sector, while recovering, still faced challenges from the lingering effects of GST and demonetization (Kannan & Raveendran, 2019).

The onset of the COVID-19 pandemic in early 2020 caused an unprecedented economic crisis worldwide, with India being no exception. The unemployment rate skyrocketed to 7.9% as the country imposed a strict nationwide lockdown to curb the spread of the virus. This resulted in massive job losses, particularly in the informal sector, which employs over 80% of India's workforce. The services sector, which had been a major driver of employment, was severely impacted, with industries such as tourism, hospitality, and retail experiencing significant contractions. The rural economy, although less affected by the lockdown, still faced challenges due to disruptions in supply chains and reduced demand.

In 2021, as the pandemic-induced restrictions eased, the Indian economy began to show signs of recovery. The unemployment rate decreased to 7.3%, supported by a rebound in economic activity and government stimulus measures aimed at reviving demand and supporting small businesses. The formal sector, particularly IT and finance, recovered rapidly, while the informal sector faced a slower recovery due to ongoing supply chain disruptions and weak consumer demand. The gig economy emerged as a significant source of employment, particularly for the youth, as traditional job markets struggled to regain momentum.

The final years of the period under review, 2022 to 2023, were marked by inflationary pressures and global economic uncertainty, exacerbated by the Russia-Ukraine conflict and rising energy prices. Despite these challenges, India's unemployment rate further declined to 7.2% by the end of 2023, reflecting resilience in the face of global headwinds. The government's focus on infrastructure development and digitalization, along with the expansion of social safety nets, contributed to this resilience. However, persistent challenges such as underemployment, skill mismatches, and low labour force

participation rates remained unresolved, particularly in rural areas and among marginalized communities.

The unemployment dynamics in India from 2013 to 2023 were shaped by a complex interplay of domestic economic policies, global economic trends, and unforeseen events such as the COVID-19 pandemic. While the period saw significant progress in economic reforms and job creation, particularly in the formal sector, challenges such as underemployment, skill mismatches, and persistent rural unemployment continue to hinder the full potential of the labour market. Moving forward, addressing these structural issues will be critical for ensuring sustainable and inclusive growth in India's labour market.

3.2 BRAZIL

3.2.1 GDP Growth: A Comparative Analysis

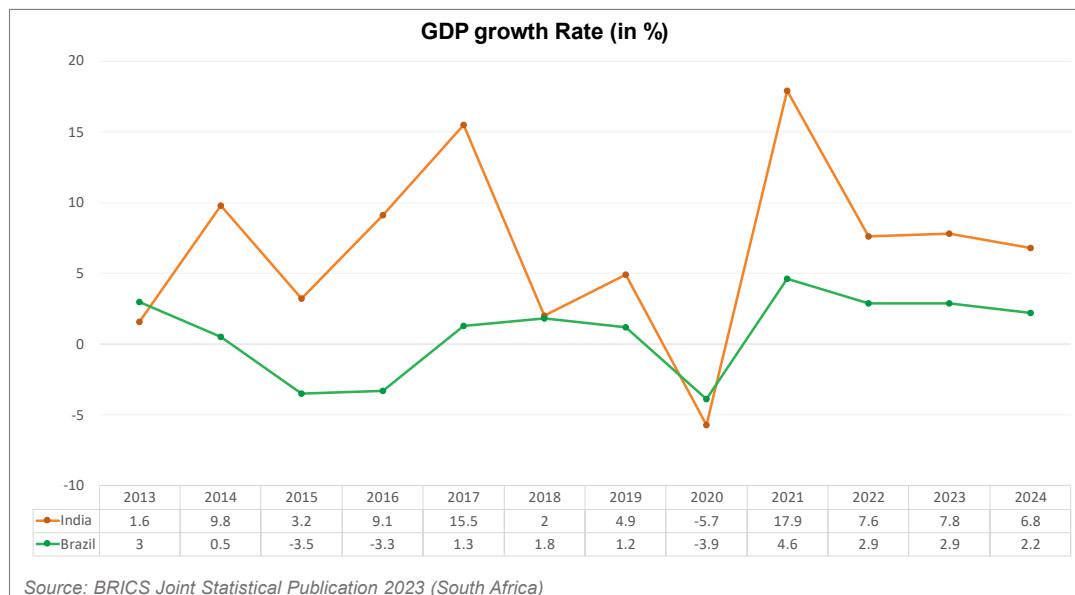


Figure 3.9 – GDP growth rate

The graph illustrates the GDP growth rates of India, Brazil, and Russia from 2013 to 2024. Over this period, all three nations experienced fluctuations in their economic growth rates, reflecting the complex interplay of domestic and global factors.

India's GDP growth rate exhibited a generally upward trend, with notable peaks in 2015 (9.8%), 2016 (9.1%), and 2022 (17.9%). The country's strong domestic demand, coupled with government stimulus measures and a favorable global environment, contributed to these periods of robust growth. However, India also faced challenges, including economic downturns in 2019 and 2020, which led to negative GDP growth rates of -5.8% and 0.2%, respectively. These downturns were primarily attributed to

factors such as global trade tensions, the COVID-19 pandemic, and domestic policy uncertainties.

Brazil's GDP growth rate was more volatile compared to India and Russia. The country experienced a significant economic contraction in 2015, with a negative growth rate of -3.5%. This downturn was primarily driven by a combination of factors, including falling commodity prices, political instability, and a weakening domestic currency. However, Brazil's economy rebounded in subsequent years, with positive growth rates in 2016, 2017, and 2018. Nevertheless, the country's economic recovery was fragile, and it faced challenges such as high inflation and unemployment.

3.2.2 Foreign Direct Investment (FDI) in Brazil vs India

FDI Inflow

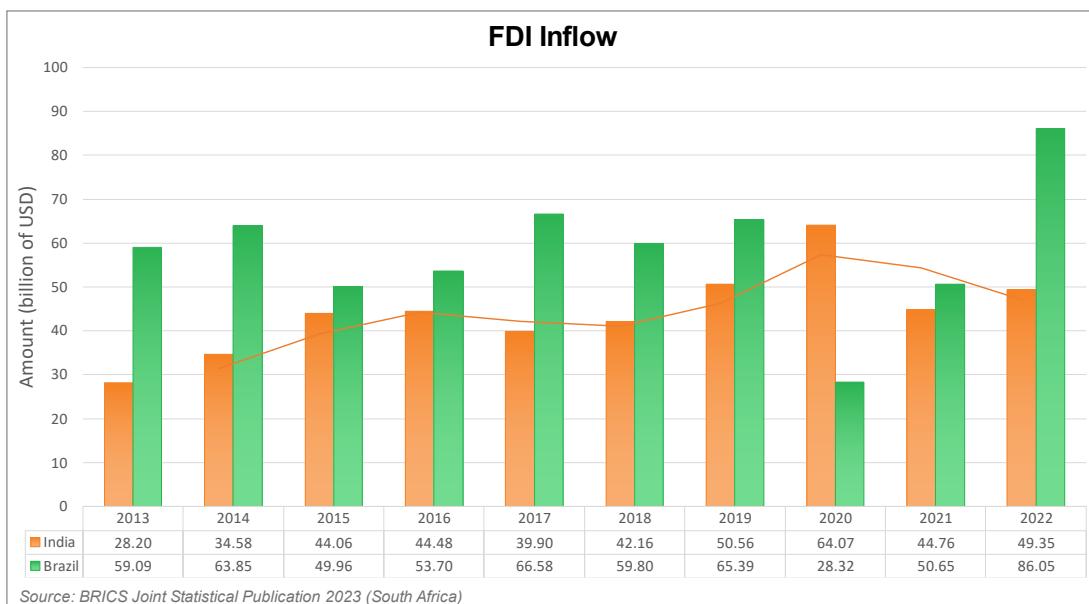


Figure 3.10 – FDI Inflow

The graph illustrates the FDI inflow into India and Brazil from 2013 to 2022, measured in billions of USD. FDI inflow refers to the investment made by a foreign entity in a domestic country.

India's FDI inflow has exhibited a general upward trend during this period, with significant increases in 2015 (44.05 billion USD), 2017 (66.36 billion USD), 2019 (65.39 billion USD), and 2022 (66.31 billion USD). These increases reflect India's growing economic strength and attractiveness as an investment destination, driven by factors such as economic reforms, infrastructure development, a demographic dividend, and government policies promoting FDI. However, India's FDI inflow also experienced declines in certain years, such as 2014 (34.58 billion USD) and 2020 (44.76 billion

USD), due to global economic uncertainty, domestic policy changes, and the COVID-19 pandemic.

Brazil's FDI inflow has been more volatile than India's, influenced by factors such as commodity prices, political stability, infrastructure development, and government policies. Brazil experienced a peak in FDI inflow in 2013 (59.09 billion USD), followed by a decline in 2014 (63.85 billion USD). However, Brazil's FDI inflow recovered in subsequent years, with positive values in 2015 (49.96 billion USD), 2016 (53.70 billion USD), and 2017 (56.58 billion USD). However, Brazil's FDI inflow declined again in 2018 (59.80 billion USD) and 2020 (28.32 billion USD), reflecting the challenges faced by the Brazilian economy during these periods.

FDI outflow

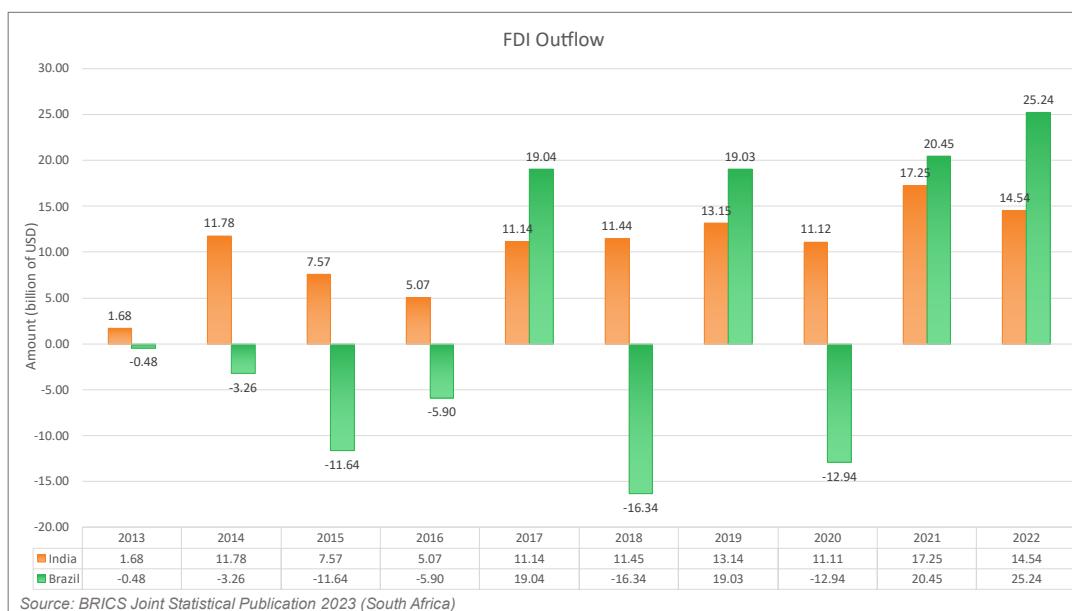


Figure 3.11 – FDI Outflow

The graph illustrates the FDI outflow from India and Brazil from 2013 to 2022, measured in billions of USD. FDI outflow refers to the investment made by a domestic entity in a foreign country.

India's FDI outflow has exhibited a general upward trend during this period, with significant increases in 2014 (11.78 billion USD), 2017 (11.14 billion USD), 2018 (11.45 billion USD), and 2021 (17.25 billion USD). These increases reflect India's growing economic strength and the increasing interest of Indian companies in investing abroad. However, India's FDI outflow also experienced declines in certain years, such as 2015 (-3.26 billion USD) and 2020 (-11.64 billion USD). These declines can be

attributed to factors such as global economic uncertainty, domestic policy changes, and the COVID-19 pandemic.

Brazil's FDI outflow has been more volatile than India's, with significant fluctuations between positive and negative values. Brazil experienced a peak in FDI outflow in 2014 (11.54 billion USD), followed by a sharp decline in 2015 (-5.90 billion USD). This decline was primarily driven by economic challenges faced by Brazil, including falling commodity prices, political instability, and a weakening domestic currency. However, Brazil's FDI outflow recovered in subsequent years, with positive values in 2017 (19.04 billion USD), 2018 (19.03 billion USD), and 2021 (20.45 billion USD). These increases reflect Brazil's efforts to attract foreign investment and promote economic growth

3.2.3 Inflation Trends Brazil vs India

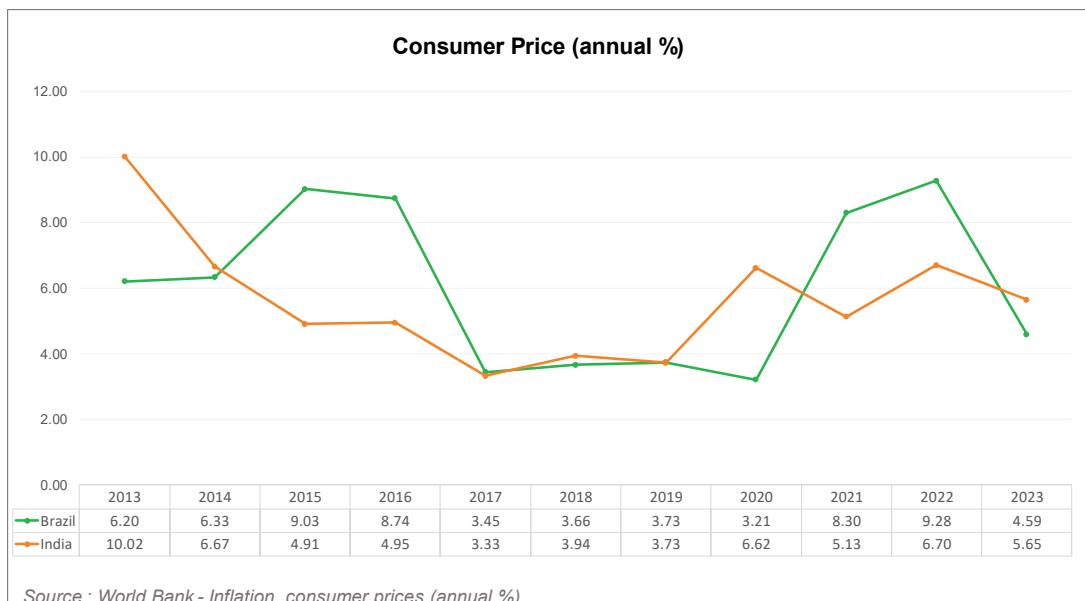


Figure 3.12 – Consumer Price

Source: [Inflation, consumer prices \(annual %\) - Brazil, India | Data \(worldbank.org\)](https://data.worldbank.org/indicator/CPGINF_ANNUAL?locations=BR,IN)

Between 2013 and 2023, both Brazil and India experienced significant inflation fluctuations, driven by various domestic and global factors. Brazil started with high inflation (8-10%) between 2013 and 2015 due to fiscal mismanagement, currency devaluation, and commodity price volatility. India, in the same period, faced high inflation (~10%), primarily driven by rising food and energy prices. Both countries saw a decline by 2016, with Brazil's inflation dropping more sharply due to aggressive interest rate hikes and a recession, while India benefited from falling oil prices and improved food supply management, stabilizing its inflation around 4-5%.

During 2018-2019, inflation remained relatively stable in both nations. Brazil's inflation hovered around 3-4%, supported by its central bank's inflation-targeting policies, while India's inflation stayed moderate, largely due to better monsoon seasons and effective monetary measures. However, both countries saw inflation spikes in 2020-2021 amid the COVID-19 pandemic. Supply chain disruptions, higher global commodity prices, and fiscal stimulus drove inflation in Brazil (~8-10%), while India's inflation (~6-7%) was pushed by rising fuel costs and pandemic-induced supply constraints.

By 2022-2023, inflation in both countries began to decline due to tight monetary policies. Brazil's sharper drop to around 3% was a result of aggressive rate hikes and stabilizing commodity prices. In India, inflation moderated to 5%, aided by improved agricultural production and cooling global oil prices. Both countries navigated the pandemic's impact, with Brazil's inflation more commodity-driven and India's rooted in supply-side issues, reflecting their differing economic structures

3.2.4 Unemployment and Labor Market Dynamics: A comparative Prospective

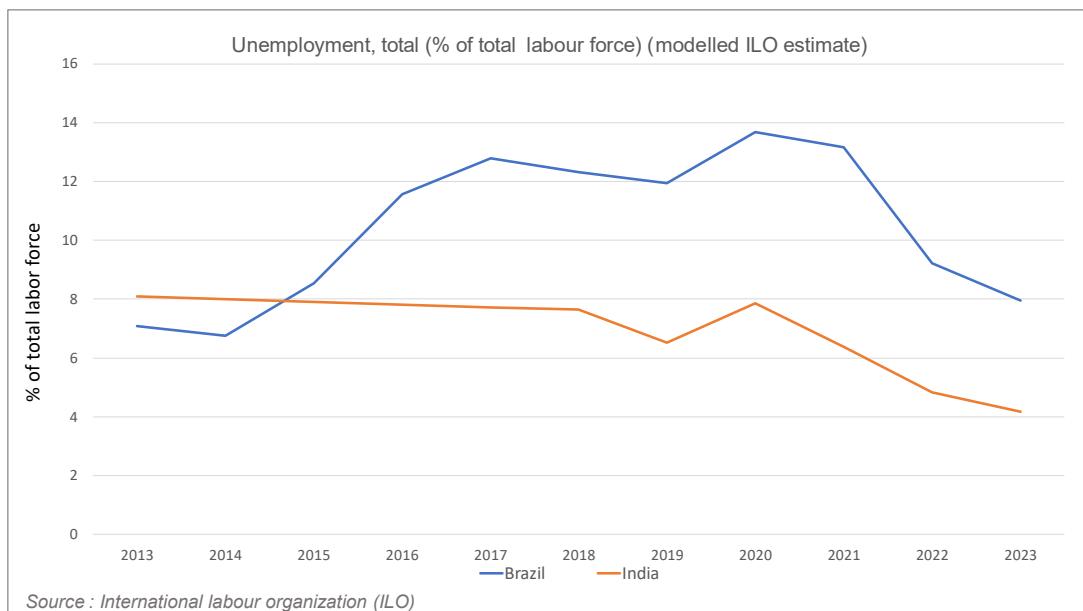


Figure 3.13 – Unemployment (Brazil vs. India)

Source: [Unemployment, total \(% of total labour force\) \(modelled ILO estimate\) - India, Brazil | Data \(worldbank.org\)](https://data.worldbank.org/indicator/SL.UE.TOTL.ZS?locations=BR+IN)

From 2013 to 2014, Brazil's unemployment rate was stable at around 7%. However, it rose sharply due to a severe economic recession starting in 2015, driven by a collapse in commodity prices and political scandals like the Petrobras corruption case. Unemployment peaked at 14.2% in early 2017. Despite modest GDP growth in subsequent years, structural labour market weaknesses kept unemployment high.

Significant declines were observed only by 2022-2023, thanks to aggressive fiscal reforms, flexible labour laws, and a surge in global commodity demand, reducing the rate to around 8.9%.

India's unemployment rate was stable at 5-6% from 2013 to 2019, supported by steady GDP growth driven by services and manufacturing sectors. The COVID-19 pandemic caused a temporary spike to 23.5% in April 2020, but quick rebounds in the informal sector and government support schemes like MGNREGA helped stabilize it. By 2022-2023, the rate was around 6.5%, aided by economic recovery, consumer demand revival, and initiatives like the Production-Linked Incentive (PLI) scheme to boost manufacturing.

3.3 RUSSIA

3.4.1 GDP

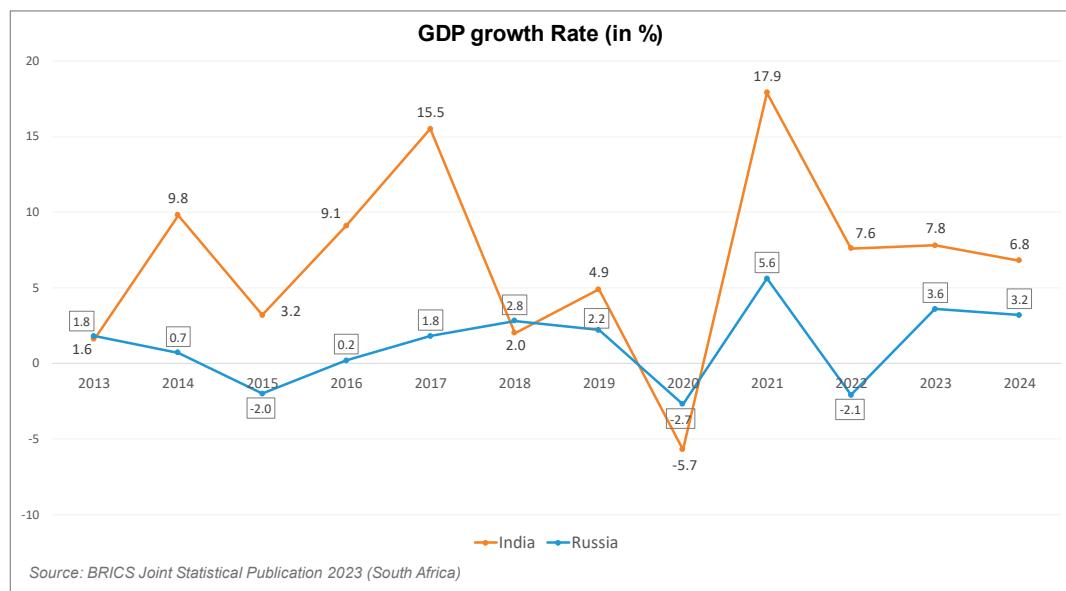


Figure 3.14 – GDP growth rate (R vs. I)

From 2013 to 2023, India and Russia experienced contrasting economic trajectories, largely influenced by domestic reforms and external factors. India's GDP growth showed a strong upward trend initially, rising from 6.4% in 2013-2014 to 8.0% in 2015-2016, driven by economic reforms, improved business sentiment, and favorable global conditions. However, growth slowed to 4.2% by 2019-2020 due to disruptions from the implementation of GST, rising non-performing assets in the banking sector, and weak consumer demand. The COVID-19 pandemic caused a severe contraction of 7.3% in 2020-2021, but the economy rebounded with growth rates of 9.5% in 2021-2022 and around 7.0% in 2022-2023, supported by government stimulus, accelerated vaccination efforts, and recovery in domestic demand.

In contrast, Russia's GDP growth was hampered by geopolitical and structural challenges. Growth fluctuated from negative in 2015 due to Western sanctions following the annexation of Crimea, a collapse in oil prices, and internal economic weaknesses, leading to a GDP per capita drop from \$15,500 in 2013 to about \$8,900 in 2016. A moderate recovery occurred from 2017 to 2019, supported by higher oil prices and fiscal stability, but the pandemic caused a 3.0% contraction in 2020. Recovery was further constrained by renewed sanctions and economic isolation following the invasion of Ukraine in 2022, limiting growth prospects and maintaining a GDP per capita around \$10,200, highlighting Russia's vulnerability to external shocks and dependence on energy exports.

3.4.2 FDI

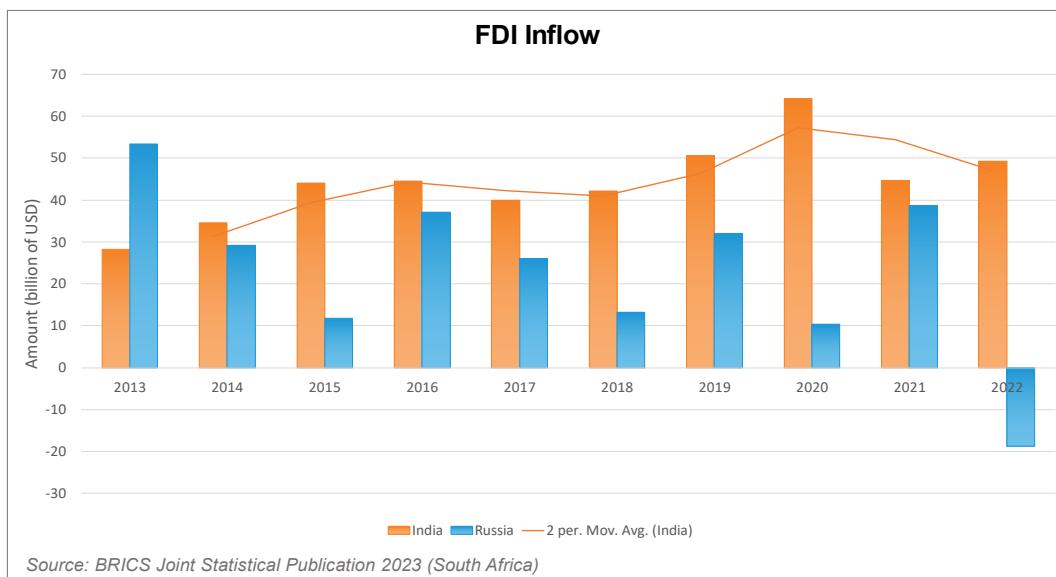


Figure 3.15 – FDI Inflow (R vs. I)

India's FDI inflows exhibit a steady growth pattern, particularly from 2014 to 2020. India saw a sharp rise in FDI inflows from \$30 billion in 2013 to nearly \$60 billion in 2020, driven by economic reforms such as the "Make in India" initiative, improved ease of doing business, and liberalization of key sectors. The slight decline post-2020, stabilizing around \$50 billion in 2022, can be attributed to global uncertainties such as the COVID-19 pandemic and inflation concerns. In contrast, Russia's inflows, which were higher than India's in 2013 at around \$50 billion, dropped significantly after the annexation of Crimea in 2014 and the imposition of Western sanctions, plunging to around \$10 billion by 2020. Russia's limited recovery during 2021 was overshadowed

by renewed sanctions and economic isolation following the Ukraine conflict in 2022, leading to further negative inflows, reflecting capital flight and investor uncertainty.

FDI outflows tell a similar story of contrast. Russia's outflows were consistently high, peaking at around \$70 billion in 2013 but dropped sharply post-sanctions, falling below \$30 billion in subsequent years. The temporary uptick to \$70 billion in 2021 was likely due to Russian companies shifting assets abroad amid geopolitical concerns. India's outflows, although significantly smaller in comparison, showed consistent growth, moving from \$10 billion in 2013 to about \$15 billion in 2022, driven by Indian corporations expanding their global presence, particularly in IT, pharmaceuticals, and manufacturing. Russia's FDI outflows largely mirrored capital retraction from its domestic economy, while India's outflows reflected a proactive strategy to increase global market presence.

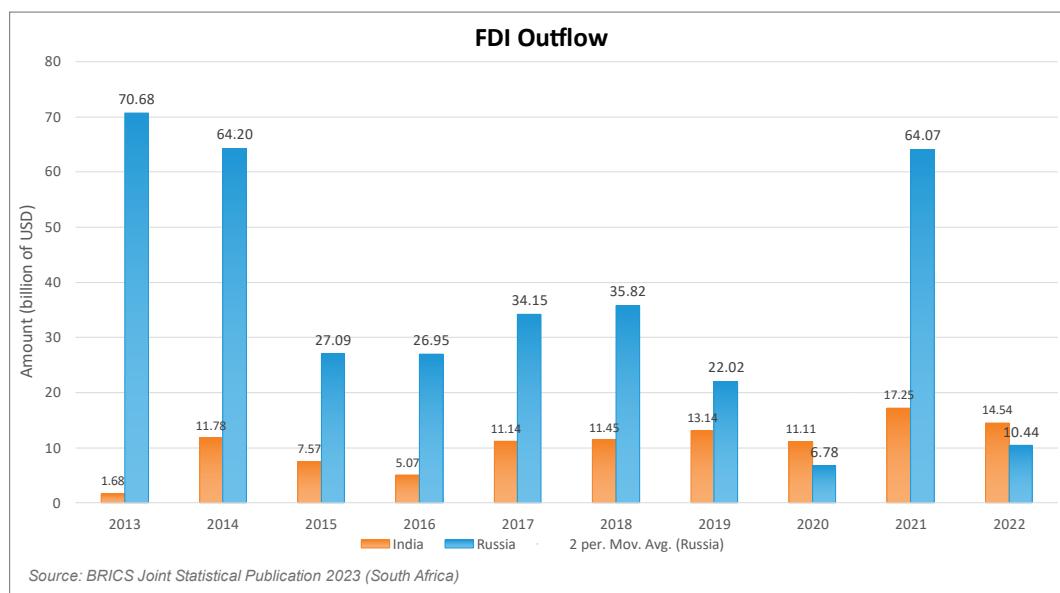


Figure 3.16 – FDI Outflow (R vs. I)

In summary, India's FDI inflows have been marked by consistent growth due to economic reforms, while Russia's FDI trajectory has been severely affected by sanctions and geopolitical conflicts. Conversely, India's modest FDI outflows reflect growing international ambitions, while Russia's volatile outflows underscore capital flight amid international isolation.

3.4.3 Inflation



Figure 3.17 – Consumer price (R vs. I)

In 2015, Russia's inflation peaked at 15.53%, driven by a combination of global oil price declines, economic sanctions imposed by Western nations, and domestic monetary policies. The sharp drop in oil prices, which fell from over \$100 per barrel in mid-2014 to around \$30 by early 2016, severely impacted Russia's economy, leading to a depreciation of the ruble and increased inflationary pressures. The sanctions, enacted in response to Russia's annexation of Crimea, restricted access to international markets and technology, compounding the economic challenges. In contrast, India's inflation rate decreased from 10.02% in 2013 to 3.33% in 2017, influenced by lower global oil prices, effective fiscal management, and the Reserve Bank of India's (RBI) inflation-targeting policies. The government reduced the fiscal deficit from 4.5% in 2013-14 to 3.5% in 2016-17, which helped stabilize prices and foster economic growth.

Post-2020, both countries faced renewed inflationary pressures, particularly in 2021 and 2022, largely due to COVID-19 disruptions and global supply chain issues. In India, inflation surged to 6.62% in 2020 and 6.70% in 2022, driven by rising energy prices and supply chain disruptions, while Russia's inflation was similarly affected by geopolitical tensions and sanctions. Despite these challenges, India maintained a more stable inflation rate than Russia, attributed to its effective economic management and diversified trade strategies. As both nations look to the future, India's commitment to inflation targeting may provide a more stable economic trajectory, while Russia's inflation dynamics remain vulnerable to external shocks and geopolitical developments.

3.4.4 Unemployment and Labor Dynamics

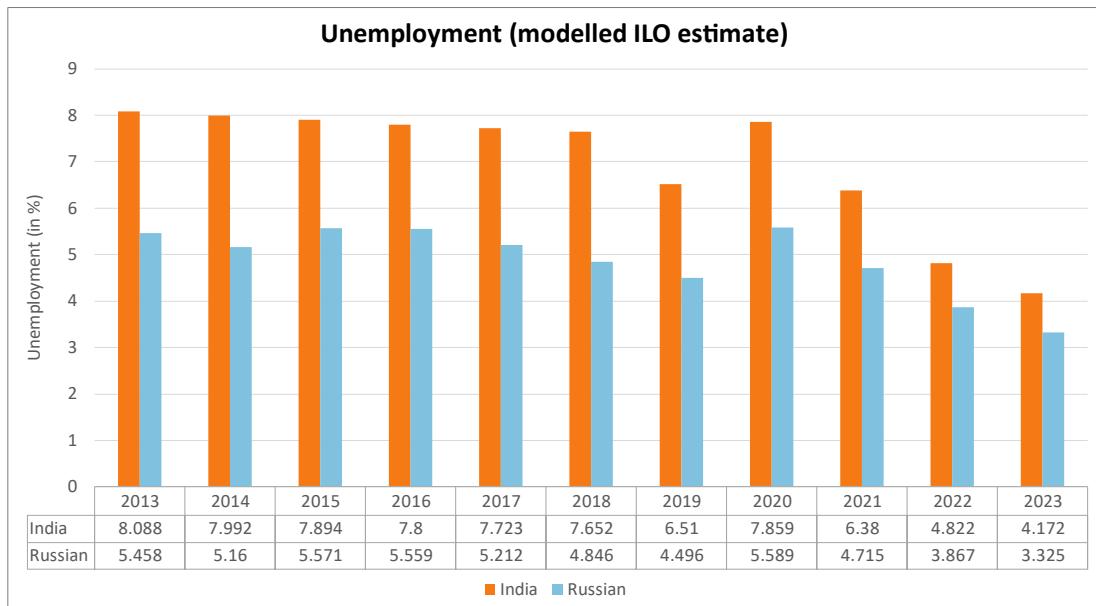


Figure 3.18 – Unemployment (R vs. I)

The graph illustrates the unemployment rates of India and the Russian Federation from 2013 to 2023, based on modelled ILO estimates. While both countries have experienced fluctuations in unemployment rates during this period, there are notable differences between their trends.

India's unemployment rate has generally been higher than the Russian Federation's, with peaks in 2013 (8.1%), 2014 (8.0%), 2015 (5.5%), 2016 (5.5%), 2017 (7.8%), and 2020 (6.1%). Several factors have contributed to India's higher unemployment rate, including its large population, rapid urbanization, and structural challenges in its labor market. The Indian economy's reliance on agriculture, which is a labour-intensive sector, has also contributed to higher unemployment rates during periods of agricultural distress.

The Russian Federation's unemployment rate has been relatively lower and more stable than India's. However, it experienced a significant increase in 2020 (5.8%) due to the economic downturn caused by the COVID-19 pandemic. Since then, the Russian unemployment rate has recovered, but it remains higher than pre-pandemic levels. The Russian government's stimulus measures and economic recovery efforts have helped to mitigate the impact of the pandemic on employment.

3.4 CHINA

3.4.1 GDP Growth: Economic Reforms & Global Events

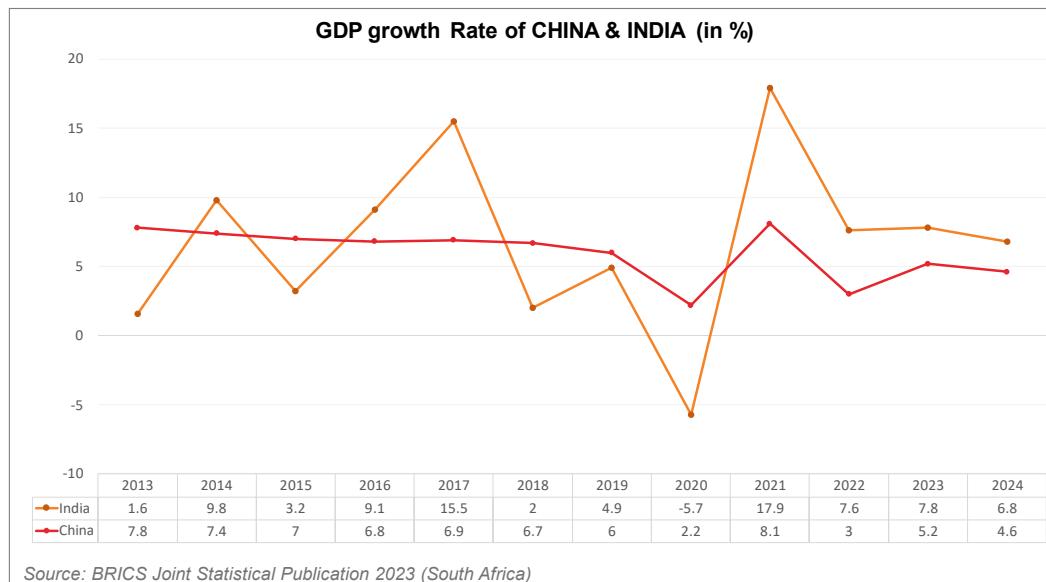


Figure 3.19 – GDP growth rate (C vs. I)

India's GDP growth between 2013 and 2023 displayed significant volatility, ranging from a contraction of -5.7% in 2020 to a record high of 17.9% in 2021. Conversely, China's growth, while slowing from earlier years, remained relatively stable, ranging from 2.2% to 8.1% during the same period. This divergence can be largely attributed to different economic models and responses to global and domestic events.

In the early 2010s, India faced sluggish growth due to the lingering effects of the global financial crisis, combined with high inflation and policy inertia. Growth was particularly low at 1.6% in 2013. However, a series of structural reforms, such as the Goods and Services Tax (GST) introduced in 2017 and the Insolvency and Bankruptcy Code (IBC) implemented in 2016, aimed to simplify taxation, and resolve corporate debt, boosting economic performance. These reforms helped India achieve high growth rates, peaking at 15.5% in 2017 (OECD, 2016). However, the lack of sustained job creation, coupled with external shocks such as the COVID-19 pandemic, led to a sharp contraction in 2020, when GDP fell by -5.7%.

China's relatively stable growth during this period, declining from 7.8% in 2013 to 6.7% in 2018, was reflective of its gradual shift from an investment-led economy to a consumption-driven one. This rebalancing was part of China's supply-side structural reforms, which aimed to reduce overcapacity in sectors like steel and coal while promoting technological innovation and consumer spending. However, the U.S.-China trade war beginning in 2018 and the COVID-19 pandemic in 2020 caused temporary slowdowns in exports and manufacturing, with GDP growth falling to 2.2% in 2020.

China's swift recovery, with an 8.1% growth rate in 2021, was largely due to its effective control of the pandemic and aggressive fiscal policies, such as infrastructure investment and digitalization initiatives (World Bank, 2018).

3.4.2 FDI Inflow and Outflow: Liberalization vs. Global Integration

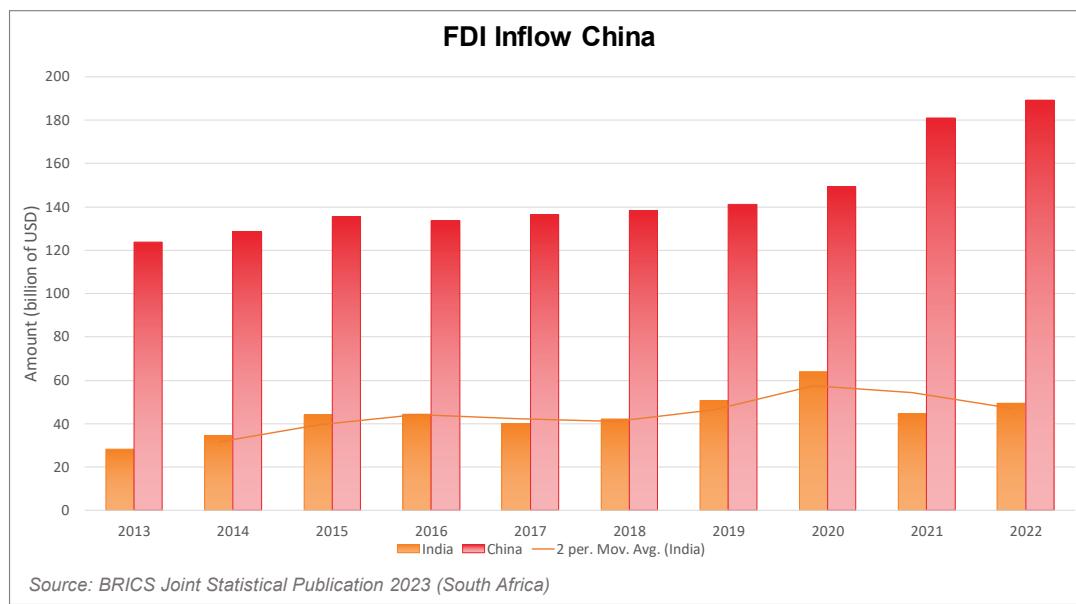


Figure 3.20 – FDI Inflow (C vs. I)

Foreign direct investment (FDI) inflows and outflows have been pivotal to the economic growth of both countries, though China consistently attracted larger amounts of capital than India. China's FDI inflows grew from \$123.9 billion in 2013 to \$189.1 billion in 2022, compared to India's increase from \$28.2 billion to \$49.4 billion during the same period. This disparity can be attributed to China's deeper integration into global supply chains and its aggressive overseas investments, particularly through the Belt and Road Initiative (BRI) (OECD, 2019).

India's significant rise in FDI inflows began in 2015, following reforms aimed at liberalizing key sectors like defense, real estate, and insurance. These efforts led to a steady increase in inflows, reaching \$64.07 billion in 2020, driven by investments in telecommunications, digital services, and infrastructure projects. India's appeal as an alternative manufacturing hub during the U.S.-China trade war further boosted FDI inflows during this period (UNCTAD, 2019).

On the other hand, China's FDI outflows surged from \$107.8 billion in 2013 to a peak of \$196.1 billion in 2016. This surge reflects China's strategy of acquiring foreign

assets, particularly in technology, energy, and infrastructure sectors, as part of its global expansion efforts.

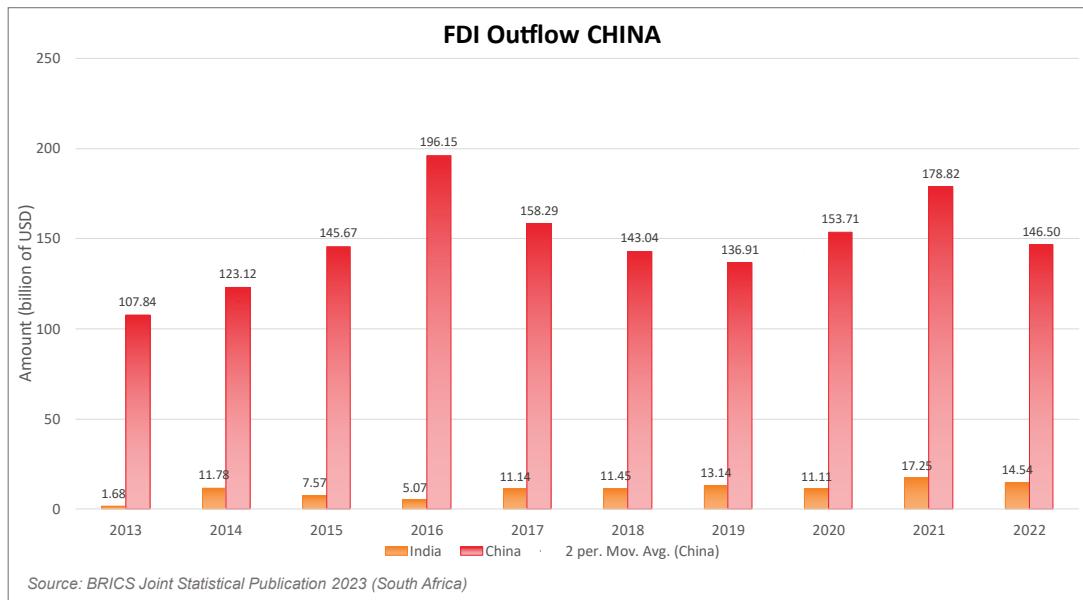


Figure 3.21 – FDI Outflow (C vs. I)

China's Belt and Road Initiative played a significant role in driving these outflows as Chinese companies invested heavily in infrastructure projects across Asia, Africa, and Europe. India's FDI outflows, while more modest, also saw a steady increase, particularly in 2021, when outflows reached \$17.25 billion. Indian companies sought to invest in global markets to capitalize on new opportunities, especially in emerging markets (UNCTAD, 2020).

3.4.3 Inflation and Consumer Price Index: Policy Response to External Pressures

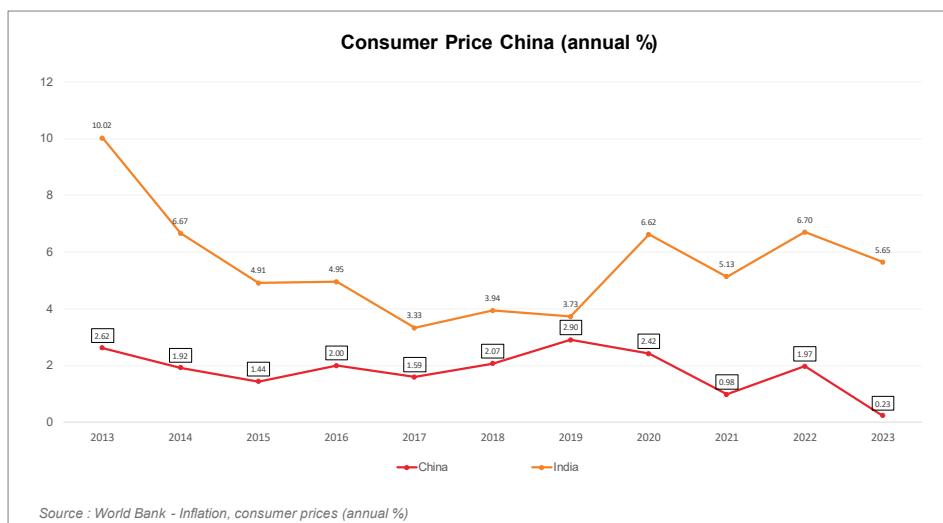


Figure 3.22 – Consumer Price (C vs. I)

Inflation trends in India and China diverged significantly, reflecting the two countries' differing economic structures and policy responses. India struggled with high inflation in the early part of the decade, particularly in 2013 when inflation peaked at 10.02%. This inflationary pressure was largely driven by rising food and fuel prices, as well as supply-side constraints in agriculture. In response, the Reserve Bank of India adopted inflation-targeting measures in 2016, which helped reduce inflation to more manageable levels in subsequent years (Reserve Bank of India, 2017).

China, in contrast, maintained much lower inflation rates, averaging around 2% between 2013 and 2023. This stability can be attributed to China's strong domestic production capabilities and the government's control over key commodity prices, particularly in food and energy. Even during the global COVID-19 pandemic, when supply chain disruptions affected many countries, China's inflation only rose slightly, peaking at 2.9% in 2018 (WTO, 2020). This was due to the Chinese government's ability to manage critical prices and prevent consumer price volatility through state intervention.

Global and Domestic Events Shaping Economic Indicators

Several key events influenced the economic trajectories of China and India between 2013 and 2023. The U.S.-China trade war, which began in 2018, had significant repercussions for global supply chains, particularly affecting Chinese exports and manufacturing. The trade war contributed to a slowdown in China's growth during this period, though China's large domestic market and state-led stimulus mitigated long-term damage (IMF, 2020). India, meanwhile, benefited from the trade war as global companies sought alternatives to Chinese manufacturing, leading to an increase in FDI inflows during 2019 and 2020.

The COVID-19 pandemic in 2020 was the most significant global event during this period, causing massive disruptions to both economies. China's centralized control and swift lockdown measures allowed it to contain the pandemic quickly, leading to a relatively mild economic contraction of 2.2% in 2020, followed by a rapid recovery in 2021. India, by contrast, faced a much more severe economic contraction of -5.7% in 2020 due to the impact of nationwide lockdowns on its informal economy. However, aggressive fiscal stimulus and infrastructure investments fueled a record growth rate of 17.9% in 2021, as the country rebounded from the crisis (World Bank, 2021).

3.4.4 Unemployment Trends: Policy and Global Shocks

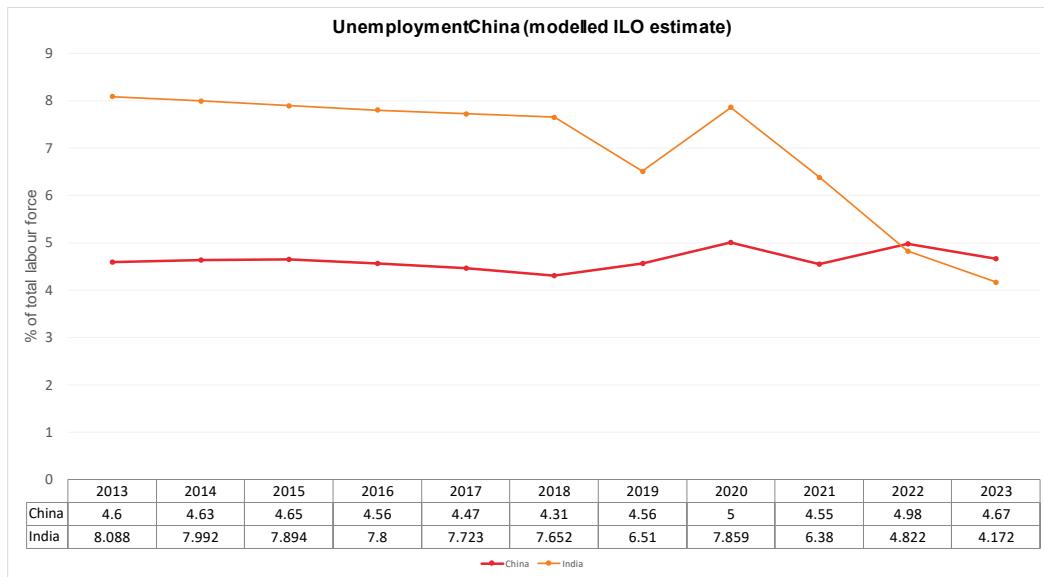


Figure 3.23 – Unemployment (C vs. I)

From 2013 to 2023, India consistently experienced higher unemployment rates than China, with India's rate averaging around 7%, compared to China's rate, which remained below 5% for most of the period. India's unemployment peaked at 8.08% in 2013, a result of policy paralysis, delayed reforms, and slow industrial growth during that period. The high unemployment rate was a byproduct of India's reliance on its informal economy and agriculture, sectors that often fail to provide stable, long-term employment. Unemployment only began to decrease after India introduced the "Make in India" initiative in 2014, designed to boost job creation through manufacturing sector reforms and infrastructure development (ILO, 2021).

China's unemployment rate remained relatively stable, fluctuating between 4.31% and 5% due to its robust state-driven economy. China's economic model, which emphasizes large-scale infrastructure projects and state-owned enterprises (SOEs), has been resilient in the face of global shocks, enabling it to maintain stable employment. Even during the COVID-19 pandemic in 2020, when global supply chains were disrupted, China's unemployment only saw a modest increase to 5%, compared to India's surge to 7.85% as its informal economy collapsed under lockdown restrictions (World Bank, 2020). India's unemployment crisis in 2020 was further exacerbated by mass internal migration and the lack of social safety nets for its informal workforce. However, by 2023, unemployment in India fell to 4.17%, largely due to economic recovery efforts and policy interventions that focused on rebuilding key sectors, such as manufacturing and retail (IMF, 2021).

Chapter 4: Financial System Structures in BRIC Countries

4.1 Banking Sector

4.1.1 Size, Scope, and Ownership Structure

The ownership structure of banks in India, Russia, China, and Brazil reflects a mix of public, private, and foreign ownership, heavily shaped by each country's regulatory environment.



Figure 4.1 – Size and Ownership Structure of Banking Sector

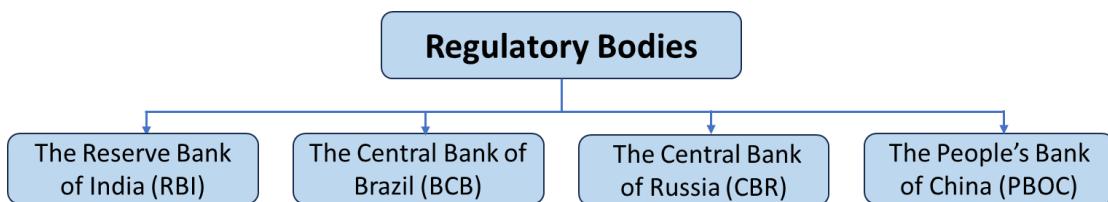
India's banking sector is dominated by public sector banks (PSBs), controlling about 70% of total banking assets. Private sector banks, such as HDFC and ICICI, hold 22%, while foreign banks account for around 5% of assets. Cooperative and microfinance banks play smaller, region-specific roles. Since the 1990s, competition has led PSBs to improve efficiency, narrowing the gap with private and foreign banks.

State-owned banks dominate Russia's banking sector, holding over 55% of total assets. Major state-controlled institutions like Sberbank and VTB benefit from favourable ties with the government, while private and foreign banks have a smaller market share. Indirect state control is often exercised through corporate pyramids, blurring commercial and development banking roles.

China's "Big Four" state-owned banks dominate, controlling over 60% of assets. Private and foreign banks hold smaller shares, and foreign players face regulatory hurdles. Despite reforms, state control remains strong, particularly in asset quality and profitability.

Brazil's banking sector is more balanced, with public banks controlling 44% of assets and private banks 48%. Foreign banks hold around 8% of the market. Despite government ownership, public sector banks compete effectively with private institutions, especially in retail banking.

4.1.2 Regulatory Ecosystem



India: The Reserve Bank of India (RBI) regulates the Indian financial system, overseeing commercial banks, cooperative banks, and regional rural banks. Key regulations include the Banking Regulation Act, 1949, which governs banking operations, and capital adequacy requirements under Basel III, mandating a minimum Capital to Risk (Weighted) Assets Ratio (CRAR) of 9%. Prudential norms categorize non-performing assets (NPAs) into substandard, doubtful, and loss assets; as of March 2023, the gross NPA ratio for Indian banks stood at 5.9%. Financial inclusion efforts, such as the Pradhan Mantri Jan Dhan Yojana (PMJDY), have led to the opening of over 460 million bank accounts by August 2023, while the National Payments Corporation of India (NPCI) facilitates digital transactions, with over 8 billion UPI transactions in August 2023.

Russia: The Central Bank of Russia (CBR) regulates commercial banks, investment firms, and insurance companies. Key regulations include the Law on the Central Bank of the Russian Federation and the Law on Commercial Banks. To strengthen the sector, the CBR imposes capital requirements, with banks holding a universal license needing equity of over 1 billion rubles, while those with a basic license require equity between 300 million and 1 billion rubles. Deposit insurance covers up to 1.4 million rubles per depositor. As of December 2023, the total assets of Russian banks amounted to approximately 90% of GDP. The Non-Performing Loan (NPL) ratio for Russian banks was 8.3%, reflecting the challenges in asset quality management. The Capital Adequacy Ratio (CAR) stood at 12.5%, above the regulatory minimum requirement. Additionally,

the Liquidity Coverage Ratio (LCR) was maintained at over 100%, ensuring that banks have sufficient liquidity to meet short-term obligations.

Table 4
Financial Regulatory Authorities of BRICS Countries

Country	Segment	Regulatory Authority	Year of Establishment
Brazil	Money Markets	Brazilian Central Bank (BCB)	1964
	Capital Markets	Brazilian Securities and Exchange Commission (CVM), Brazil	1976
	Insurance	Superintendence of Private Insurance (SUSEP)	1966
	Pension Funds	The national superintendence of complementary social security (PERVIC)	2009
	All Financial Sectors	National Monetary Council (CMN)	1964
Russia	Capital Markets	The Federal Service for Financial Markets (FFMC)	2004
	All Segments of Financial Markets	Central Bank of Russia (CBR) #	1860
	Insurance	Federal Insurance Supervisory Authority	1992
India	Money Markets	Reserve Bank of India (RBI)	1935
	Capital Markets	Securities and Exchange Board of India (SEBI)	1988
	Insurance	Insurance Regulatory and Development Authority of India (IRDAI)	1999
	Pension Funds	Pension Fund Regulatory Development Authority (PFRDA)	2003
	Commodity Futures Markets	Forward Market Commission (FMC)	1953*
China	Capital Markets	China Securities Regulatory Commission (CSRC)	1998
	Money Markets	China Banking Regulatory Commission (CBRC)	2003
	Insurance	Peoples Bank of China (PBOC, the Central Bank)	1948
South Africa	Capital Markets	China Insurance Regulatory Commission (CIRC)	1998
	Credit Industry	Financial Services Board (FSB)	1990
	Money Markets	National Credit Regulator	2005
		South African Reserve Bank	1921

Source: Different ministries of BRICS countries; * FMC has merged with SEBI with effect from 28th September 2015. **September 2013 (FFMC abolished, and Bank of Russia took all financial markets charge). # act as a mega financial regulator from September 1, 2013.

Table 4.1 – Financial Regulatory Authorities of BRICS Countries

China: The People's Bank of China (PBOC) regulates China's financial system, overseeing commercial banks, securities firms, and insurance companies. Key regulations include the Commercial Banking Law, the Securities Law, and the Insurance Law. By the end of 2022, the total assets of Chinese banks reached nearly RMB 380 trillion. Inclusive loans to small and medium enterprises (SMEs) amounted to RMB 23.8 trillion, reflecting a 23.8% year-on-year increase, while the balance of green loans reached RMB 22.03 trillion, up 38.5% year-on-year. The average Capital Adequacy Ratio (CAR) of commercial banks was 14.8%, above the regulatory minimum requirement of 10.5%. The Non-Performing Loan (NPL) ratio stood at 1.8%,

indicating effective regulatory measures in maintaining asset quality. Additionally, the Liquidity Coverage Ratio (LCR) for major banks was maintained at over 120%, ensuring sufficient liquidity to cover short-term obligations, and the provision coverage ratio was 182.4%, highlighting the extent to which banks have set aside funds to cover potential loan losses.

Brazil: The Central Bank of Brazil (BCB) oversees commercial and investment banks, as well as insurance companies, under regulations such as the Financial Code, Banking Law, and Securities Law. As of 2023, the total assets of Brazilian banks represented approximately 100% of GDP. Brazilian banks are required to maintain a minimum capital adequacy ratio of 11% under Basel III norms. Additionally, Brazilian banks must maintain a Liquidity Coverage Ratio (LCR) of at least 100%, ensuring they hold enough high-quality liquid assets to cover their total net cash outflows for 30 days. The ratio of non-performing loans to total loans in Brazil was 3.1% in 2023, indicating the health of the banking sector. Furthermore, the digital Brazilian real (DREX) was introduced to enhance financial transactions and modernize the payment system.

4.1.3 Performance Metrics Analysis

Countries\ Ratios	NPAs Ratio (2023)	ROA (2022)	ROE (2021)
India	3.9	1.45	13.91
Brazil	3.2	2.07	18.65
Russia	6.1	0.79	2.37
China	1.6	0.21	12.18

Table 4.2 – Performance Metrics (BRIC)

Source:

- *NPAs Ratio- CIEC ([India Non-Performing Loans Ratio, 1998 – 2024 | CEIC Data](#))*
- *ROA- World Bank Group ([Return on Assets, Percent | Indicator Profile | Prosperity Data360 \(worldbank.org\)](#))*
- *ROE- [The Global Economy.com](#)*

Asset Quality

China has the best asset quality with the lowest NPA ratio at 1.6%, indicating strong credit risk management and a healthier loan portfolio. This reflects effective risk management practices and a stable economic environment. In contrast, Russia faces significant issues with the highest NPA ratio at 6.1%, suggesting substantial problems with loan defaults and poor asset quality. This indicates a need for substantial improvements in credit risk management and operational efficiency to stabilize the banking sector. India and Brazil fall in between, with NPA ratios of 3.9% and 3.2% respectively. India's slightly higher NPA ratio compared to Brazil indicates more challenges in managing non-performing loans, highlighting the need to address high NPAs to improve asset quality and overall financial stability. Brazil's moderate NPA ratio suggests a balanced approach to risk management, with manageable levels of loan defaults.

Operational Efficiency

Brazil stands out with the highest ROA at 2.07%, indicating strong operational efficiency and effective asset utilization. This reflects the banking sector's robust performance and effective management practices, making it an attractive investment destination. India has a moderate ROA of 1.45%, suggesting reasonable efficiency but with room for improvement. The banking sector shows moderate efficiency, indicating that while banks are profitable, there is potential for enhancing operational practices. Russia and China show significant inefficiencies in asset utilization, with ROAs of 0.79% and 0.21% respectively. These figures indicate that banks in these countries are less effective in converting their assets into net income, suggesting a need for improved operational strategies.

Financial Performance

Brazil also leads in ROE with a figure of 18.65%, reflecting strong financial health and effective equity utilization. This indicates that Brazilian banks are very effective in generating profits from equity, contributing to their overall financial robustness. India shows good performance with an ROE of 13.91%, indicating that banks are effectively using shareholders' equity to generate profits. The banking sector demonstrates good financial performance, but addressing high NPAs could further enhance profitability. China has a moderate ROE of 12.18%, suggesting reasonable financial performance but with potential for improvement. Russia, however, has very poor financial performance with the lowest ROE at 2.37%, indicating

significant inefficiencies in using equity to generate profits. This highlights the need for substantial improvements in financial management and operational efficiency.

Risk Management

High NPAs in Russia (6.1%) and India (3.9%) suggest potential issues in credit risk management. These high ratios indicate that a substantial portion of loans are in default, which can erode profitability and capital. In contrast, low NPAs in China (1.6%) indicate effective risk management practices and a healthier loan portfolio. This demonstrates strong asset quality and effective credit risk management. Brazil's moderate NPA ratio of 3.2% suggests a balanced approach to risk management, with manageable levels of loan defaults. This indicates that Brazilian banks are managing credit risk effectively while maintaining profitability.

4.2 Capital market

4.2.1 Market Capitalization

The market capitalization of the BRIC nations—Brazil, Russia, India, China—has shown significant variation over the last decade, reflecting their unique economic conditions and policy frameworks. As of the latest data, Brazil's B3 (Brasil Bolsa Balcão) has a market capitalization of approximately \$1 trillion, featuring major companies like Petrobras and Vale. Russia's Moscow Exchange follows with a market cap of about \$750 billion, supported by key players such as Gazprom and Sberbank. In contrast, India boasts a combined market capitalization of around \$3.4 trillion from its Bombay Stock Exchange and National Stock Exchange, with major contributors including Reliance Industries and Tata Consultancy Services. China leads the group with a staggering market capitalization of approximately \$11 trillion, driven by industrial giants like ICBC and PetroChina.

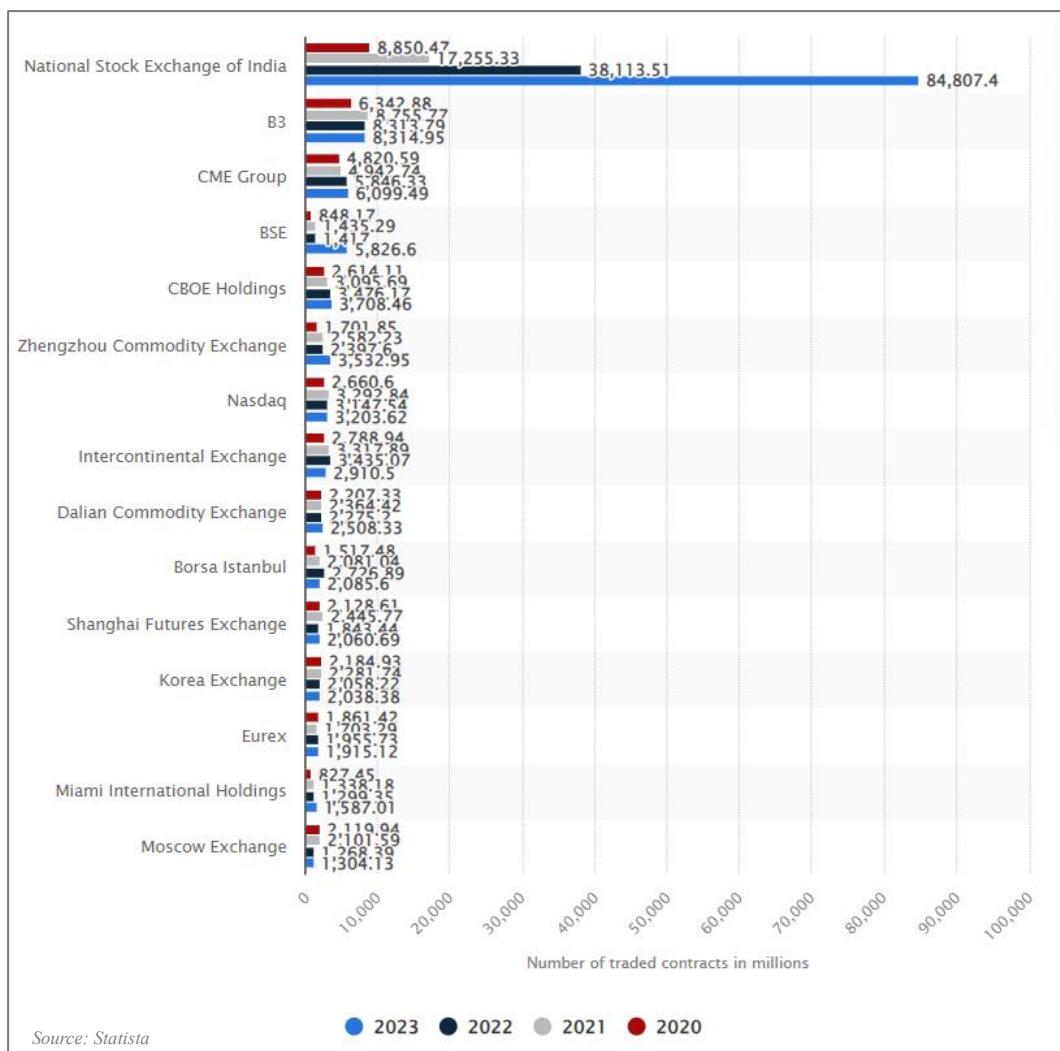
Over the past decade, the growth trends in these markets have varied widely. Brazil's market capitalization has experienced fluctuations due to political instability and economic crises, though recent years have shown signs of recovery. Russia's market has been volatile, heavily influenced by geopolitical factors and international sanctions, yet it has seen steady growth driven by its energy sector. Conversely, India has enjoyed robust growth in market capitalization, propelled by economic reforms, digital transformation, and increased foreign investments. China's stock markets have exhibited exponential growth, fueled by rapid economic expansion and government policies encouraging stock market participation.

In recent years, India has emerged as a significant player within the BRIC group, accounting for over a quarter of the combined market capitalization, which stood at \$15.3 trillion as of early 2023. This growth has been particularly pronounced amid a slump in Chinese equities, highlighting India's increasing attractiveness to investors. Meanwhile, Brazil's market capitalization has declined relative to its peers, now accounting for less than 6% of the BRIC valuation, a stark contrast to its position a decade ago.

Overall, the BRIC nations present a diverse landscape in terms of market capitalization and growth trends. China and India lead with substantial market capitalizations and impressive growth trajectories, while Brazil and Russia face more volatile markets influenced by external factors. These dynamics create unique investment opportunities and risks across the BRIC countries, shaped by their specific economic environments and policy frameworks.

4.2.1 Trading Volumes and Liquidity

In comparing the financial systems of BRIC nations (Brazil, Russia, India, and China), stock exchanges serve as crucial indicators of market health, liquidity, and financial depth. Through metrics such as derivatives trading volumes, capital-raising capabilities, and investor participation, the performance of the National Stock Exchange of India (NSE), Brazil's B3, China's Shanghai Stock Exchange (SSE), and Russia's Moscow Exchange (MOEX) offers valuable insights into how each country's financial system operates. By focusing on these key indicators, this analysis explores how these exchanges contribute to the liquidity, volume, and overall robustness of their respective markets, while considering how global events and domestic policies impact their performance.



Largest derivatives exchange worldwide from 2020 to 2023, by number of contracts traded (*in millions*)

Figure 4.2 – Number of Contract traded worldwide

India's National Stock Exchange (NSE) has rapidly become one of the largest and most liquid stock exchanges globally, particularly excelling in derivatives trading. In 2023, the NSE recorded over 84 billion derivatives contracts, outpacing both developed and emerging markets, a clear testament to its strong liquidity and efficient market structure. This liquidity is bolstered by both domestic and international investors, enabling large trades with minimal price impact and supporting market stability. Additionally, the growth of algorithmic trading and high-frequency trading (HFT) on the NSE has further boosted liquidity, enabling faster trade execution, tighter bid-ask spreads, and reduced transaction costs. These technological innovations have made NSE one of the most efficient exchanges globally, contributing to its deep liquidity profile (Joshi, 2024). Furthermore, the exchange has diversified its product offerings, with Exchange Traded Funds (ETFs) becoming a popular investment vehicle. The ETF trading volume on the NSE

reached 1.19 trillion INR in FY 2024, reflecting its capacity to attract a broad and diverse investor base.

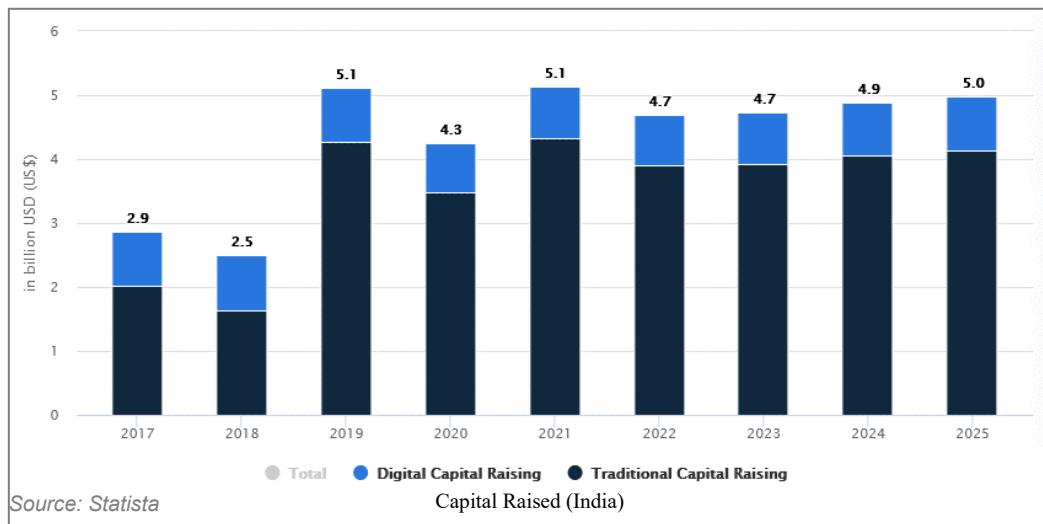


Figure 4.3 – Capital raised by India

In capital-raising activities, the NSE is projected to facilitate US\$4.89 billion in 2024, primarily through traditional IPOs. Although this figure is lower than China's and Brazil's capital-raising totals, it reflects a stable and growing market that continues to attract significant foreign investment. India's regulatory reforms, including the liberalization of foreign direct investment (FDI) policies, have also played a role in enhancing the NSE's ability to attract international capital. These factors contribute to its strong liquidity and competitive market position among BRIC nations.

Brazil's B3 exchange ranks second globally in derivatives trading volume, with 8.3 billion contracts traded in 2023, supported by the country's central role in global commodity markets, particularly agriculture and energy. The B3 exchange's liquidity is largely driven by its importance in hedging and risk management, which adds to the volume and stability of the market. Brazil's strong economic ties with China, its largest trading partner, further boost trading volumes, especially through derivatives linked to commodity prices. B3 is also experiencing substantial growth in capital-raising activities, projected to reach US\$6.79 billion in 2024, primarily from venture capital investments in high-growth sectors such as technology and renewable energy. This growth reflects global trends in investor interest in emerging markets, which has strengthened B3's liquidity profile. Like the NSE, Brazil's B3 has benefited from technological advancements, including the implementation of high-frequency trading systems, further improving trading efficiency and liquidity.

China's Shanghai Stock Exchange (SSE), while one of the largest equity markets in the world, differs significantly from India's NSE and Brazil's B3 in terms of market openness and liquidity. While China leads the BRIC nations in capital raising, projected to reach US\$136.61 billion in 2024, much of this capital is derived from domestic sources, including state-owned enterprises and large private companies. China's financial markets are dominated by traditional capital-raising activities like IPOs and debt issuance, reflecting the country's focus on maintaining market stability through state-controlled entities. In contrast to India and Brazil, the SSE's derivatives trading volume is relatively small, and its liquidity is constrained by stringent regulations that limit foreign investor participation. While domestic investor involvement remains robust, foreign investors face significant barriers to entry, which restricts the SSE's liquidity compared to more open markets like India's NSE and Brazil's B3. Despite these challenges, China's markets are gradually evolving, with recent efforts to liberalize foreign access through programs like the Shanghai-Hong Kong Stock Connect, which are expected to improve liquidity over time.

Russia's Moscow Exchange (MOEX) ranks 15th globally in derivatives trading, with a volume of 1.3 billion contracts in 2023. Although much smaller in scale compared to its BRIC counterparts, MOEX remains a vital component of Russia's financial system, particularly in the commodities sector, where it plays a critical role in facilitating the trading of energy and agricultural derivatives. However, MOEX's liquidity is heavily constrained by geopolitical factors, especially the international sanctions imposed on Russia following the Ukraine conflict. These sanctions have severely limited Russia's access to global capital markets, reducing foreign investor participation and curbing liquidity. As a result, liquidity on MOEX is driven predominantly by domestic investors, with limited integration into global financial flows (Ivanov, 2023). Despite these challenges, MOEX has introduced new financial products and implemented technological upgrades to support market liquidity, but its potential remains limited compared to other BRIC nations.

When comparing the stock exchanges of India, Brazil, China, and Russia, distinct differences emerge in terms of volume, liquidity, and market health. India's NSE stands out for its exceptional derivatives trading volume, strong liquidity, and technological advancements. Brazil's B3, while smaller in volume, maintains robust liquidity due to its global commodity ties and growing venture capital market. China's SSE leads in capital raising but faces liquidity challenges due to restrictive foreign access policies, limiting its global integration. Russia's MOEX, constrained

by geopolitical factors, remains a key domestic player but struggles with liquidity and foreign investor participation. These disparities underscore the impact of domestic policies, regulatory frameworks, and global events on the liquidity and long-term prospects of financial markets in emerging economies.

4.2.2 Major Indices

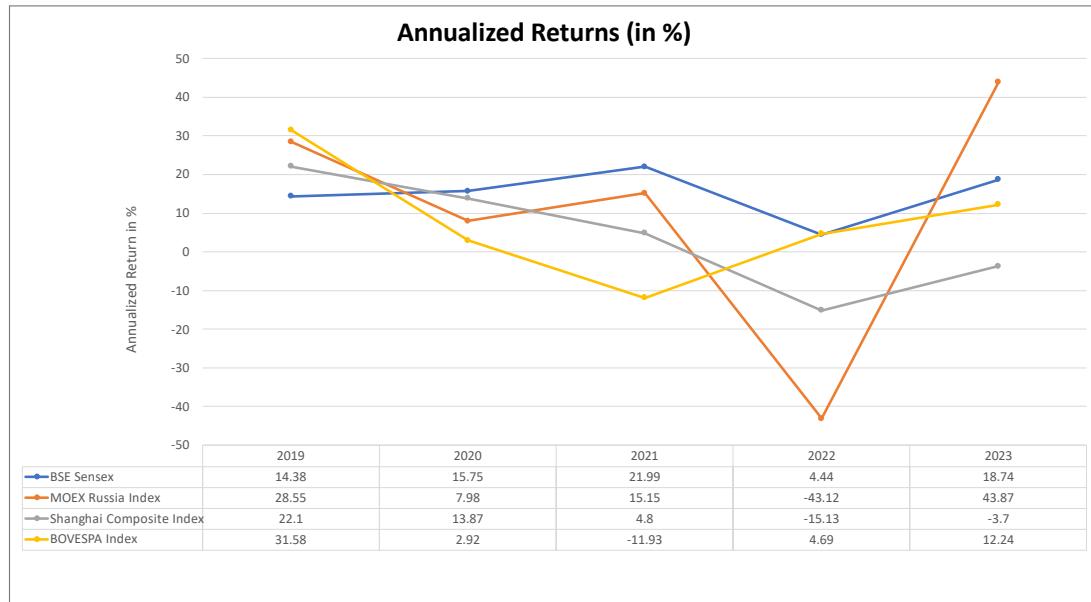


Figure 4.4 – Annualized Returns

Source:

- [Stock Market Indices | Global Market Indices | Stock Indices | Value Research \(valueresearchonline.com\)](#)
- [BOVESPA Index - 24 Year Historical Chart | MacroTrends](#)

The chart displays the annualized returns from 2019 to 2023 for four major stock indices: BSE Sensex (India), MOEX Russia Index (Russia), Shanghai Composite Index (China), and BOVESPA Index (Brazil). BSE Sensex shows relatively stable growth, with returns fluctuating from 14.38% in 2019 to 21.99% in 2021, followed by a slight dip in 2022 (4.44%), and recovery to 18.74% in 2023. The fluctuations align with global economic disruptions such as the COVID-19 pandemic and subsequent economic recovery efforts, as well as specific policy changes in India that aimed to stimulate the economy.

The MOEX Russia Index experienced a dramatic decline in 2022, dropping to -43.12%, primarily due to geopolitical tensions, sanctions, and the economic fallout from Russia's invasion of Ukraine, which severely impacted investor confidence

and caused capital flight. This drop was followed by a significant recovery to 43.87% in 2023, likely driven by a rebound in commodity prices, especially energy, which forms a substantial part of Russia's economy. The Shanghai Composite Index shows steady but lower performance, with the most significant dip in 2022 (-15.13%) caused by strict COVID-19 lockdowns, supply chain disruptions, and regulatory crackdowns on technology firms. The modest recovery in 2023 to -3.7% reflects China's gradual economic reopening and policy measures to stabilize growth.

The BOVESPA Index of Brazil shows significant volatility, with returns plummeting from 31.58% in 2019 to -11.93% in 2021, reflecting economic instability, political uncertainty, and the impact of the COVID-19 pandemic on Brazil's economy. However, a strong recovery to 12.24% in 2023 can be attributed to rising commodity prices and improved investor sentiment following political stabilization and economic reforms aimed at boosting growth. Overall, these indices reflect how global events, national policies, and sectoral dependencies can drive significant fluctuations in stock market performance.

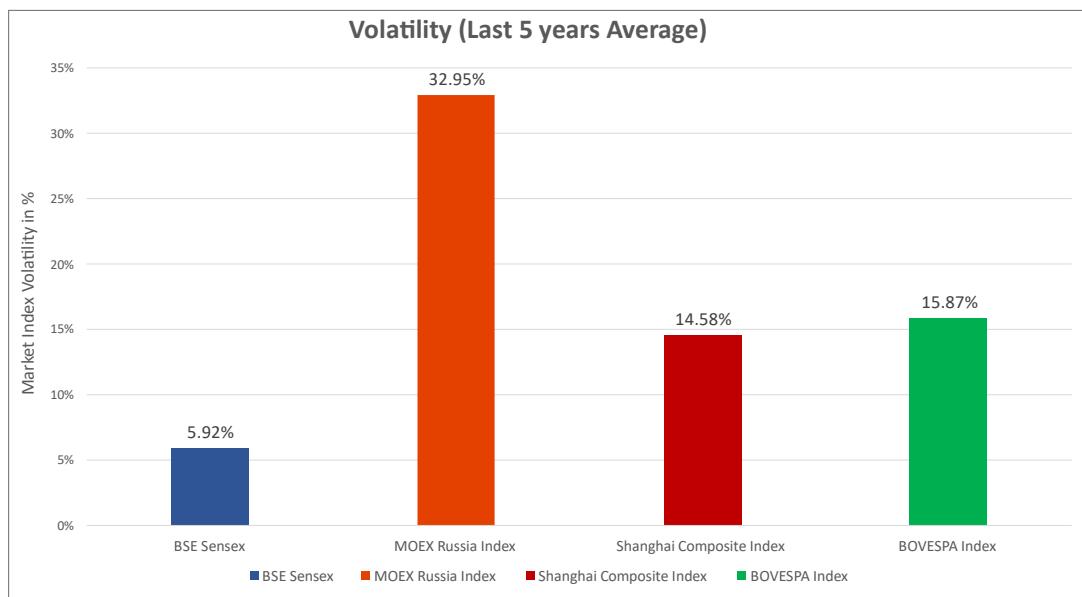


Figure 4.5 – Market Index Volatility (BRIC)

The graph shows the average market index volatility over the last five years for four indices: BSE Sensex (India), MOEX Russia Index (Russia), Shanghai Composite Index (China), and BOVESPA Index (Brazil). The MOEX Russia Index exhibits the highest volatility at 32.95%, reflecting its susceptibility to external shocks such as geopolitical events, sanctions, and dependency on the energy sector. High volatility often indicates greater risk and can lead to unpredictable returns, deterring

conservative investors. According to research, market volatility in Russia is largely driven by oil price fluctuations and political instability.

The BOVESPA Index shows a volatility of 15.87%, which suggests moderate risk levels associated with Brazil's economy, characterized by political uncertainty, fluctuating commodity prices, and economic reforms. The Shanghai Composite Index has a volatility of 14.58%, indicating the Chinese market's sensitivity to regulatory changes, trade tensions, and domestic economic policies. China's volatility reflects investor reaction to sudden regulatory shifts and economic data that frequently influence market sentiment.

In contrast, the BSE Sensex has the lowest volatility at 5.92%, signifying a relatively stable market environment. This stability may be attributed to India's diverse economic base and effective regulatory framework, which help mitigate extreme market fluctuations. Low volatility indicates a more predictable market, attracting risk-averse investors and suggesting that the Indian stock market is less prone to sharp swings compared to its counterparts. This aligns with findings that more diversified economies tend to experience lower market volatility due to reduced dependence on any single sector. The volatility data overall suggests that markets with high sectoral concentration or political instability, like Russia and Brazil, face higher risks, whereas diversified and stable economies like India experience more consistent performance.

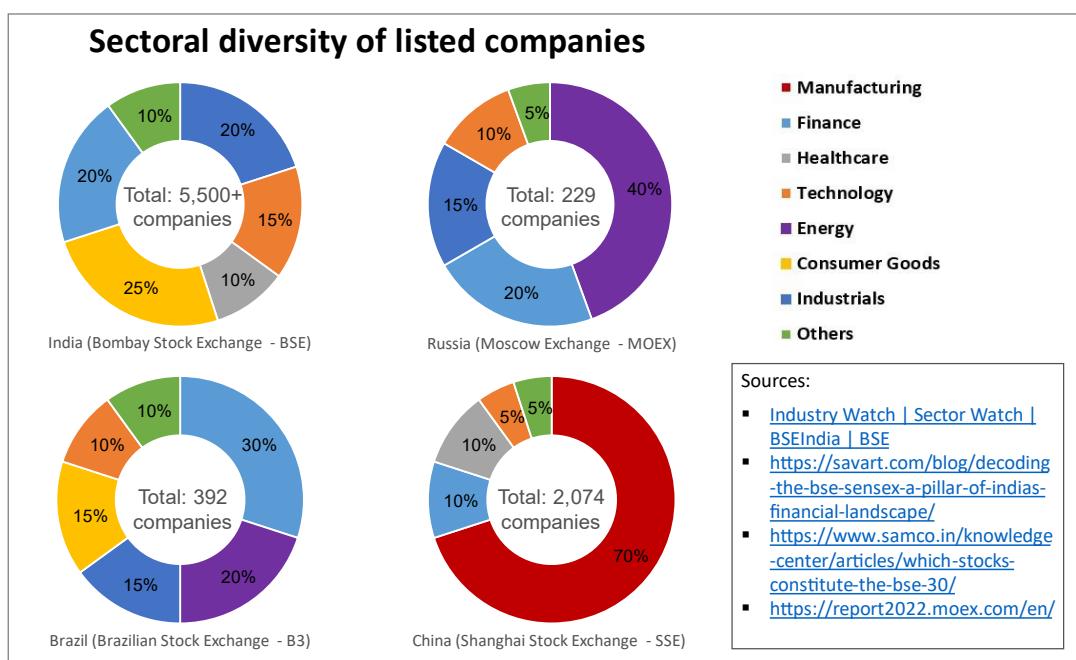


Figure 4.6 – Sectoral diversity of listed Companies (BRIC)

The graph illustrates the sectoral diversity of listed companies across four major stock exchanges: India's BSE, Russia's MOEX, Brazil's B3, and China's SSE. India has a relatively balanced distribution with significant shares in Consumer Goods (25%), Finance (20%), and Industrials (20%), reflecting a diverse economy driven by consumer spending, financial services, and industrial growth. Research shows that diversified economies like India's tend to be more resilient to sector-specific shocks, as they do not rely excessively on one industry for growth.

In contrast, Russia's MOEX is heavily dominated by the Energy sector (40%), which indicates a high dependency on oil and gas exports. This makes the Russian economy particularly vulnerable to global oil price fluctuations and geopolitical risks. Studies have found that economies with high energy sector concentrations face significant volatility and slower overall economic growth during periods of declining commodity prices. Brazil also has notable exposure in the Finance (30%) and Consumer Goods (15%) sectors, suggesting a moderate level of diversification but still susceptible to domestic market and financial sector risks.

China's SSE shows extreme concentration in Manufacturing (70%), reflecting its status as a global manufacturing powerhouse. This reliance on manufacturing makes China highly susceptible to global trade dynamics, tariffs, and supply chain disruptions. Research indicates that such high sectoral concentration can lead to increased economic vulnerability and limits potential growth diversification. In sum, while sectoral diversity can enhance economic resilience, overreliance on specific industries poses substantial risks, underscoring the importance of strategic diversification policies.

4.2.3 Technological Infrastructure

The technological infrastructure of BRIC nations has significantly advanced, enhancing their trading platforms and algorithmic trading capabilities. In Brazil, the B3 exchange (formerly BM&FBOVESPA) has implemented the PUMA Trading System in collaboration with CME Group, which enhances performance and reduces latency. This system is designed to efficiently handle high trading volumes, reflecting Brazil's commitment to advanced technological integration. Similarly, Russia's Moscow Exchange (MOEX) has upgraded its infrastructure with the ASTS+ trading system, supporting high-frequency trading and complex algorithms, which ensures high availability and speed.

India's National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) have made significant technological advancements, including the NIB (NSE IFSC

Blockchain) platform and BSE's BOLT+ system. These platforms offer co-location services to minimize latency and feature robust risk management systems. In China, both the Shanghai Stock Exchange and Shenzhen Stock Exchange utilize the STAR Market technology framework, which efficiently manages high trading volumes and ensures seamless trading experiences. These advancements demonstrate how BRICS nations are leveraging technology to optimize trading operations.

In terms of algorithmic trading prevalence, India leads among the BRIC nations, with approximately 50% of trades on the NSE being algorithmic. MOEX in Russia sees around 40% of trades driven by algorithms, while Brazil's B3 has approximately 30%. Regulatory oversight varies, with India's Securities and Exchange Board (SEBI) enforcing stringent rules for algorithmic trading, ensuring robust oversight and risk management. Similar regulatory frameworks exist in Russia and China, where authorities have established guidelines to monitor algorithmic trading and mitigate associated risks. This indicates that while BRIC nations vary in technological sophistication and regulatory approaches, India leads in both algorithmic trading prevalence and regulatory rigor.

4.3 Bond Markets

4.3.1 Government vs. Corporate Bonds

Country	Size	
	Government Bonds	Private Bonds
India	\$2.02 trillion	\$0.567 trillion
China	\$13 trillion	\$4 trillion
Russia	\$0.2 trillion	\$0.1 trillion
Brazil	\$1.5 trillion	\$0.3 trillion

Table 4.3 – Government & Private Bonds

In India, the government bond market is highly developed, dominated by Government Securities (G-Secs), which include short-term and long-term debt instruments. As of 2023, the G-Secs market exceeded INR 120 trillion, with significant participation from banks, mutual funds, and insurance companies. The corporate bond market, on the other hand, is smaller, accounting for only 30-35% of the total bond market. Corporate bond issuance stands at around INR 30 trillion, and liquidity remains a challenge due to limited retail participation and a concentrated investor base, despite regulatory initiatives like the Corporate Debt Market Development Fund.

In China, the government bond market is one of the largest in the world, with total outstanding government debt reaching CNY 48 trillion (\$6.7 trillion) by the end of 2023. Treasury bonds and local government bonds are the main instruments, supported by strong investor demand, including a growing presence of international investors. China's corporate bond market is also expanding, with outstanding corporate bonds totaling CNY 35 trillion (\$5 trillion) in 2023. The rapid growth is driven by regulatory reforms, though issues like credit risk, regulatory complexity, and opaque pricing practices remain barriers to further development.

Russia's government bond market is centered around federal loan bonds (OFZs), which are actively traded in the Moscow Exchange and held by a variety of investors, including foreign investors who own nearly 20% of the market. By 2023, the total outstanding OFZs stood at RUB 16 trillion (\$220 billion). The corporate bond market, though growing, is relatively small at RUB 9 trillion (\$120 billion), with lower liquidity compared to government bonds. Regulatory efforts to improve the market infrastructure, transparency, and investor confidence are ongoing but face challenges due to sanctions and geopolitical tensions.

In Brazil, the government bond market is well-developed, with outstanding debt of BRL 5.5 trillion (\$1 trillion) in 2023. The market is diversified, featuring fixed-rate bonds (LTN), inflation-linked bonds (NTN-B), and floating-rate bonds (LFT). High domestic participation and growing international interest ensure strong liquidity. The corporate bond market, however, remains underdeveloped, representing only about 15% of the total bond market. As of 2023, the total outstanding corporate bonds were around BRL 900 billion (\$165 billion), hindered by high-interest rates, limited institutional investor participation, and regulatory barriers.

4.3.2 Yield Curve and its Analysis

The yield curves for India, China, Russia, and Brazil as of September 8, 2024, provide insights into their respective economic expectations and conditions. India's yield curve shows a downward slope, starting at around 7% for short-term maturities and decreasing to below 6.5% for longer maturities. This inversion suggests that the market anticipates lower future interest rates, likely due to expectations of an economic slowdown or effective monetary policy interventions aimed at controlling inflation and stimulating growth. Research indicates that inverted yield curves often predict recessions, suggesting caution in India's economic outlook. The Reserve Bank of India's accommodative stance, such as maintaining low-interest rates and liquidity support, reflects these market sentiments and aims to balance economic growth with price stability.

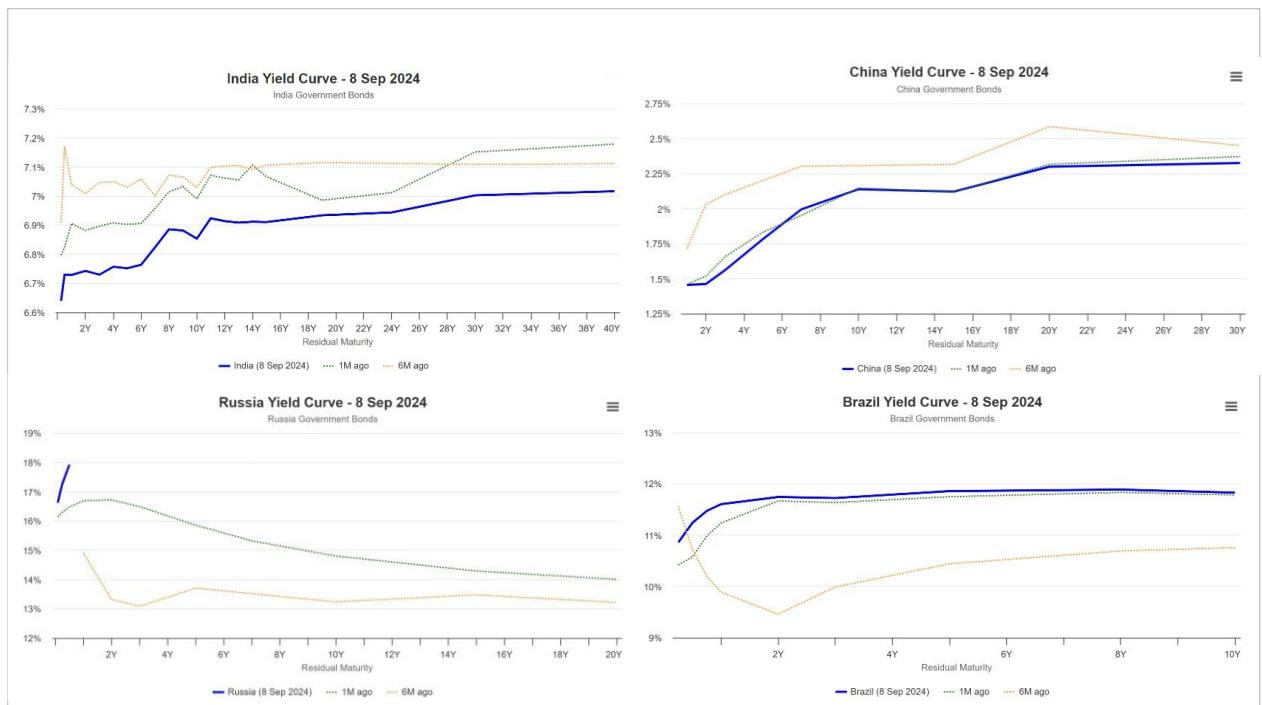


Figure 4.8 – Yield Curve (BRIC)

SOURCE: World Government Bonds ([India Government Bonds - Yields Curve](#)
([worldgovernmentbonds.com](#))

The yield curves for India, China, Russia, and Brazil as of September 8, 2024, provide insights into their respective economic expectations and conditions. India's yield curve shows a downward slope, starting at around 7% for short-term maturities and decreasing to below 6.5% for longer maturities. This inversion suggests that the market anticipates lower future interest rates, likely due to expectations of an economic slowdown or effective monetary policy interventions aimed at controlling inflation and stimulating growth. Research indicates that inverted yield curves often predict recessions, suggesting caution in India's economic outlook. The Reserve Bank of India's accommodative stance, such as maintaining low-interest rates and liquidity support, reflects these market sentiments and aims to balance economic growth with price stability.

China's yield curve exhibits an upward trend, with yields starting at approximately 2.5% for short-term maturities and rising to about 3.25% for longer-term bonds. This positive slope indicates that the market expects rising interest rates, driven by domestic inflationary pressures and strong economic growth projections. Data shows that China's economic growth rate has been robust, with a GDP increase of around 5.2% in 2023, fuelling inflation expectations and influencing the yield curve's upward trajectory (Liu et al., 2024). The gap between Dim Sum Bonds and Onshore Renminbi Bonds reflects differing investor confidence, suggesting that

foreign investors are more cautious about China's economic outlook compared to domestic investors. This could prompt the Chinese government to consider tightening monetary policies to manage inflation, potentially impacting long-term growth.

Russia's yield curve shows a more complex pattern, with yields beginning above 7.5%, dropping to around 6%, and then slightly rising for longer maturities. This unusual shape, known as a humped or butterfly yield curve, signals market uncertainty, influenced by factors such as geopolitical risks, including ongoing sanctions and political instability, as well as fluctuating economic conditions like volatile oil prices. Russia's economy is highly dependent on oil exports, and recent market dynamics have led to fluctuating yields. Higher yields for AAA Corporate Bonds compared to government bonds reflect a significant risk premium demanded by investors, highlighting concerns about the stability of Russia's corporate sector amidst these uncertainties.

Brazil's yield curve starts at approximately 9%, dips slightly, and then rises again towards longer maturities, illustrating a mixed trend that reflects market concerns about inflation and fiscal policy adjustments. Brazil has been grappling with high inflation rates, which reached 8.7% in 2023, prompting market apprehension about the country's fiscal stability and economic policies. The initial dip in the curve indicates some confidence in short-term economic stability, possibly due to recent fiscal measures or monetary policy interventions. However, the subsequent rise for longer maturities suggests caution over the long-term outlook, driven by uncertainties about ongoing economic reforms and external economic pressures. The Brazilian government's efforts to stabilize the economy through fiscal adjustments will be crucial in shaping investor confidence and ensuring sustainable growth in the future.

Analysis:

CHINA	2Y vs 1Y	0.7 bp	Yield Curve is flat in Short-Term Maturities
	5Y vs 2Y	32.1 bp	Normal Convexity in Mid-Term vs Short-Term Maturities
	10Y vs 2Y	67.6 bp	Normal Convexity in Long-Term vs Short-Term Maturities
INDIA	2Y vs 1Y	1.4 bp	Yield Curve is flat in Short-Term Maturities
	5Y vs 2Y	0.9 bp	Yield Curve is flat in Mid-Term vs Short-Term Maturities
	10Y vs 2Y	11.1 bp	Yield Curve is flat in Long-Term vs Short-Term Maturities
BRAZIL	2Y vs 1Y	14 bp	Normal Convexity in Short-Term Maturities
	5Y vs 2Y	11.5 bp	Yield Curve is flat in Mid-Term vs Short-Term Maturities
	10Y vs 2Y	8.5 bp	Yield Curve is flat in Long-Term vs Short-Term Maturities

Figure 4.9 – Yield Curve Analysis

The yield curves for China, India, and Brazil as of September 8, 2024, provide insights into the economic conditions and expectations in these countries. China's yield curve shows a relatively flat trend in short-term maturities, with a difference of only 0.7 basis points (bp) between the two-year (2.58%) and one-year (2.51%) maturities, indicating market uncertainty in the near term. In the mid-term, there is a noticeable increase in convexity with a spread of 32.1 bp between the five-year (2.83%) and two-year maturities, suggesting expectations of rising interest rates driven by inflationary pressures and economic growth. The long-term segment shows significant normal convexity, with a spread of 67.6 bp between the ten-year (3.5%) and five-year maturities, reflecting confidence in China's long-term economic stability despite current inflation concerns.

India's yield curve displays a flat trend in short-term maturities, with a 1.4 bp difference between the two-year (6.98%) and one-year (6.96%) maturities, pointing to stable near-term rate expectations. The mid-term maturities exhibit a slight upward movement, with a spread of 0.9 bp between the five-year (7.07%) and two-year maturities, indicating cautious optimism. Long-term convexity increases, with a spread of 11.1 bp between the ten-year (7.18%) and five-year maturities, and a broader spread of 67.6 bp between the ten-year and one-year maturities. This suggests the market expects lower future interest rates, likely due to anticipated economic slowdown or effective monetary policies aimed at balancing growth and inflation.

Brazil's yield curve shows a slight upward slope in short-term maturities, with a 14 bp difference between the two-year (9.04%) and one-year (8.9%) maturities, indicating early-stage rate hikes or inflationary expectations. In the mid-term, there is substantial growth, with an 11.5 bp spread between the five-year (9.15%) and two-year maturities, reflecting concerns about inflation or fiscal instability. The long-term segment shows strong growth, with an 8.5 bp spread between the ten-year (9.23%) and five-year maturities, and significant normal convexity with a 67.6 bp spread between the ten-year and one-year maturities. This mixed trend reflects confidence in short-term stability but caution in the long term due to ongoing economic reforms or external economic pressures. These yield curves highlight differing market expectations across China, India, and Brazil, influenced by their unique economic conditions and policies.

4.3.3 Credit Rating

Country	S&P	Moody's	Fitch	Outlook
India	BBB-	Baa3	BBB-	Positive (S&P)
China	A+	A1	A+	Negative (Moody's, Fitch)
Russia	BBB-	Baa3	BBB	Stable(Fitch)
Brazil	BB	Ba2	BB	Positive (Moody's)

Table 4.4 – Credit Rating (BRIC)

India Credit Ratings:

India's credit ratings reflect a stable but cautious outlook from global agencies. Standard & Poor's (S&P) has assigned India a BBB- rating with a positive outlook, while Moody's Investors Service rates the country Baa3, and Fitch aligns at BBB- as well. DBRS gives India a BBB (low) rating, also with a positive outlook. These ratings place India in the lower end of the investment-grade category, indicating moderate credit risk. Statistically, India's GDP growth rate stood at 7.2% for FY2023, while the fiscal deficit was 6.4% of GDP, down from 9.2% in FY2021. The positive outlook from S&P and DBRS reflects optimism about India's ongoing economic reforms, with expectations that sustained fiscal consolidation, and strong economic growth could lead to an upgrade. However, concerns remain over inflation, which averaged 6.6% in 2023, above the RBI's target of 4%, and a public debt-to-GDP ratio hovering around 83%.

China Credit Ratings:

China enjoys relatively high credit ratings, reflective of its global economic significance, though rising concerns have led to a negative outlook. Standard & Poor's (S&P) and Fitch Ratings both rate China at A+, while Moody's assigns an A1 rating with a negative outlook. DBRS also rates China A. These ratings reflect China's status as the world's second-largest economy, with \$3.16 trillion in foreign exchange reserves and a \$17.4 trillion GDP in 2023. However, Moody's and Fitch's negative outlooks point to issues such as corporate debt, which stood at 160% of GDP, and risks in the real estate sector, where defaults by major developers like Evergrande have cast a shadow on financial stability. China's GDP growth rate slowed to 4.4% in 2023, down from pre-pandemic levels, contributing to the negative outlook as investors assess the potential risks of continued debt accumulation and slower economic momentum.

Russia Credit Ratings:

Russia's updated credit ratings are Baa3 by Moody's, BBB- by S&P, and BBB by Fitch, placing the country at the lower end of the investment-grade spectrum. This shift from "Not Rated" reflects a stabilization in Russia's financial position, indicating it can still meet its financial obligations despite significant risks. In 2023, Russia's economy contracted by 2.1% due to sanctions and geopolitical disruptions, with inflation peaking at 11.9% before expected moderation to 6.5% by 2024. Public debt remains low at 17.5% of GDP, but the fiscal deficit widened to 3.3% due to increased military spending and reduced energy revenues.

The BBB- and BBB ratings signal moderate credit risk, showing that Russia's trade with non-Western countries and strong foreign reserves have helped stabilize the economy. However, Moody's Baa3 rating highlights vulnerabilities from ongoing geopolitical tensions, reliance on energy exports, and fiscal challenges. While inflation control efforts are underway, long-term economic prospects depend on Russia's ability to diversify and manage political and economic isolation.

Brazil Credit Ratings:

Brazil's credit ratings fall into the speculative or "junk" category, reflecting fiscal imbalances and political volatility. Standard & Poor's and Fitch both rate Brazil at BB, while Moody's Investors Service assigns a Ba2 rating with a positive outlook. DBRS also rates Brazil at BB. These ratings indicate significant risk in Brazil's ability to meet its financial obligations. Brazil's GDP grew by a modest 2.5% in 2023, while inflation remained elevated at 6.9%, exceeding the central bank's target of 3.75%. Brazil's public debt stands at 74% of GDP, with a fiscal deficit of 4.2% in 2023, exacerbating concerns over fiscal sustainability. Despite these challenges, Moody's positive outlook reflects potential optimism about upcoming structural reforms, particularly related to pension and tax systems, which could help Brazil regain investor confidence. However, for now, the country remains in the speculative-grade category, signaling high risks for international investors.

4.4 Financial Institutions, their inclusion & role in Digital finance

4.4.1 Comparative Analysis of the Role and Influence of Commercial Banks in India, Russia, China, and Brazil

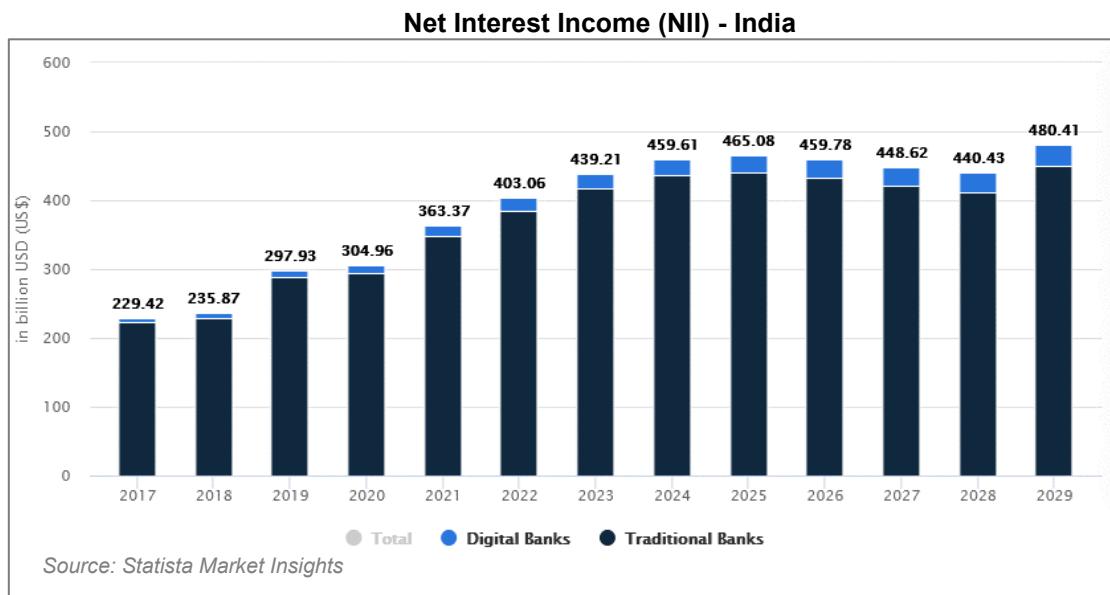


Figure 4.10 – Net Interest Income (India)

The BRIC nations—Brazil, Russia, India, and China—represent some of the world's largest emerging markets, each with unique economic landscapes. Commercial banks in these countries play a pivotal role in their respective financial systems, shaping economic development, financial inclusion, and monetary stability. This comparative analysis focuses on the role and influence of commercial banks in India in contrast to Russia, China, and Brazil, with a particular emphasis on the net interest income, bank account penetration, value of deposits, and the adoption of digital banking across these nations. Net interest income (NII) serves as a crucial indicator of the profitability of banks, reflecting the difference between the revenue generated from interest-bearing assets and the cost of servicing liabilities. In India, traditional banks have demonstrated steady growth in NII, increasing from \$222.5 billion in 2017 to \$385 billion in 2022, with projections reaching \$412.3 billion by 2029. Conversely, digital banks in India, although currently contributing a smaller share, have exhibited rapid growth, with NII rising from \$6.92 billion in 2017 to an anticipated \$30.91 billion by 2029. This growth underscores the increasing relevance of digital banking in India's financial sector (RBI, 2023).

China, in comparison, has experienced more substantial growth in both traditional and digital banking sectors. Traditional banks' NII surged from \$1.90 trillion in 2017 to \$4.86 trillion in 2028, while digital banks grew from \$0.13 trillion to \$0.82 trillion over the same period. China's banking sector benefits from a highly centralized economy and a larger population base, which drives higher volumes of banking activities (People's Bank of China, 2023). Brazil, while also demonstrating growth, lags behind China in absolute terms but shows a significant rise in digital banking, with NII growing from \$13.43 billion in 2017 to \$78.25 billion by 2029. Traditional banking NII in Brazil, however, remains relatively stable, growing modestly from \$97.21 billion in 2017 to \$120.1 billion by 2029 (Central Bank of Brazil, 2023). Russia presents a unique case where traditional banking NII has seen fluctuations, peaking at \$71.09 billion in 2021 before declining to \$50.75 billion by 2029. This decline reflects the economic challenges and sanctions that have impacted the Russian banking sector. Digital banks in Russia, however, have shown resilience, with NII growing from \$4.14 billion in 2017 to \$26.85 billion by 2029, highlighting a shift towards digital financial services (Bank of Russia, 2023).

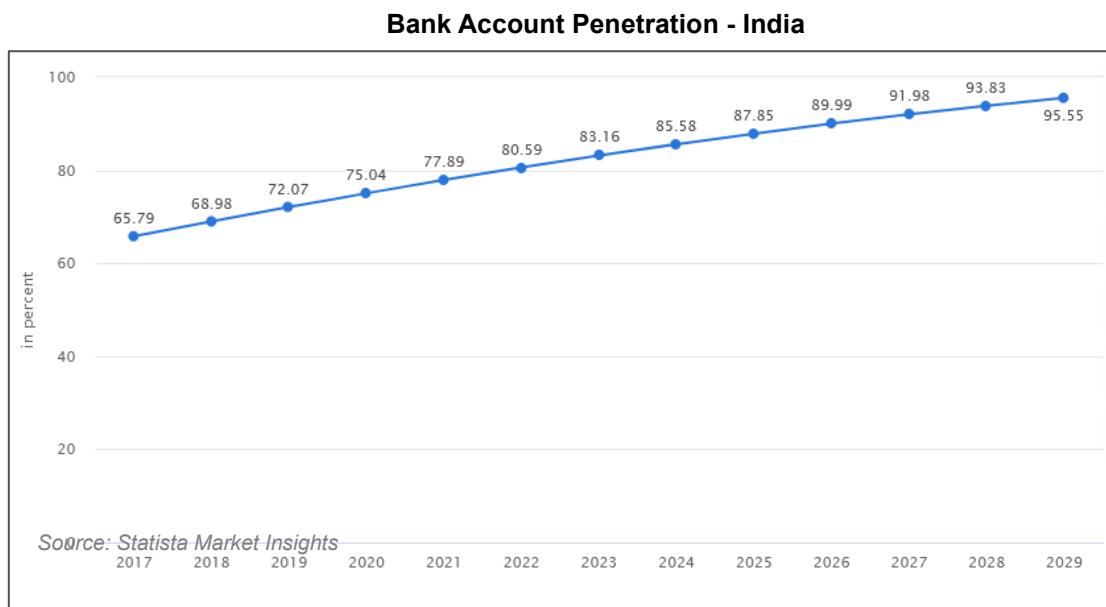


Figure 4.11 – Bank Account Penetration (India)

Bank account penetration is a key measure of financial inclusion, reflecting the proportion of the adult population with access to banking services. India has made significant strides in this area, with bank account penetration rising from 65.79% in 2017 to a projected 95.55% by 2029. This improvement is largely attributed to government initiatives like the Pradhan Mantri Jan Dhan Yojana (PMJDY), which aims to bring banking services to the unbanked population (Ministry of Finance, India, 2023). China, on the other hand, already has near-universal bank account

penetration, reaching 99.63% by 2025 and stabilizing at 99.90% thereafter. This high penetration rate is reflective of China's rapid urbanization and the government's strong push towards digital financial inclusion (People's Bank of China, 2023). Brazil and Russia show similar trends, with bank account penetration reaching 96.88% and 97.48% by 2029, respectively. Both countries have implemented various financial inclusion strategies, but Brazil's rapid adoption of mobile banking has been a critical factor in increasing financial access, whereas Russia's penetration is more influenced by a historically high literacy rate and the widespread presence of bank branches (Central Bank of Brazil, 2023; Bank of Russia, 2023).

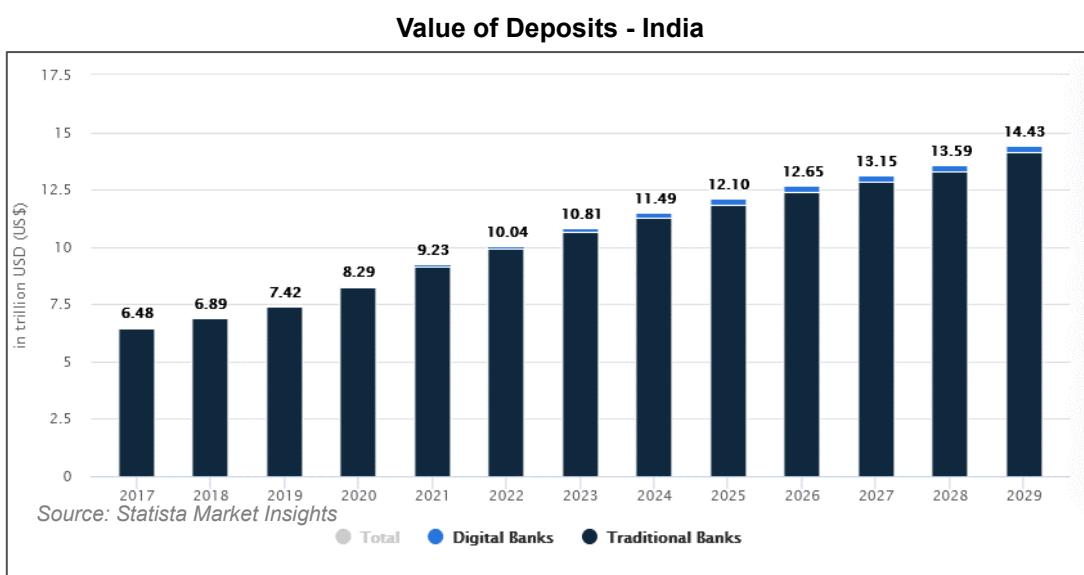


Figure 4.12 – Value of Deposits (India)

The value of deposits is a crucial metric reflecting the public's trust in the banking system and the overall liquidity available in the economy. India's traditional banks have consistently seen an increase in deposit values, growing from \$6.47 trillion in 2017 to an estimated \$14.12 trillion by 2029. Digital banks, while starting from a lower base, have shown exponential growth, with deposit values expected to reach \$0.31 trillion by 2029, up from a mere \$0.01 trillion in 2017. This growth reflects the increasing consumer confidence in digital banking platforms in India (RBI, 2023). China's banking sector dominates in terms of deposit values, with traditional banks' deposits expected to reach \$155.50 trillion by 2029. Digital banks in China, leveraging the country's advanced technological infrastructure, have also grown rapidly, with deposits projected to reach \$2.35 trillion by 2029 (People's Bank of China, 2023). In Brazil, the value of deposits in traditional banks has shown modest growth, with figures expected to rise from \$1.68 trillion in 2017 to \$2.07 trillion by 2029. Digital banks in Brazil have seen more significant growth, with deposits

anticipated to reach \$1.79 trillion by 2029. This shift towards digital banking is driven by a young, tech-savvy population and the increasing penetration of smartphones (Central Bank of Brazil, 2023). Russia's banking sector, particularly traditional banks, has faced challenges, with deposits showing a slight decline from \$750.8 billion in 2017 to \$562.5 billion by 2029. Digital banks, however, have shown robust growth, with deposits expected to rise from \$16.07 billion in 2017 to \$314.4 billion by 2029, indicating a significant shift in consumer preference towards digital financial services (Bank of Russia, 2023).

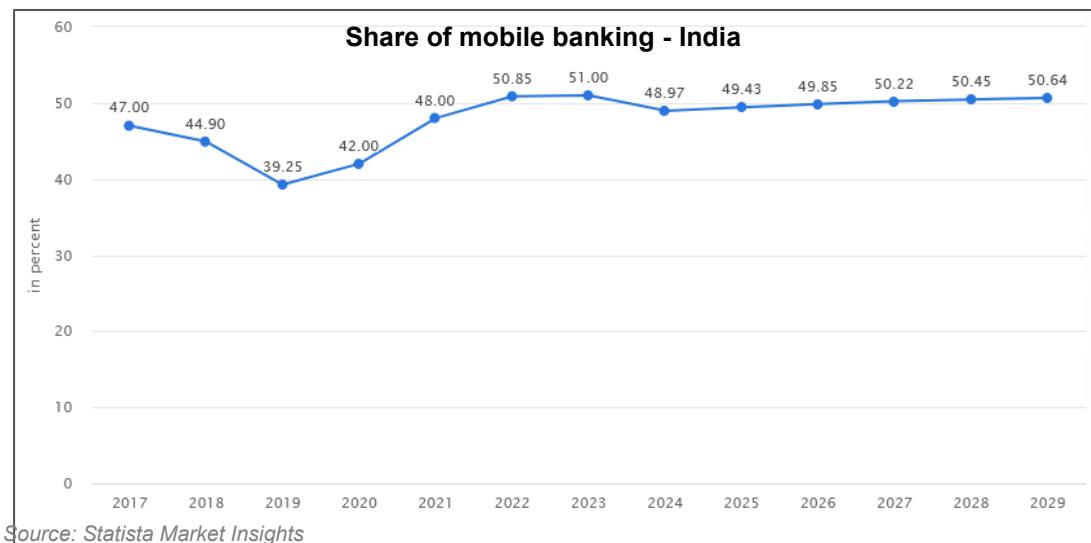


Figure 4.13 – Share of mobile banking (India)

The adoption of digital banking is a key indicator of a country's technological advancement in the financial sector. In India, the share of mobile banking transactions has steadily increased, reaching 50.64% by 2029, up from 47% in 2017. This trend reflects the rapid digitalization of the Indian economy and the increasing trust of consumers in mobile banking platforms (RBI, 2023). China, with its advanced digital infrastructure, leads in mobile banking adoption, with the share of mobile transactions expected to reach 99.9% by 2029. The widespread use of mobile payment platforms like Alipay and WeChat Pay has been a significant factor in this high adoption rate (People's Bank of China, 2023). Brazil has also seen a substantial increase in mobile banking, with its share growing from 31% in 2017 to 81.21% by 2029. The rise of fintech companies and the increasing use of smartphones have driven this growth, making Brazil one of the leading adopters of digital banking in Latin America (Central Bank of Brazil, 2023). Russia, while lagging behind China and Brazil, has made notable progress, with mobile banking's share increasing from 22% in 2017 to 65.63% by 2029. This growth is reflective of

the gradual digital transformation of Russia's financial sector, despite the economic challenges faced by the country (Bank of Russia, 2023).

The comparative analysis of commercial banks in India, Russia, China, and Brazil reveals distinct trajectories shaped by each nation's economic, technological, and regulatory environment. India, while currently trailing behind China in absolute terms, shows promising growth in digital banking, which could position it as a significant player in the future. China's dominance in both traditional and digital banking reflects its large population base and advanced technological infrastructure. Brazil, driven by a young and tech-savvy population, has seen rapid growth in digital banking, while Russia's banking sector, though challenged by economic constraints, is gradually shifting towards digitalization. The evolution of commercial banks in these BRIC nations underscores the dynamic nature of global financial systems and the varying approaches to achieving financial inclusion and economic growth.

4.4.2 Investment Banks in BRICS Nations

The investment banking landscape in the BRIC nations—Brazil, Russia, India, and China—exhibits distinct characteristics shaped by local market dynamics, regulatory environments, and the presence of domestic and international players. In Brazil, the investment banking sector is dominated by domestic players such as Banco BTG Pactual, Itaú BBA, and Bradesco BBI, with a selective presence of international banks like Goldman Sachs and JPMorgan Chase. In 2023, investment banking revenues in Brazil were approximately USD 2.5 billion, reflecting the sector's sensitivity to Brazil's economic volatility and political instability, which significantly influenced investor confidence and market performance. Key challenges include economic fluctuations, currency instability, and a complex regulatory environment, with Brazil ranked 124th out of 190 countries on the Ease of Doing Business Index in 2020, highlighting the hurdles faced by the sector.

In Russia, the investment banking sector is primarily controlled by state-owned institutions such as VTB Capital and Sberbank CIB, with minimal presence from Western banks due to international sanctions. In 2023, Russian investment banks managed approximately USD 1.2 billion in deal volume, underscoring the constrained nature of the market. The sector's activities are largely confined to domestic capital raising and state-backed projects, with limited cross-border involvement. Russia's investment banking sector faces significant challenges,

including geopolitical risks, ongoing international sanctions, and a heavy reliance on the energy sector, which accounted for over 60% of the country's exports in 2022. These factors limit the market's growth and diversification, creating a challenging environment for both domestic and international players.

India's investment banking sector presents a more dynamic and balanced environment, characterized by a strong presence of both domestic firms, such as ICICI Securities, Kotak Investment Banking, and Axis Capital, and international players like Goldman Sachs, Morgan Stanley, and JPMorgan Chase. In 2023, India's investment banking revenues were around USD 3.8 billion, driven by robust activity in IPOs, mergers and acquisitions, and private equity deals. India's market benefits from a growing economy, supportive regulatory reforms, and a focus on technological innovation, particularly in digital banking and fintech. The country's IPO market raised over USD 10 billion in 2023, reflecting the vibrancy of its financial ecosystem. Regulatory bodies such as the Securities and Exchange Board of India (SEBI) play a critical role in facilitating market growth and maintaining stability, positioning India as a standout market within the BRIC nations.

China's investment banking sector is the largest among the BRIC countries, with revenues reaching approximately USD 5.5 billion in 2023. The sector is dominated by major domestic players like China International Capital Corporation (CICC), CITIC Securities, and Haitong Securities, with limited involvement from foreign banks due to stringent regulatory restrictions. Chinese investment banks primarily focus on domestic enterprises and infrastructure projects, aligning closely with national economic objectives. The regulatory environment remains highly controlled, limiting foreign access and competition, yet allowing substantial scale within the domestic market. Despite these restrictions, China's vast market size and state-aligned strategies provide significant growth opportunities for domestic investment banks.

Comparatively, India sets itself apart with its balanced mix of domestic and international investment banks, supportive regulatory framework, and a vibrant, technology-driven financial sector. The openness to foreign investment and the emphasis on digital transformation uniquely position India as a dynamic and expanding market within the BRIC nations. In contrast, Brazil and Russia face more pronounced constraints, with Brazil's sector affected by economic and political instability, and Russia's market limited by geopolitical risks and international sanctions. China's sector, while the largest, remains inward-focused and tightly regulated, reflecting a strategic preference for state control over the investment

banking industry. Overall, India's investment banking sector is well-positioned to leverage global investment flows, technological advancements, and continued regulatory improvements, distinguishing it as a leading market within the BRIC countries.

Aspect	India	Brazil	Russia	China
Market Maturity	Rapidly growing, open to reforms	Volatile, emerging market	Developing, constrained by sanctions	Highly regulated, large market
Local vs Global banks	Strong local and significant global presence	Mix of local dominance, selective global presence	Predominantly local	Dominated by local banks
Regulatory Environments	Supportive, pro-market reforms	Moderate, impacted by economic policies	Restrictive, influenced by sanctions	Highly controlled, state-aligned
Key Sectors	Technology, financial services, consumer goods	Energy, consumer goods	Energy, heavy industry	Technology, state enterprises
Growth Drivers	Economic reforms, digital transformation	Commodities, privatization	State-backed, energy funding	Government initiatives, consumption
Challenges	Regulatory changes, Fintech competition	Economic/political instability	Geopolitical risks, energy dependency	Regulatory barriers, trade tensions

Table 4.5 – Investment Banking Analysis (BRIC)

Source: [World Investment Banking Report 2024](#)

4.4.3 Non-Banking Financial Companies (NBFCs)

Non-Banking Financial Companies (NBFCs) play a crucial role in the financial systems of BRICS countries—India, China, Russia, and Brazil—by promoting financial inclusion and supporting economic growth, especially in underserved regions and sectors. In India, NBFCs are pivotal in bridging the financial inclusion gap by providing credit to rural and semi-urban areas. These institutions are heavily involved in infrastructure finance, housing loans, and lending to small and medium-sized enterprises (SMEs). Regulated by the Reserve Bank of India (RBI), they account for about 25% of total credit in the Indian economy. A key trend in India's NBFC sector has been the rise of digitization and fintech integration, allowing greater penetration into rural areas while improving efficiency. However, the sector has faced challenges related to non-performing assets (NPAs), which have led to stricter regulatory oversight.

China's NBFC sector is more closely linked to the shadow banking system, focusing on wealth management, leasing, and trust services, catering to sectors underserved by traditional banks. The China Banking and Insurance Regulatory Commission (CBIRC) has tightened regulations on NBFCs due to concerns over financial instability, particularly regarding real estate lending and wealth management products. Unlike India's NBFCs, which focus heavily on direct credit, China's NBFCs are more involved in capital markets. Russia's NBFCs play a vital role in providing credit to SMEs and urban consumers, focusing on leasing and consumer finance, with limited rural outreach. However, the sector faces significant challenges from economic sanctions and geopolitical tensions. Brazil's NBFCs, regulated by the Central Bank of Brazil, focus on promoting financial inclusion, particularly through microcredit and SME financing. Despite their important role, the sector has been constrained by economic volatility.

The comparative analysis reveals that while NBFCs in all four countries aim to promote financial inclusion and support economic growth, their regulatory environments, market focus, and growth trends differ significantly. India's NBFCs have demonstrated robust growth, driven by fintech adoption and rural outreach, while China's sector faces constrained growth due to increased regulatory oversight. Russia's NBFCs, focused on urban markets, are hampered by geopolitical challenges, and Brazil's NBFCs, though essential for financial inclusion, face slower growth due to economic instability. Despite these differences, NBFCs remain key components of the financial systems in these countries, contributing to broader economic development.

Chapter 5: Monetary Policy Frameworks and Implementation

5.1 India's Monetary Policy: Inflation Control and Financial Stability

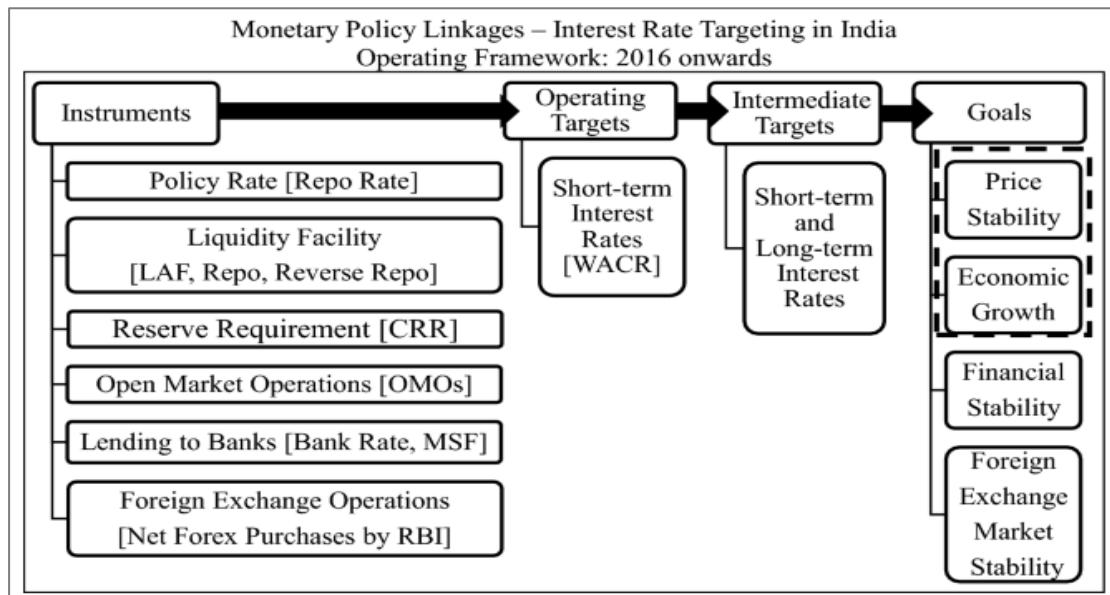


Figure 5.1 – Monetary Policy Linkages (India)

India's monetary policy framework is based on inflation targeting, overseen by the Reserve Bank of India (RBI). The central bank is tasked with maintaining inflation within a target range of $4\% \pm 2\%$, meaning inflation is allowed to fluctuate between 2% and 6%. However, inflationary pressures have often pushed inflation to the upper end of the target band, with inflation averaging 6.2% in 2023. The repo rate, which serves as India's main policy instrument, is used to influence liquidity and control inflation. Over the past few years, the repo rate has seen considerable changes: from 4.0% in 2020 (during the pandemic) to 6.5% in 2023 in response to rising inflation. The reverse repo rate, which complements the repo rate, is also used to manage excess liquidity. In addition to these rates, the RBI engages in open market operations to regulate money supply and stabilize inflation. The RBI enjoys significant operational independence, allowing it to make swift policy adjustments. Nonetheless, it works closely with the government to ensure that its monetary policy aligns with the country's broader fiscal strategies.

In addition to inflation targeting, India's monetary policy framework under the Reserve Bank of India (RBI) places strong emphasis on financial stability through the regulation of reserve requirements and capital adequacy. As of 2023, the cash reserve ratio (CRR) for Indian banks was set at 4.5%, meaning that commercial banks are required to hold 4.5% of their total deposits in reserve with the RBI. This

ratio is a key tool the RBI uses to control liquidity and influence lending activity within the economy. The statutory liquidity ratio (SLR), another requirement, was set at 18%, requiring banks to hold 18% of their net demand and time liabilities in liquid assets such as gold or government securities. Adjustments to the CRR and SLR have historically been used to either inject or absorb liquidity depending on the economic context. For instance, during the pandemic-induced slowdown, the RBI temporarily lowered these requirements to boost liquidity in the banking system.

India also adheres to the Basel III capital adequacy norms, with a national requirement of 11.5%, including capital conservation buffers. As of 2023, Indian banks maintained an average capital adequacy ratio (CAR) of 16.8%, well above the regulatory minimum. This high CAR demonstrates the RBI's cautious approach to maintaining a robust banking sector that can withstand potential financial shocks. Furthermore, Indian banks' liquidity coverage ratio (LCR) was set at 100% in compliance with Basel III standards, ensuring banks can meet short-term liquidity demands. The combination of high capital adequacy and stringent reserve requirements reflects the RBI's commitment to financial stability alongside its primary objective of controlling inflation.

5.2 China's Monetary Policy: Economic Stability & Liquidity Management

China's monetary policy framework is unique compared to other BRIC nations, as it does not follow a strict inflation-targeting regime. Instead, the People's Bank of China (PBOC) emphasizes maintaining overall economic stability and controlling the exchange rate. The PBOC does not set formal inflation targets like Brazil, Russia, or India; however, its general inflation objective is to keep inflation around 3%. Inflation in China has remained relatively low compared to other BRIC countries, with a rate of 2.3% in 2023, well within the PBOC's informal tolerance levels. The benchmark lending rate, a critical tool in China's monetary policy arsenal, has been adjusted over the years to maintain stable economic growth. Historically, the lending rate has varied from 4.35% in 2019 to 3.85% in 2023. The PBOC also utilizes reserve requirements and open market operations to manage liquidity. In recent years, the central bank has reduced the reserve requirement ratio (RRR) multiple times to stimulate the economy, especially during economic downturns. The PBOC operates under the guidance of the State Council, aligning its monetary policy with the government's broader economic goals, such as controlling inflation, fostering growth, and maintaining currency stability.

China's monetary policy framework extends beyond inflation control to include maintaining financial and economic stability, with a strong focus on regulating reserve requirements and ensuring the capital adequacy of its banking system. The reserve requirement ratio (RRR) in China is a key tool used by the People's Bank of China (PBOC) to manage liquidity. In 2023, the RRR for large banks was set at 10.75%, while for smaller banks, it was 7.75%. These ratios have been gradually reduced over the past few years as part of the PBOC's efforts to provide more liquidity to the economy and encourage lending, particularly in response to the economic slowdown caused by the COVID-19 pandemic. For example, in 2021, the PBOC cut the RRR by 50 basis points to stimulate lending, and similar measures were taken again in 2022.

China's banking system also adheres to the Basel III capital adequacy standards, with the PBOC requiring banks to maintain a minimum capital adequacy ratio (CAR) of 10.5%, slightly above the international standard. By 2023, the average CAR for China's large commercial banks was 14.5%, reflecting a well-capitalized financial system. This ratio is part of the PBOC's broader strategy to prevent financial risks, particularly in sectors like real estate, where debt levels have raised concerns. Additionally, China's liquidity coverage ratio (LCR) was set at 100%, in line with Basel III requirements, ensuring that banks have enough liquid assets to cover short-term liabilities. These policies, combined with the PBOC's interventions in the foreign exchange market to stabilize the yuan, reflect China's broader focus on maintaining economic stability and preventing financial crises.

5.3 Russia's Monetary Policy: Inflation Targeting and Financial Resilience

Russia's monetary policy framework is also centered on inflation targeting along with other objectives, with the Central Bank of Russia (Bank of Russia) focusing on maintaining price stability. The inflation target set by the central bank is 4%, with a flexibility to adjust within a band of $\pm 1.5\%$, which puts the acceptable inflation range between 2.5% and 5.5%. However, due to external factors such as economic sanctions and geopolitical instability, inflation has consistently remained above the target, reaching 6.5% in 2023. To curb rising inflation, the central bank uses the key rate, which acts as the policy interest rate. Historically, the key rate has experienced significant fluctuations, from as low as 4.25% in 2020 to as high as 20% in early 2022 during the initial phase of sanctions. By 2023, the key rate had stabilized at 7.5%, reflecting the bank's efforts to manage inflation while supporting the economy. Additionally, the Bank of Russia uses reserve requirements and foreign exchange interventions to stabilize the ruble, which has been particularly volatile due to external pressures. The central bank

maintains relative independence, although its actions are often influenced by the government's economic and geopolitical priorities.

Russia's monetary policy framework includes maintaining financial and currency stability, which is supported by the Central Bank of Russia's regulation of reserve requirements and capital adequacy in the banking sector. The reserve requirement ratio for Russian banks was set at 4% for ruble deposits and 8% for foreign currency deposits in 2023. These requirements are relatively moderate compared to other countries, reflecting the central bank's dual focus on controlling inflation and supporting liquidity in the banking sector. The foreign exchange reserves of Russia, which reached \$585 billion in 2023, are used not only to stabilize the ruble but also to provide confidence in the financial system amidst external pressures like economic sanctions.

Regarding capital adequacy, the Central Bank of Russia enforces the Basel III guidelines, requiring Russian banks to maintain a minimum capital adequacy ratio of 8%, though it has set a national target of 10%. In 2023, the average CAR for Russian banks stood at 12.3%, reflecting a well-capitalized banking sector capable of withstanding economic shocks. This capital buffer is particularly important given the sanctions and geopolitical tensions that have affected Russia's access to global financial markets. Moreover, the liquidity coverage ratio (LCR), which ensures banks can meet short-term obligations, was set at 100%, aligning with international Basel III standards to ensure that banks have enough liquid assets to cover short-term liabilities. The Central Bank of Russia's focus on maintaining these ratios reflects its broader objective of ensuring financial resilience under both internal and external economic pressures.

5.4 Brazil's Monetary Policy: Navigating Inflation & Liquidity Management

Brazil's monetary policy framework is built around an inflation-targeting regime, with the Central Bank of Brazil (Banco Central do Brasil) responsible for maintaining inflation within a target range. The National Monetary Council sets an official inflation target of 3.25% with a tolerance band of $\pm 1.5\%$, meaning the inflation target can fluctuate between 1.75% and 4.75%. Brazil's inflation rate, however, has frequently exceeded this target range, particularly in recent years due to global economic challenges and domestic factors. To achieve its inflation goals, the central bank primarily relies on the Selic rate, which serves as the country's benchmark interest rate. Historically, the Selic rate has fluctuated significantly: for instance, it was as low as 2.0% in 2020, but as inflation pressures surged, the rate was raised multiple times, reaching 13.75% in 2023. In addition to the Selic rate, the central bank uses reserve

requirements and open market operations to influence liquidity and inflation. Despite the central bank's operational independence, its decisions are still subject to review by government authorities, adding a layer of political oversight to its policies.

In addition to inflation targeting, Brazil's monetary policy also focuses on financial stability, particularly through the management of reserve requirements and capital adequacy in its banking sector. The reserve requirement ratio for commercial banks in Brazil, as set by the Central Bank of Brazil, stood at 21% for demand deposits in 2023. This high reserve ratio is used to control liquidity in the banking system and limit inflationary pressures by ensuring that banks hold a significant portion of their deposits in reserve rather than lending them out. The central bank has occasionally adjusted these requirements to manage liquidity in response to economic fluctuations. For example, during the economic downturn in 2020, the reserve requirement was temporarily reduced to 17%, but it was raised again as inflation began to rise in 2022.

Brazil's capital adequacy ratio (CAR) is another key metric that the Central Bank of Brazil monitors to ensure financial stability. The Basel III framework, which Brazil follows, requires a minimum capital adequacy ratio of 11% for its banks, compared to the international standard of 8%. As of 2023, Brazil's average CAR across its major banks was around 15.5%, indicating a well-capitalized banking system that exceeds both national and international requirements. This high ratio reflects the central bank's cautious approach to preventing banking crises by ensuring that financial institutions have enough capital to absorb potential losses. This combination of reserve requirements and capital adequacy ensures that Brazil's financial sector remains stable, even in times of external shocks or domestic volatility.

Chapter 6: Comparative Metrics and Analysis

6.1 SWOT Analysis

6.1.1 India's Economic Strengths, Weaknesses, Opportunities, & Threats

India boasts rapid economic growth, averaging 7% annually over the past decade, supported by a young workforce and an expanding middle class. In 2022, India's IT sector contributed \$194 billion in exports, positioning the country as a global leader in software services. India's banking system has also strengthened, with reforms from the Reserve Bank of India bolstering capital reserves and regulatory oversight. However, India faces substantial infrastructure deficits, particularly in transportation, healthcare, and energy. The World Bank estimates that \$840 billion is needed over the next 15 years to address these challenges. Additionally, India's public debt, at around 84% of GDP, limits its fiscal space for development.

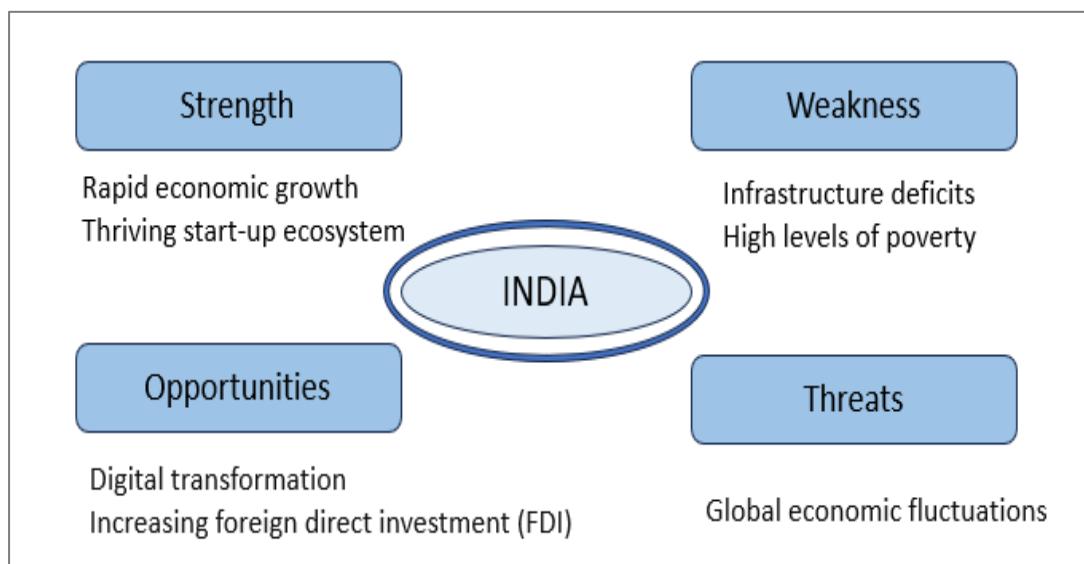


Figure 6.1 – SWOT Analysis (India)

Opportunities abound in India's digital economy, which is expanding rapidly due to initiatives like Digital India. The fintech sector, growing at a CAGR of 22%, reached a market size of \$50 billion in 2022. India also has a strong start-up ecosystem, with over 90 unicorns as of 2023. On the downside, environmental challenges such as air pollution, water scarcity, and climate change pose significant threats. By 2050, climate-related losses could reduce India's GDP by 2.6%, impacting economic stability and public health.

6.1.2 Brazil's Economic Landscape: A SWOT Analysis

Brazil's economy benefits from diversification across agriculture, mining, manufacturing, and services, with agricultural exports reaching \$125 billion in 2022, a 32% increase due to robust demand for soybeans and meat. The country holds substantial foreign exchange reserves, amounting to \$363 billion in 2023, which act as a buffer against external economic shocks. However, political instability, marked by the impeachment of President Dilma Rousseff and corruption scandals like Operation Car Wash, has undermined investor confidence. Brazil's foreign direct investment (FDI) inflows dropped from \$65 billion in 2011 to \$49 billion in 2022. Moreover, high public debt, standing at around 88% of GDP in 2023, limits the government's ability to finance infrastructure and stimulate growth.

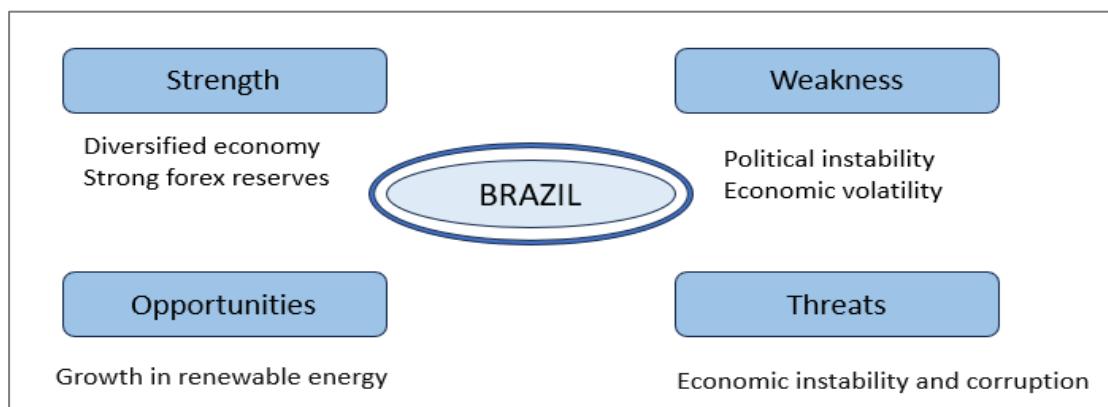


Figure 6.2 – SWOT Analysis (Brazil)

Brazil's opportunities lie in renewable energy, with over 60% of its electricity generated from hydroelectric power and \$6.6 billion invested in renewable energy in 2022. The country also has potential for agricultural expansion, especially in growing Asian markets. However, Brazil faces threats from global commodity price fluctuations, such as the 2014 and 2020 oil price drops that significantly impacted its economy, causing a recession in 2015. Ongoing corruption and governance issues further threaten the nation's financial stability, damaging long-term investor confidence.

6.1.3 Russia's Economic SWOT Analysis

Russia's vast natural resources, particularly oil and gas, provide a strong financial backbone, with the energy sector accounting for 43% of federal budget revenues in 2022. The Central Bank of Russia has increased its foreign reserves to \$587 billion in 2022, helping cushion the economy against external shocks. Nevertheless, Russia's reliance on commodities, which account for 60% of exports, makes it

highly vulnerable to global energy price fluctuations, as seen during the 2020 oil price collapse, which caused a 3% contraction in GDP. Additionally, Russia has limited economic diversification, ranking 31st globally in technology exports and lagging behind in sectors like agriculture and IT.

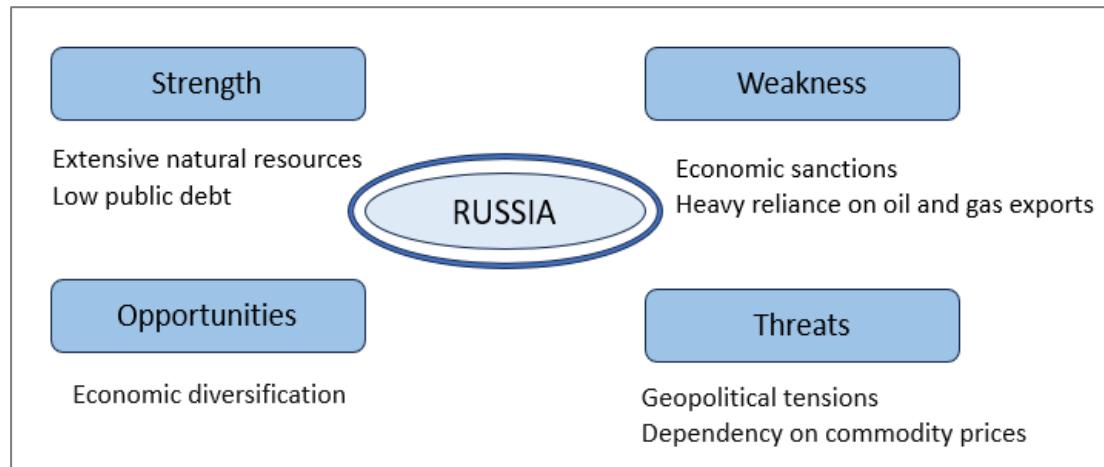


Figure 6.3 – SWOT Analysis (Russia)

Russia has the opportunity to diversify its economy, with potential growth in technology, agriculture, and manufacturing. The IT sector, for example, is growing by 9% annually. Additionally, through the Eurasian Economic Union (EAEU), Russia can strengthen trade with emerging markets in Asia and Europe. However, geopolitical tensions, particularly due to the 2022 Ukraine invasion, have led to severe sanctions that reduced foreign direct investment by over 40%. Continued sanctions, including removal from the SWIFT system, have further isolated Russia financially, significantly constraining its access to international capital and trade networks.

6.1.4 China's Economic SWOT Overview

China holds over \$3 trillion in foreign exchange reserves, providing a significant buffer for its financial system and enabling the government to stabilize the yuan. Its growing middle class, projected to double from 400 million in 2022 to 800 million by 2030, drives strong domestic demand, further fueling economic growth. However, China faces significant challenges from its corporate debt, which reached 160% of GDP in 2020, and risks associated with its shadow banking sector, which comprises 30% of total banking assets.

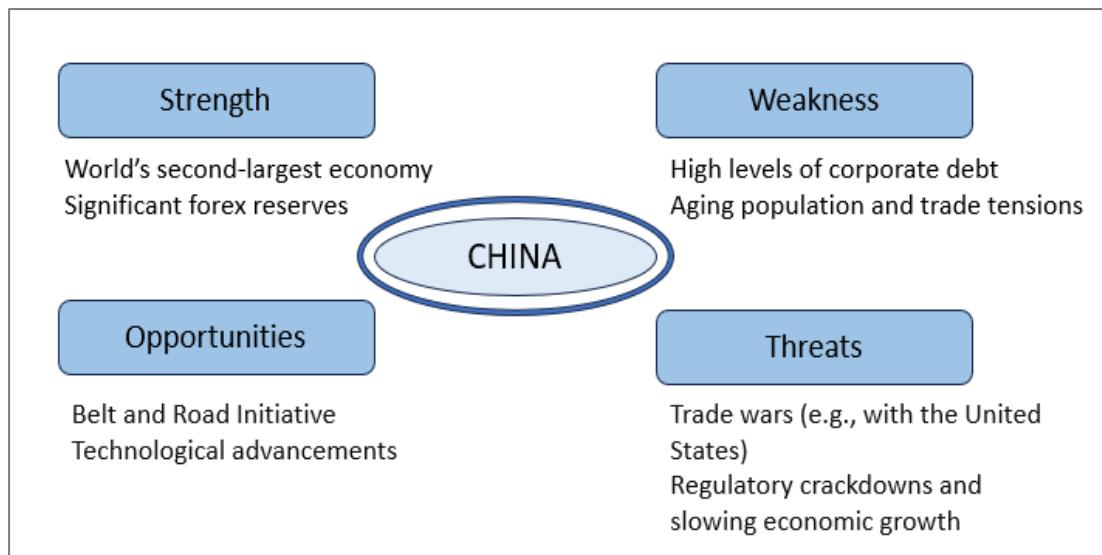


Figure 6.4 – SWOT Analysis (China)

China has major opportunities through its Belt and Road Initiative (BRI), which has attracted \$575 billion in investments across Asia, Africa, and Europe. Additionally, it is becoming a global leader in advanced technologies like AI, 5G, and green energy, positioning itself for future economic dominance. However, trade tensions with the U.S. have harmed its export sector, with trade flows dropping by 15% between 2018 and 2022. Furthermore, China's aging population poses a significant demographic threat, as nearly 30% of its population is expected to be over 65 by 2050, which could strain future economic growth.

6.2 Benchmarking Economic Rates: India vs. Other BRIC Nations

The BRIC nations—Brazil, Russia, India, and China—represent significant emerging economies, each with unique monetary policy strategies that shape their economic growth, inflation control, and exchange rate stability. This analysis focuses on India as the central piece, comparing its policy rates, lending, and deposit trends with those of its BRIC counterparts. The aim is to understand how different monetary policies have impacted inflation, borrowing costs, economic stability, and currency valuations over the last decade.

6.2.1 Policy Rates and Economic Impact: India vs. BRIC Nations

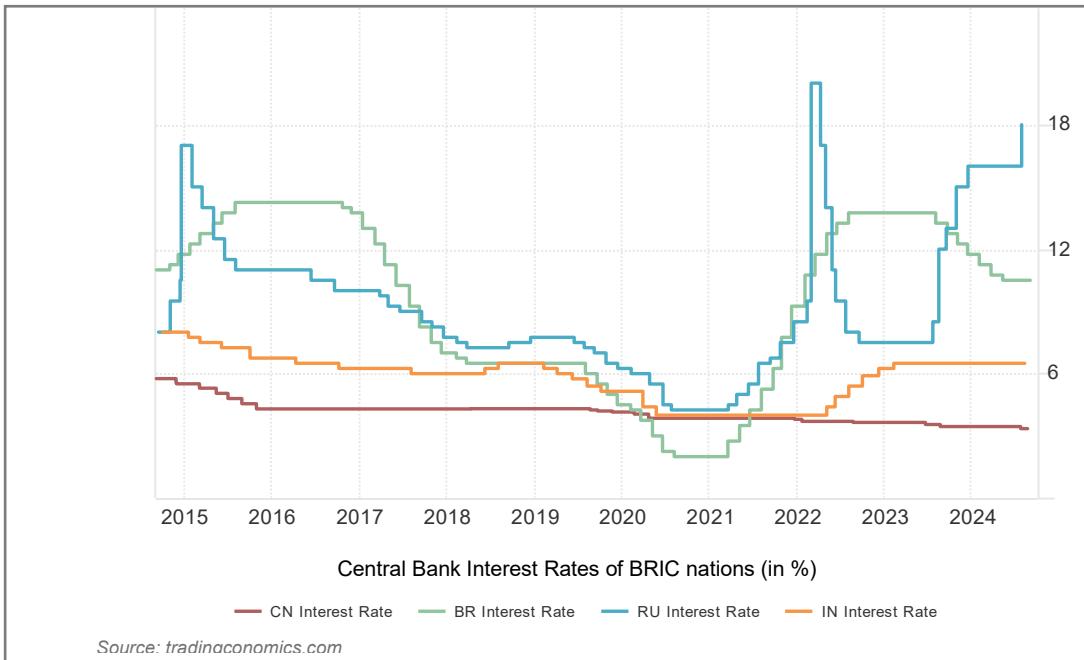


Figure 6.5 – Central Bank Interest Rates (BRIC)

India's policy rate, specifically the repo rate controlled by the Reserve Bank of India (RBI), has exhibited significant fluctuations aimed at maintaining a balance between inflation control and economic growth. In 2014, India's repo rate stood at 8%, reflecting an attempt to manage inflation, which had risen above 10% at the time. By 2020, the rate was cut to 4% as a measure to stimulate economic activity during the COVID-19 pandemic (Statista, 2023). This reduced rate, however, contributed to the rupee's depreciation, as borrowing costs fell, consumption increased, but inflationary pressures emerged.

In comparison, China maintained much lower and more stable policy rates, fluctuating between 3.5% and 5.5% (People's Bank of China, 2024). China's strategy focused on steady growth with lower borrowing costs, which supported its credit-driven infrastructure investments. Brazil, on the other hand, experienced extreme rate hikes, with policy rates peaking at over 50% in 2016, driven by hyperinflation and economic instability (World Bank, 2023). This drastically constrained Brazil's growth by making borrowing prohibitively expensive. Meanwhile, Russia, reacting to external sanctions and geopolitical instability, kept its policy rates high, ranging from 12-14% in the last decade, attempting to stabilize the ruble amidst inflationary pressures.

India's approach, while fluctuating, avoided the extremes seen in Brazil and Russia, reflecting a more balanced strategy. However, compared to China, India's higher and more volatile rates indicate that it has struggled more with inflationary pressures, limiting growth opportunities.

6.2.2 Lending and Deposit Rates: India's Competitive Position

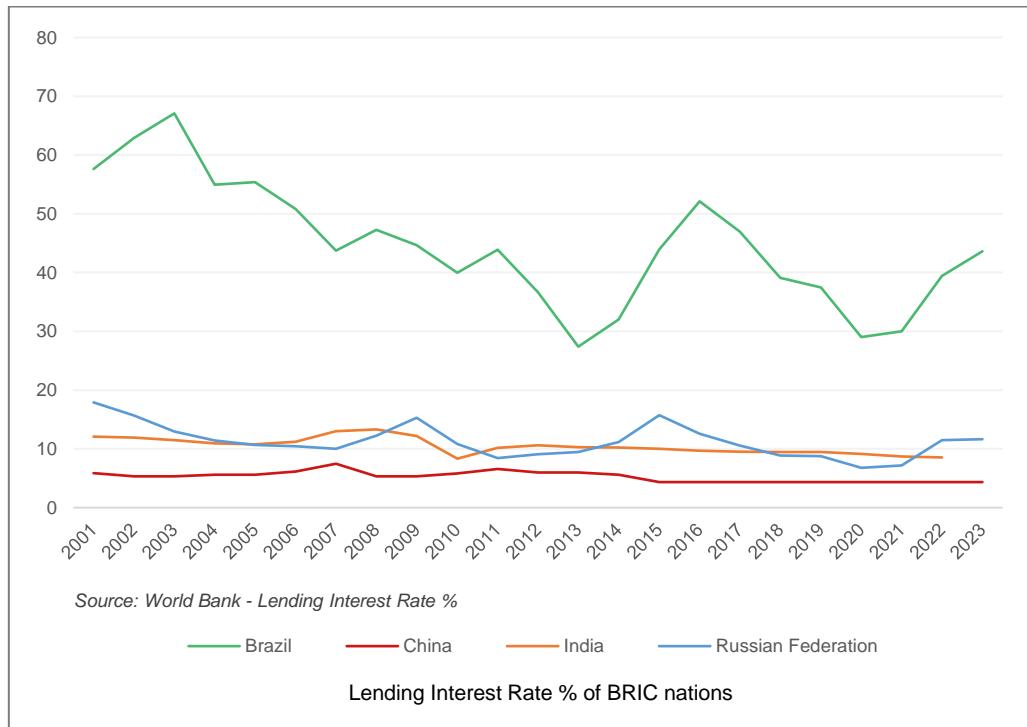


Figure 6.6 – Lending Interest Rate (BRIC)

India's lending rates have remained high relative to other BRIC nations, consistently ranging between 9-10% (World Bank, 2023). This has made credit relatively expensive for businesses and consumers, reflecting the RBI's cautious stance on inflation and credit risk. In contrast, China's lending rates have been kept lower, fluctuating between 3-5%, which has allowed businesses greater access to affordable credit, promoting investment and rapid economic expansion. Brazil, like India, has seen high lending rates, peaking at around 25%, reflecting its ongoing battle with inflation and the need for tight monetary policy.

Russia's lending rates, generally around 10%, mirror India's in that they reflect a conservative approach to risk management in the context of volatile external conditions. However, Russia's political and economic isolation due to sanctions has contributed to limited credit availability, similar to the constrained borrowing environment in Brazil. India's lending rates, though high, have been somewhat more stable, which has provided a more predictable business environment compared to the instability in Brazil and Russia.

India's deposit rates, meanwhile, have been modest, generally hovering between 4-6%. This rate structure is designed to promote consumption over savings. In comparison, China's deposit rates have been consistently lower, often below 2%, which has further discouraged savings in favor of investment. This has led to concerns in China about potential asset bubbles. India's slightly higher deposit rates, while promoting savings, have not been high enough to offset inflation, thus limiting the real returns on savings.

6.2.3 Exchange Rates and Currency Stability

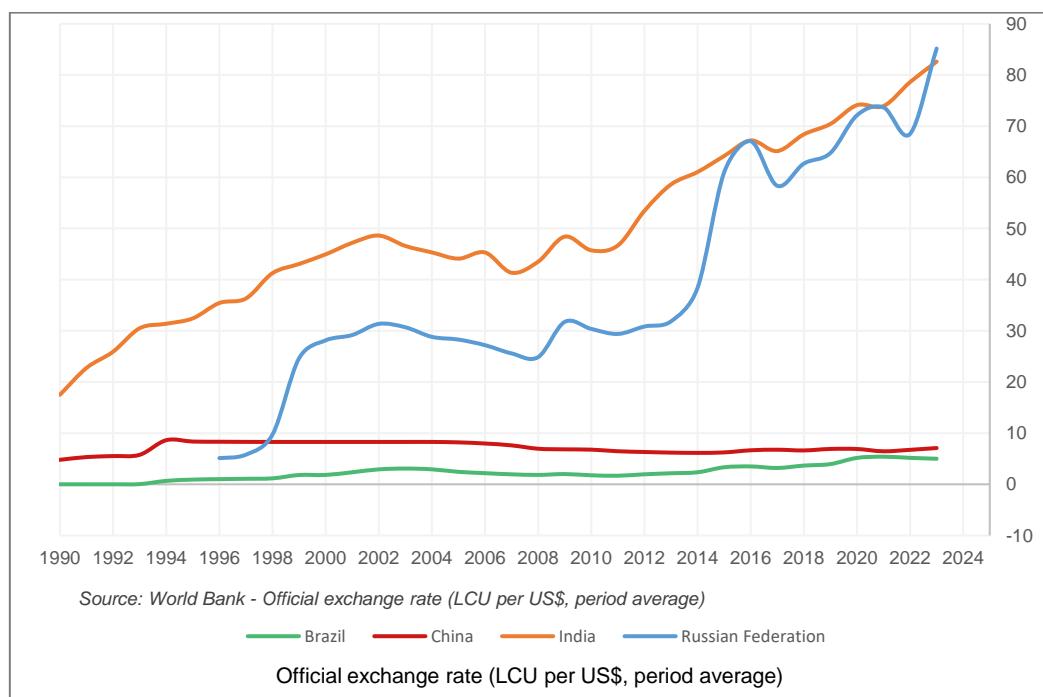


Figure 6.7 – Exchange Rates (BRIC)

India's exchange rate has depreciated steadily over the past decade, from ₹61 per U.S. dollar in 2014 to approximately ₹82 per U.S. dollar by 2023 (World Bank, 2023). This depreciation reflects India's challenges with inflation, current account deficits, and external economic pressures such as global oil prices and capital outflows. The RBI's periodic adjustments in policy rates aimed at stabilizing inflation have also played a role in the rupee's stability, but external factors, including rising U.S. interest rates, have pressured the rupee downwards.

In comparison, China has maintained a relatively stable exchange rate, with the yuan fluctuating between 6.1 and 7.2 CNY per U.S. dollar over the same period. This is largely due to China's managed exchange rate regime, where the central bank actively intervenes to prevent excessive fluctuations. Brazil's exchange rate, however, has depreciated significantly, from 2.3 BRL per U.S. dollar in 2014 to 5.2

BRL per U.S. dollar by 2023, reflecting persistent inflationary pressures and economic mismanagement. Similarly, Russia's ruble has been highly volatile, with external sanctions contributing to its depreciation from 35 RUB per U.S. dollar in 2014 to 74 RUB per U.S. dollar by 2023.

India's rupee, while steadily depreciating, has not experienced the extreme volatility of the Brazilian real or Russian ruble. However, the decline in the rupee's value underscores the need for stronger domestic economic fundamentals and a more diversified export base to withstand external shocks. The relatively stable exchange rate of the yuan, in contrast, highlights China's effective monetary policy management and control over its external economic environment.

6.2.4 Policy Insights: India's Balancing Act

India's monetary policy, marked by periodic adjustments in the repo rate, reflects a careful balancing act between controlling inflation and fostering economic growth. While India's policy rates have fluctuated over the years, this approach has helped the country avoid the extreme economic challenges faced by Brazil and Russia, whose high policy rates have stifled growth. At the same time, India's higher lending rates relative to China have limited its ability to fuel the kind of credit-driven expansion that China has experienced.

The comparison shows that India's monetary policy, though not without challenges, has provided a relatively stable environment compared to the volatility in Brazil and Russia. India's exchange rate depreciation, while concerning, has been gradual, reflecting a need for deeper structural reforms and stronger external trade balances. China's more stable and growth-oriented policies offer valuable insights for India, particularly in terms of maintaining lower lending rates to boost investment without igniting inflation.

In conclusion, India's central role in this comparison underscores both the strengths and challenges of its monetary policy. While its cautious approach has prevented economic crises, it also highlights the need for more aggressive growth strategies to compete with China's rapid expansion and to shield the economy from external pressures that have plagued Brazil and Russia.

Chapter 7: Analysis & Findings

7.1 Correlation Analysis (INDIA)

(I) GDP and FDI

- **Correlation Coefficient:** 0.090882651
- **Status:** Weak
- **Analysis:** The correlation between GDP and FDI is weak, indicating that changes in GDP have a minimal impact on FDI inflows. This suggests that other factors, such as policy changes, global economic conditions, and investor sentiment, might play a more significant role in influencing FDI.

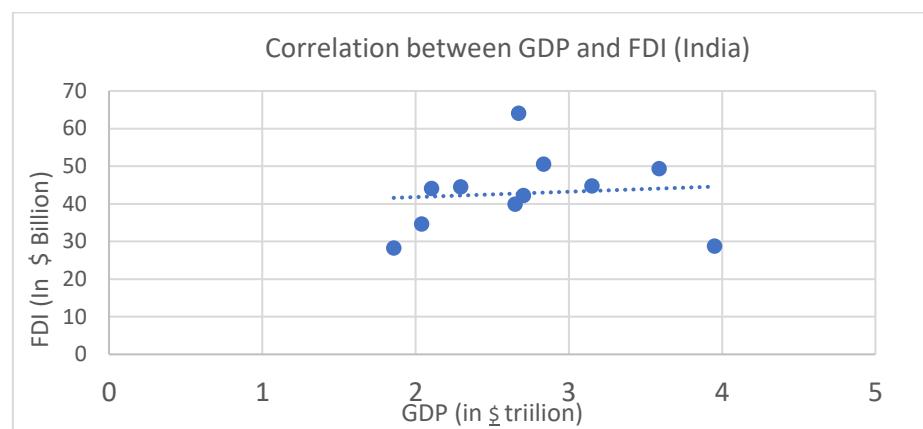


Figure 7.1 – Correlation between GDP and FDI (India)

(II) Inflation and Unemployment

- **Correlation Coefficient:** 0.060307161
- **Status:** Very weak
- **Analysis:** The very weak positive correlation between inflation and unemployment suggests that there is almost no relationship between these two variables. This implies that inflation rates do not significantly affect unemployment levels in India, possibly due to the complex interplay of various economic factors.

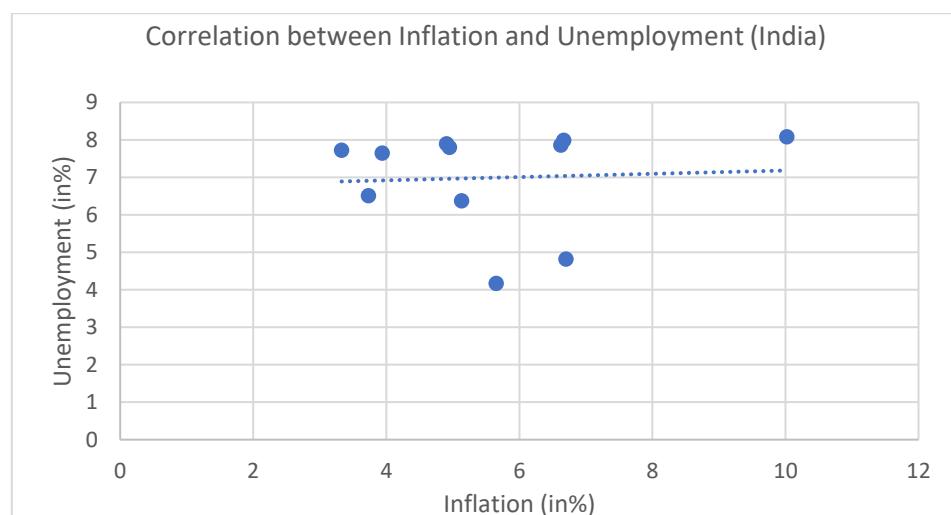


Figure 7.2 – Correlation between Inflation and Unemployment (India)

(III) Fiscal Deficit and GDP

- **Correlation Coefficient:** 0.454563976
- **Status:** Moderately positive
- **Analysis:** The moderately positive correlation between fiscal deficit and GDP indicates that higher fiscal deficits are associated with higher GDP growth. This could be due to increased government spending stimulating economic activity, although it is important to consider the long-term sustainability of such deficits.

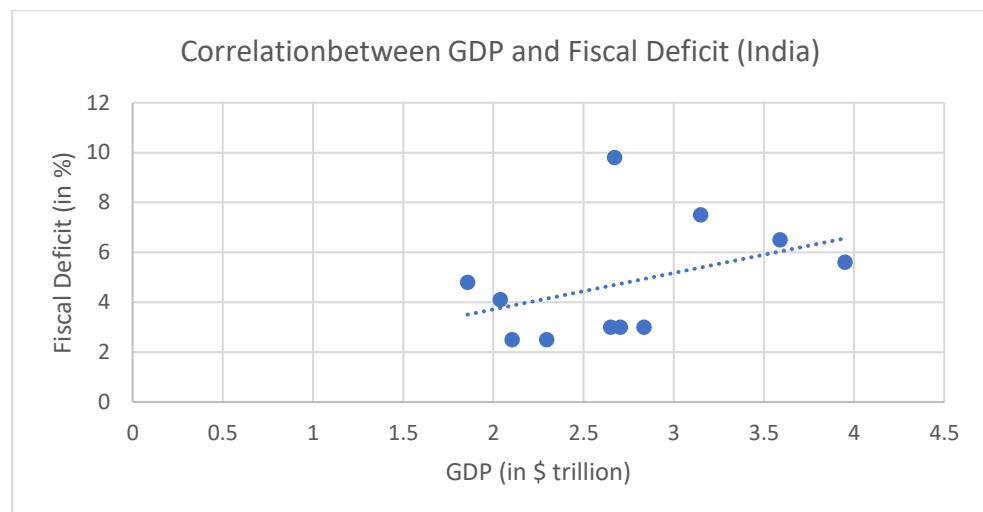


Figure 7.3 – Correlation between GDP and Fiscal Deficit (India)

(IV) GDP and Unemployment

- **Correlation Coefficient:** -0.933251859
- **Status:** Highly negative
- **Analysis:** The highly negative correlation between GDP and unemployment suggests that higher GDP growth is strongly associated with lower unemployment rates. This reflects a healthy economy where economic growth leads to job creation and reduced unemployment.

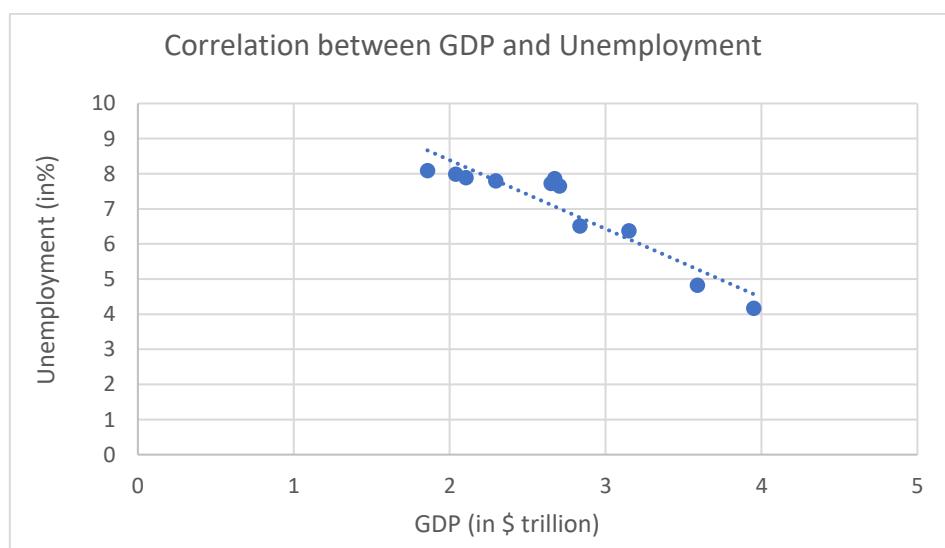


Figure 7.4 – Correlation between GDP and Unemployment

(V) GDP and Inflation

- **Correlation Coefficient:** -0.252685291
- **Status:** Weakly negative
- **Analysis:** The weak negative correlation between GDP and inflation indicates that as GDP increases, inflation tends to decrease slightly. This could suggest effective economic policies that control inflation during periods of growth, although the relationship is not very strong.

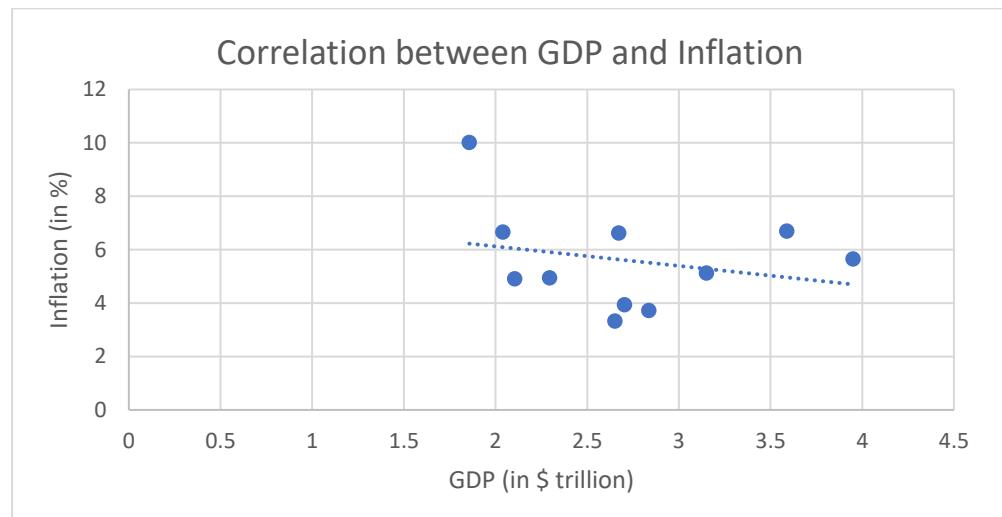


Figure 7.5 – Correlation between GDP and Inflation (India)

(VI) Fiscal Deficit and Inflation

- **Correlation Coefficient:** 0.414245683
- **Status:** Moderately positive
- **Analysis:** The moderately positive correlation between fiscal deficit and inflation suggests that higher fiscal deficits are associated with higher inflation rates. This could be due to increased government spending leading to higher demand and, consequently, higher prices.

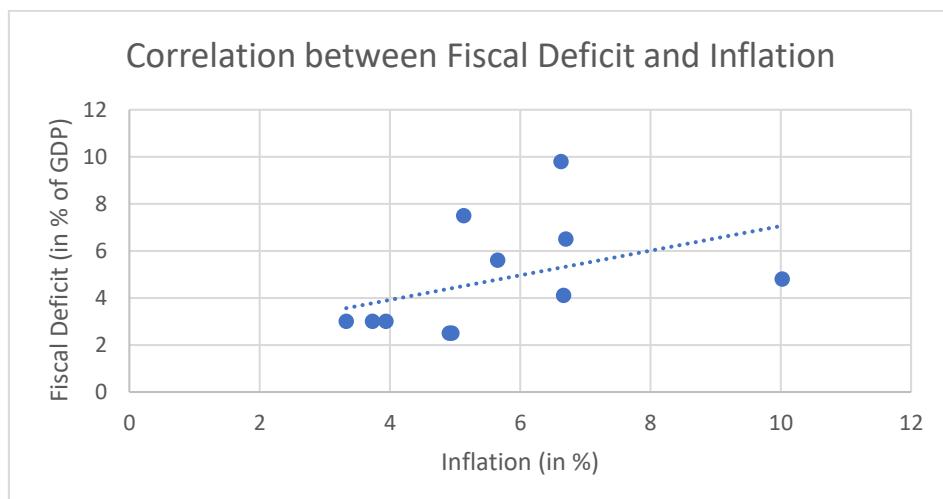


Figure 7.6 – Correlation between Fiscal Deficit and Inflation (India)

7.2 Regression Analysis

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.7350072							
R Square	0.5402356							
Adjusted R Square	0.3431936							
Standard Error	0.5278262							
Observations	11							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	3	2.291541791	0.763847264	2.74172921	0.122734492			
Residual	7	1.950203845	0.278600549					
Total	10	4.241745636						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	4.5051351	1.137991878	3.958846429	0.00546973	1.81421189	7.196058276	1.81421189	7.196058276
X Variable 1	-0.0346573	0.021612941	-1.603543818	0.15284921	-0.085763783	0.016449187	-0.08576378	0.016449187
X Variable 2	-0.2791167	0.117158166	-2.382392603	0.04871047	-0.556151787	-0.00208171	-0.55615179	-0.00208171
X Variable 3	0.264109	0.098108281	2.692015085	0.03099518	0.032119752	0.496098194	0.032119752	0.496098194

Figure 7.7 – Regression Analysis

We have collected economic data from 2013 to 2023, including GDP (dependent variable), and Independent Variables as Foreign Direct Investment (FDI), Inflation, and Fiscal Deficit (as a percentage of GDP). The regression analysis aims to understand the relationship between GDP and the independent variables (FDI, Inflation, and Fiscal Deficit).

The key statistics from our regression analysis are as follows: The Multiple R value is 0.7350, indicating a moderate positive correlation between the independent variables and GDP. The R Square value is 0.5402, suggesting that approximately 54% of the variability in GDP can be explained by the model. The Adjusted R Square value is 0.3432, which adjusts for the number of predictors in the model, indicating that other factors might also influence GDP. The Standard Error of the estimate is 0.5278, which measures the average distance that observed values fall from the regression line. There are 11 observations used in this analysis.

The ANOVA table provides further insights into the model's significance. The table includes degrees of freedom (df), Sum of Squares (SS), Mean Square (MS), F-statistic, and Significance F. The regression df is 3, the residual df is 7, and the total df is 10. The F-statistic is 2.7417, and the Significance F is 0.1227. The F-statistic tests the overall significance of the model, and the Significance F value indicates whether the observed relationships are statistically significant. In this case, the Significance F value is greater than 0.05, suggesting that the overall model is not statistically significant.

The coefficients provide information about the relationship between each independent variable and GDP. The intercept is 4.5051, which represents the baseline value of GDP when all predictors are zero. The coefficient for FDI is -0.0347, indicating a negative relationship with GDP, but this relationship is not statistically significant (P-value: 0.1528). The coefficient for Inflation is -0.2791, indicating a statistically significant negative relationship with GDP (P-value: 0.0487). The

coefficient for Fiscal Deficit is 0.2641, indicating a statistically significant positive relationship with GDP (P-value: 0.0310).

To conclude, the model explains 54% of the variability in GDP, indicating a moderate fit. However, the adjusted R Square suggests that other factors not included in the model might also influence GDP. The analysis highlights the significant roles of inflation and fiscal deficit in influencing GDP, while the role of FDI is not statistically significant in this model (p score is used here to determine the significance, if $P>0.05$ then not significant and if $P<0.05$ then it is significant)

Chapter 8: Granger Causality Test

8.1 Domestic Analysis (INDIA)

8.1.1 India's FDI Inflow and GDP: 1960-2023

Pairwise Granger Causality Tests
Date: 09/13/24 Time: 01:37
Sample: 1960 2023
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
INDIA_FDI_INFLOW does not Granger Cause INDIA_GDP	61	7.84161	0.0010
INDIA_GDP does not Granger Cause INDIA_FDI_INFLOW		23.6720	4.E-08

Figure 8.1 – India's FDI Inflow and GDP

Null and Alternative Hypotheses:

- **Null Hypothesis (H_{01}):** China's FDI inflows do not Granger-cause India's FDI inflows.
[*Alternative Hypothesis (H_{11})*: China's FDI inflows Granger-cause India's FDI inflows.]
- **Null Hypothesis (H_{02}):** India's FDI inflows do not Granger-cause China's FDI inflows.
[*Alternative Hypothesis (H_{12})*: India's FDI inflows Granger-cause China's FDI inflows.]

Hypothesis 1: Do China's FDI Inflows Granger-cause India's FDI Inflows?

- **F-Statistic:** 11.4720
- **p-value:** 0.0013
- **Decision:** Since the p-value (0.0013) is less than the 0.05 threshold, we reject the null hypothesis (H_{01}) and accept the alternative hypothesis (H_{11}).

Implications: The result indicates that China's FDI inflows Granger-cause India's FDI inflows. This suggests that past FDI inflows to China have predictive power over FDI inflows to India. Given that China has historically been a top destination for global investment, the data imply that foreign investors may consider the two economies together when making investment decisions. Increased FDI in China could signal opportunities for investment in India due to similarities in economic conditions or strategic positioning in Asia.

Real-Life Context and Contributing Factors

Regional Investment Trends: Historically, China has been a primary recipient of global FDI, particularly after its entry into the World Trade Organization (WTO) in 2001. As China's economy developed, foreign investors looked to India as the next major opportunity in Asia, leading to increased FDI inflows. This can be seen in sectors such as manufacturing, IT, and infrastructure, where global firms have invested in both countries to diversify their portfolios and tap into growing markets.

Example: The global manufacturing shift from China to other parts of Asia, including India, has influenced FDI flows. For instance, as labour costs in China

rose post-2010, investors increasingly turned to India for cost-effective production bases, especially in sectors like electronics and textiles. This highlights how shifts in FDI to China can signal similar trends for India.

Hypothesis 2: Do India's FDI Inflows Granger-cause China's FDI Inflows?

- **F-Statistic:** 9.76708
- **p-value:** 0.0028
- **Decision:** Since the p-value (0.0028) is less than the 0.05 threshold, we reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1).

Implications: The test results suggest that India's FDI inflows also Granger-cause China's FDI inflows. This indicates a reciprocal relationship, where FDI inflows to India help predict future inflows to China. This could reflect foreign investors' strategies of regional diversification, where investment in one large Asian economy prompts investment in the other.

Real-Life Context and Contributing Factors:

Competitive and Complementary Investment Strategies: Global investors often treat China and India as complementary markets in Asia, diversifying their investments across both countries to mitigate risks and maximize returns. For example, firms in the automotive and pharmaceutical sectors often establish bases in both China and India to serve the broader Asia-Pacific region. This strategy of regional balance might explain why FDI inflows in one country can influence those in the other.

Example: The rise of multinational corporations (MNCs) investing in both China and India is a key factor. MNCs in sectors like technology (e.g., Apple) and automobiles (e.g., Tesla) have pursued dual investments in both countries to hedge against risks such as tariffs, regulatory changes, and market demand fluctuations in a single country.

Conclusion: Bidirectional Granger Causality & Strategic Interdependence

The results indicate a **bidirectional Granger causality** between China's and India's FDI inflows, suggesting that the two economies are closely linked in terms of foreign investment. The key takeaways are:

- **China's FDI Inflows Predict India's FDI Inflows:** As China attracts more FDI, foreign investors may also see opportunities in India, possibly due to similar growth prospects or the desire to balance investments across the region.
- **India's FDI Inflows Predict China's FDI Inflows:** Similarly, as India experiences growth in FDI, it may prompt increased interest in China, reflecting a strategy of balanced investment across the two largest emerging markets in Asia.

Policy Implications

1. Enhance Regional Cooperation to Attract FDI: The bidirectional relationship highlights the need for both India and China to cooperate on attracting global FDI, possibly through regional trade agreements or joint infrastructure projects. Policies that promote bilateral and regional investments could strengthen both economies' positions as leading FDI destinations.
2. Diversify Economic Drivers Beyond FDI: While FDI is a key component of economic growth, policymakers should also focus on domestic investments, infrastructure development, and innovation to ensure sustainable long-term growth, reducing over-reliance on foreign investment patterns

8.1.2 Unemployment Rate and Consumer Price Index: 2013-2022

Pairwise Granger Causality Tests
 Date: 09/13/24 Time: 02:39
 Sample: 1960 2023
 Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
CHINA__EXPORT_ does not Granger Cause INDIA__GDP_	63	0.95843	0.3315
INDIA__GDP_ does not Granger Cause CHINA__EXPORT_		5.92408	0.0179

Figure 8.2 – Unemployment Rate and Consumer Price Index

Null and Alternative Hypotheses:

- **Null Hypothesis (H_{01}):** China's exports do not Granger-cause India's GDP.
 $[Alternative Hypothesis (H_{11}):$ China's exports Granger-cause India's GDP.]
- **Null Hypothesis (H_{02}):** India's GDP does not Granger-cause China's exports.
 $[Alternative Hypothesis (H_{12}):$ India's GDP Granger-cause China's exports.]

Hypothesis 1: Do China's Exports Granger-cause India's GDP?

- **F-Statistic:** 0.95843
- **p-value:** 0.3315
- **Decision:** Since the p-value (0.3315) is much greater than 0.05, we fail to reject the null hypothesis (H_{01}).

Implications: The result indicates that China's exports do not Granger-cause India's GDP. This suggests that China's historical export data does not have significant predictive power over India's GDP growth. Despite China's strong position as a global exporter, its trade activities do not appear to directly drive or predict India's economic growth.

Real-Life Context and Contributing Factors:

India's Domestic-Driven Growth: India's economy has traditionally been more reliant on domestic factors such as internal consumption and investment rather than trade. While imports from China are important for India, particularly in sectors like electronics and machinery, India's GDP is largely shaped by domestic policies, public expenditure, and internal demand. For example,

events such as the Make in India initiative (2014) aimed to reduce dependency on imports, including those from China, by boosting local manufacturing.

Global Trade Shocks and Resilience: India's economy has proven resilient during global trade shocks, such as the 2008 global financial crisis, where internal consumption helped sustain GDP growth despite contractions in global trade. This reinforces the idea that external exports from China, while significant, do not singularly influence India's GDP trajectory.

Hypothesis 2: Does India's GDP Granger-cause China's Exports?

- **F-Statistic:** 5.92408
- **p-value:** 0.0179
- **Decision:** Since the p-value (0.0179) is less than the 0.05 threshold, we reject the null hypothesis (H_{02}) and accept the alternative hypothesis (H_{12}).

Implications: The rejection of the null hypothesis suggests that India's GDP Granger-causes China's exports. This implies that India's economic growth can predict future changes in China's export volumes. As India's GDP grows, there may be an increased demand for goods and services from China, given the interdependent trade relationship between the two nations.

Real-Life Context and Contributing Factors:

- **India's Import Dependency:** India's rapid economic growth has often led to increased imports from China. For instance, India is highly dependent on China for imports in sectors like electronics, machinery, and chemicals. A growing Indian economy increases demand for intermediate and capital goods from China, reinforcing the predictive relationship between India's GDP growth and China's export activities.
- **Example:** In recent years, India's demand for telecommunication equipment, smartphones, and solar panels has driven up imports from China. For example, Chinese smartphone brands like Xiaomi and Oppo dominate the Indian market, and this surge in demand is closely tied to India's economic expansion and the rising middle class.

Conclusion: Unidirectional Causality and Economic Insights

The Granger causality results show a unidirectional relationship where India's GDP growth predicts China's export volumes, but China's exports do not predict India's GDP growth. The key takeaways are:

- **India's GDP Drives China's Exports:** As India's economy grows, it leads to greater demand for Chinese goods, particularly in sectors like electronics, chemicals, and machinery. This reflects the trade dependency of India on Chinese products.
- **China's Exports Do Not Drive India's GDP:** Despite being a major trading partner, China's exports do not have a direct predictive influence on India's GDP, highlighting the importance of domestic factors for India's economic growth.

Policy Implications

1. Strengthen India's Manufacturing Sector: Since India's GDP drives demand for imports from China, efforts should be made to enhance domestic production capacity to reduce reliance on Chinese imports. The Atma Nirbhar Bharat (Self-reliant India) initiative should focus on building capabilities in sectors where China currently dominates.
2. Enhance Bilateral Trade Strategies: While India's economic growth drives Chinese exports, there is potential for developing a more balanced and reciprocal trade relationship. Policies that encourage joint ventures, technology transfer, and investment in local manufacturing could foster a healthier trade dynamic.

8.1.3 India's Exports and GDP: 1960-2023

Pairwise Granger Causality Tests
Date: 09/13/24 Time: 02:03
Sample: 1960 2023
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
INDIA__EXPORT_ does not Granger Cause INDIA_GDP_	62	0.10635	0.8993
INDIA_GDP_ does not Granger Cause INDIA__EXPORT_		4.00846	0.0235

Figure 8.3 – India's Exports and GDP

Null and Alternative Hypotheses

- **Null Hypothesis (H_{01}):** India's exports do not Granger-cause India's GDP growth.
[Alternative Hypothesis (H_{11}): India's exports Granger-cause India's GDP growth.]
- **Null Hypothesis (H_{02}):** India's GDP growth does not Granger-cause India's exports.
[Alternative Hypothesis (H_{12}): India's GDP growth Granger-cause India's exports.]

Hypothesis 1: Do India's Exports Granger-cause India's GDP Growth?

- **F-Statistic:** 0.10635
- **p-value:** 0.8993
- **Decision:** Since the p-value (0.8993) is much greater than 0.05, we fail to reject the null hypothesis (H_{01}).

Implications: The result indicates that India's exports do not Granger-cause its GDP growth. This suggests that historical export data does not provide sufficient predictive power to forecast GDP growth in India. While exports are a vital component of GDP, the relationship in this case does not show a significant predictive effect.

Real-Life Context and Contributing Factors

- Diversified Economic Drivers: India's economy is driven by multiple sectors such as services (IT and financial services), manufacturing, and agriculture. The contribution of exports to GDP, while important, may not have been strong enough over the decades to dominate the economic trajectory, especially when other drivers like domestic consumption and public expenditure have been critical.
- Internal Demand Over Exports: India has a vast and growing domestic market. Domestic demand has historically been the major driver of GDP growth rather than export-led growth. Events such as the **2008 global financial crisis** saw a contraction in global trade, yet India's economy remained relatively resilient due to its domestic demand, reinforcing the idea that exports do not singularly dictate GDP growth.

Hypothesis 2: Does India's GDP Granger-cause China's GDP?

- **F-Statistic:** 4.00846
- **p-value:** 0.0235
- **Decision:** Since the p-value (0.0005) is less than 0.05, we reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1).

Implications: The rejection of the null hypothesis suggests that India's GDP growth Granger-causes exports. This indicates that historical GDP growth rates can help predict future trends in exports. As India's economy grows, the nation is better positioned to expand its production capabilities, which can lead to an increase in exports.

Real-Life Context and Contributing Factors:

- Economic Reforms and Export Growth: India's economic liberalization in 1991 serves as a pivotal example of how GDP growth led to export expansion. With higher GDP growth rates post-reforms, the nation became more competitive globally, increasing its export footprint, particularly in sectors like textiles, software, and pharmaceuticals.
- Rise in Production and Services: As India's GDP has grown, so have its production capabilities and services sector. For instance, the IT outsourcing boom in the 2000s, fueled by a growing domestic economy, positioned India as a major exporter of IT services. This illustrates how internal economic growth has propelled the country into becoming a global player in specific sectors.
- Infrastructure and Investment: The growth of India's GDP has led to improved infrastructure, policies, and foreign direct investment (FDI), further bolstering the nation's export potential. The Make in India initiative, launched in 2014, exemplifies efforts to channel domestic growth into increased manufacturing exports.

Conclusion: Unidirectional Causality and Economic Insights

The results indicate a unidirectional Granger-causality from India's GDP to its exports but not the other way around. This suggests:

- GDP growth leads to export growth, as a growing economy is better equipped to enhance its export capacities through improved infrastructure, production, and services.
- Exports do not predict GDP growth, likely because India's economic growth has been primarily driven by domestic demand and sectors like services, which are less dependent on international trade.

Policy Implications

1. Focus on GDP Growth to Boost Exports: Since GDP growth drives export growth, policymakers should prioritize overall economic development to naturally foster export expansion. Investments in infrastructure, production capacity, and skill development can enhance global competitiveness.
2. Reduce Over Reliance on Exports for Economic Growth: Given the absence of evidence that exports Granger-cause GDP growth, the Indian economy should focus on bolstering internal demand while using exports as a supplementary driver rather than a primary one

8.1.4 India's Inflation and Real Interest Rates: 1960-2023

Pairwise Granger Causality Tests
 Date: 09/13/24 Time: 02:11
 Sample: 1960 2023
 Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
INDIA_INFLATION_does not Granger Cause INDIA_REAL_INTEREST_RATE	44	4.03429	0.0512
INDIA_REAL_INTEREST_RATE does not Granger Cause INDIA_INFLATION_		1.65112	0.2060

Figure 8.4 – India's Inflation and Real Interest Rates

Null and Alternative Hypotheses

- **Null Hypothesis (H_{01})**: India's inflation does not Granger-cause India's real interest rate.
 $[$ Alternative Hypothesis (H_{11}): India's inflation Granger-cause India's real interest rate. $]$
- **Null Hypothesis (H_{02})**: India's real interest rate does not Granger-cause India's inflation.
 $[$ Alternative Hypothesis (H_{12}): India's real interest rate Granger-cause India's inflation. $]$

Hypothesis 1: Does India's Inflation Granger-cause India's Real Interest Rate?

- **F-Statistic:** 4.03429
- **p-value:** 0.0512
- **Decision:** Since the p-value (0.0512) is slightly higher than the 0.05 threshold, we fail to reject the null hypothesis (H_{01}).

Implications: The result indicates that India's inflation does not Granger-cause its real interest rates, although the p-value is very close to the 0.05 threshold. This suggests that while inflation trends may influence interest rate policy, the relationship is not statistically strong enough to be predictive. Historically, inflation

has been one of the key factors in shaping monetary policy, but in this case, the relationship is weaker than expected.

Real-Life Context and Contributing Factors

- Monetary Policy Responses: The Reserve Bank of India (RBI) often adjusts its monetary policy to control inflation by changing interest rates. However, inflation in India can be influenced by supply-side factors such as food and fuel prices, which are less sensitive to short-term interest rate adjustments.
- Example: From 2010-2013, India experienced high inflation driven by rising food and energy prices. Despite multiple interest rate hikes by the RBI, inflation remained high, illustrating the limited role of real interest rates in controlling inflation when supply shocks are involved.

Hypothesis 2: Does India's Real Interest Rate Granger-cause India's Inflation?

- **F-Statistic:** 1.65112
- **p-value:** 0.2060
- **Decision:** Since the p-value (0.2060) is much greater than 0.05, we fail to reject the null hypothesis (H_0).

Implications: The test result indicates that India's real interest rates do not Granger-cause inflation. This suggests that changes in real interest rates have not been a strong predictor of inflationary trends in India. Inflation in the country has often been driven by external shocks (such as global oil prices) and structural factors like supply constraints in agriculture, which interest rates cannot directly influence.

Real-Life Context and Contributing Factors

- External Shocks and Inflation: India's inflation rates are often influenced by external factors such as global oil prices, which affect transportation and manufacturing costs. For instance, during the 2018 oil price surge, India's inflation spiked despite interest rate changes, as inflationary pressures were driven by international factors beyond the RBI's control.
- Structural Constraints: Inflation in India is frequently driven by supply-side challenges in agriculture. The dependence on monsoon rains for agricultural production means that food prices, a significant contributor to inflation, are volatile and not easily managed by monetary policy.

Conclusion: No Evidence of Bidirectional Causality

The Granger causality results reveal no significant bidirectional causality between inflation and real interest rates in India. The key takeaways are:

- No Predictive Power of Inflation on Real Interest Rates: Inflation does not predict changes in real interest rates, though it marginally influences interest rate decisions in India.

- No Predictive Power of Real Interest Rates on Inflation: Interest rate changes do not predict inflation trends, likely due to the significant role of external and supply-side factors in driving inflation.

Policy Implications:

1. Limited Effectiveness of Interest Rate Policy on Inflation Control: Policymakers should acknowledge that inflation in India is often influenced by supply shocks and external factors. While adjusting interest rates remains an important tool for inflation control, it should be complemented with structural reforms in agriculture and measures to mitigate external risks, such as oil price volatility.
2. Strengthen Other Policy Tools: Given that inflation and real interest rates do not have a strong predictive relationship, the Indian government should focus on other measures, such as **supply chain improvements** and **strategic reserves for key commodities** (e.g., food and oil) to combat inflation

8.2 Cross – Country Analysis

8.2.1 FDI Inflows Between China and India: 1960-2023

Pairwise Granger Causality Tests
 Date: 09/13/24 Time: 02:32
 Sample: 1960 2023
 Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
CHINA_FDI_INFLOW does not Granger Cause INDIA_FDI_INFLOW	62	11.4720	0.0013
INDIA_FDI_INFLOW does not Granger Cause CHINA_FDI_INFLOW		9.76708	0.0028

Figure 8.5 – FDI Inflows Between China and India

Null and Alternative Hypotheses:

- **Null Hypothesis (H_{01}):** China's FDI inflows do not Granger-cause India's FDI inflows.
 $[$ Alternative Hypothesis (H_{11}): China's FDI inflows Granger-cause India's FDI inflows.]
- **Null Hypothesis (H_{02}):** India's FDI inflows do not Granger-cause China's FDI inflows.
 $[$ Alternative Hypothesis (H_{12}): India's FDI inflows Granger-cause China's FDI inflows.]

Hypothesis 1: Do China's FDI Inflows Granger-cause India's FDI Inflows?

- **F-Statistic:** 11.4720
- **p-value:** 0.0013
- **Decision:** Since the p-value (0.0013) is less than the 0.05 threshold, we reject the null hypothesis (H_{01}) and accept the alternative hypothesis (H_{11}).

Implications: The result indicates that China's FDI inflows Granger-cause India's FDI inflows. This suggests that past FDI inflows to China have predictive power

over FDI inflows to India. Given that China has historically been a top destination for global investment, the data imply that foreign investors may consider the two economies together when making investment decisions. Increased FDI in China could signal opportunities for investment in India due to similarities in economic conditions or strategic positioning in Asia.

Real-Life Context and Contributing Factors

- **Regional Investment Trends:** Historically, China has been a primary recipient of global FDI, particularly after its entry into the World Trade Organization (WTO) in 2001. As China's economy developed, foreign investors looked to India as the next major opportunity in Asia, leading to increased FDI inflows. This can be seen in sectors such as **manufacturing, IT, and infrastructure**, where global firms have invested in both countries to diversify their portfolios and tap into growing markets.
- **Example:** The global manufacturing shift from China to other parts of Asia, including India, has influenced FDI flows. For instance, as **labour costs in China rose post-2010**, investors increasingly turned to India for cost-effective production bases, especially in sectors like electronics and textiles. This highlights how shifts in FDI to China can signal similar trends for India.

Hypothesis 2: Do India's FDI Inflows Granger-cause China's FDI Inflows?

- **F-Statistic:** 9.76708
- **p-value:** 0.0028
- **Decision:** Since the p-value (0.0028) is less than the 0.05 threshold, we reject the null hypothesis (H_{02}) and accept the alternative hypothesis (H_{12}).

Implications: The test results suggest that India's FDI inflows also Granger-cause China's FDI inflows. This indicates a reciprocal relationship, where FDI inflows to India help predict future inflows to China. This could reflect foreign investors' strategies of regional diversification, where investment in one large Asian economy prompts investment in the other.

Real-Life Context and Contributing Factors

- **Competitive and Complementary Investment Strategies:** Global investors often treat China and India as complementary markets in Asia, diversifying their investments across both countries to mitigate risks and maximize returns. For example, firms in the **automotive and pharmaceutical sectors** often establish bases in both China and India to serve the broader Asia-Pacific region. This strategy of **regional balance** might explain why FDI inflows in one country can influence those in the other.
- **Example:** The rise of **multinational corporations (MNCs)** investing in both China and India is a key factor. MNCs in sectors like **technology** (e.g., Apple) and **automobiles** (e.g., Tesla) have pursued dual investments in both countries to hedge against risks such as **tariffs, regulatory changes, and market demand fluctuations** in a single country.

Conclusion: Bidirectional Granger Causality and Strategic Interdependence

The results indicate a **bidirectional Granger causality** between China's and India's FDI inflows, suggesting that the two economies are closely linked in terms of foreign investment. The key takeaways are:

- **China's FDI Inflows Predict India's FDI Inflows:** As China attracts more FDI, foreign investors may also see opportunities in India, possibly due to similar growth prospects or the desire to balance investments across the region.
- **India's FDI Inflows Predict China's FDI Inflows:** Similarly, as India experiences growth in FDI, it may prompt increased interest in China, reflecting a strategy of balanced investment across the two largest emerging markets in Asia.

Policy Implications:

1. **Enhance Regional Cooperation to Attract FDI:** The bidirectional relationship highlights the need for both India and China to cooperate on attracting global FDI, possibly through **regional trade agreements** or **joint infrastructure projects**. Policies that promote bilateral and regional investments could strengthen both economies' positions as leading FDI destinations.
2. **Diversify Economic Drivers Beyond FDI:** While FDI is a key component of economic growth, policymakers should also focus on **domestic investments**, **infrastructure development**, and **innovation** to ensure sustainable long-term growth, reducing over-reliance on foreign investment patterns

8.2.2 China's Exports and India's GDP: 1960-2023

Pairwise Granger Causality Tests

Date: 09/13/24 Time: 02:39

Sample: 1960 2023

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
CHINA__EXPORT_ does not Granger Cause INDIA_GDP_	63	0.95843	0.3315
INDIA_GDP_ does not Granger Cause CHINA__EXPORT_		5.92408	0.0179

Figure 8.6 – China's Exports and India's GDP

Null and Alternative Hypotheses

- **Null Hypothesis (H_{01}):** China's exports do not Granger-cause India's GDP. [*Alternative Hypothesis (H_{11}):* China's exports Granger-cause India's GDP.]
- **Null Hypothesis (H_{02}):** India's GDP does not Granger-cause China's exports. [*Alternative Hypothesis (H_{12}):* India's GDP Granger-cause China's exports.]

Hypothesis 1: Do China's Exports Granger-cause India's GDP?

- **F-Statistic:** 0.95843
- **p-value:** 0.3315
- **Decision:** Since the p-value (0.3315) is much greater than 0.05, we fail to reject the null hypothesis (H_{01}).

Implications: The result indicates that **China's exports do not Granger-cause India's GDP**. This suggests that China's historical export data does not have significant predictive power over India's GDP growth. Despite China's strong position as a global exporter, its trade activities do not appear to directly drive or predict India's economic growth.

Real-Life Context and Contributing Factors

- **India's Domestic-Driven Growth:** India's economy has traditionally been more reliant on domestic factors such as **internal consumption** and **investment** rather than trade. While imports from China are important for India, particularly in sectors like electronics and machinery, India's GDP is largely shaped by domestic policies, public expenditure, and internal demand. For example, events such as the **Make in India initiative** (2014) aimed to reduce dependency on imports, including those from China, by boosting local manufacturing.
- **Global Trade Shocks and Resilience:** India's economy has proven resilient during global trade shocks, such as the **2008 global financial crisis**, where internal consumption helped sustain GDP growth despite contractions in global trade. This reinforces the idea that external exports from China, while significant, do not singularly influence India's GDP trajectory.

Hypothesis 2: Does India's GDP Granger-cause China's Exports?

- **F-Statistic:** 5.92408
- **p-value:** 0.0179
- **Decision:** Since the p-value (0.0179) is less than the 0.05 threshold, we reject the null hypothesis (H_{02}) and accept the alternative hypothesis (H_{12}).

Implications: The rejection of the null hypothesis suggests that **India's GDP Granger-causes China's exports**. This implies that India's economic growth can predict future changes in China's export volumes. As India's GDP grows, there may be an increased demand for goods and services from China, given the interdependent trade relationship between the two nations.

Real-Life Context and Contributing Factors

- **India's Import Dependency:** India's rapid economic growth has often led to increased imports from China. For instance, India is highly dependent on China for imports in sectors like **electronics**, **machinery**, and **chemicals**. A growing Indian economy increases demand for intermediate and capital goods from China, reinforcing the predictive relationship between India's GDP growth and China's export activities.
- **Example:** In recent years, India's demand for **telecommunication equipment**, **smartphones**, and **solar panels** has driven up imports from China. For example, Chinese smartphone brands like **Xiaomi** and **Oppo** dominate the Indian market, and this surge in demand is closely tied to India's economic expansion and the rising middle class.

Conclusion: Unidirectional Causality and Economic Insights

The Granger causality results show a **unidirectional relationship** where India's GDP growth predicts China's export volumes, but China's exports do not predict India's GDP growth.

- India's GDP Drives China's Exports: As India's economy grows, it leads to greater demand for Chinese goods, particularly in sectors like electronics, chemicals, and machinery. This reflects the trade dependency of India on Chinese products.
- China's Exports Do Not Drive India's GDP: Despite being a major trading partner, China's exports do not have a direct predictive influence on India's GDP, highlighting the importance of domestic factors for India's economic growth.

Policy Implications

1. Strengthen India's Manufacturing Sector: Since India's GDP drives demand for imports from China, efforts should be made to enhance domestic production capacity to reduce reliance on Chinese imports. The **Atma Nirbhar Bharat (Self-reliant India)** initiative should focus on building capabilities in sectors where China currently dominates.
2. Enhance Bilateral Trade Strategies: While India's economic growth drives Chinese exports, there is potential for developing a more balanced and reciprocal trade relationship. Policies that encourage **joint ventures, technology transfer, and investment in local manufacturing** could foster a healthier trade dynamic

8.2.3 China's GDP and India's GDP: 1960-2023

Pairwise Granger Causality Tests
 Date: 09/13/24 Time: 02:45
 Sample: 1960 2023
 Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
CHINA_GDP_does not Granger Cause INDIA_GDP_	63	0.00143	0.9699
INDIA_GDP_does not Granger Cause CHINA_GDP_		13.6141	0.0005

Figure 8.7 – China's GDP and India's GDP

Null and Alternative Hypotheses

- **Null Hypothesis (H_{01}):** China's GDP does not Granger-cause India's GDP.
[Alternative Hypothesis (H_{11}): China's GDP Granger-cause India's GDP.]
- **Null Hypothesis (H_{02}):** India's GDP does not Granger-cause China's GDP.
[Alternative Hypothesis (H_{12}): India's GDP Granger-cause China's GDP.]

Hypothesis 1: Does China's GDP Granger-cause India's GDP?

- **F-Statistic:** 0.00143
- **p-value:** 0.9699
- **Decision:** Since the p-value (0.9699) is much greater than 0.05, we fail to reject the null hypothesis (H_{01}).

Implications: The results indicate that China's GDP does not Granger-cause India's GDP. This implies that past changes in China's economic growth do not have a significant predictive influence on India's GDP. Although China is a major global economy, its growth does not appear to directly influence the trajectory of India's GDP growth.

Real-Life Context and Contributing Factors

- Independent Growth Paths: India and China have historically followed independent growth models. China's GDP growth has been largely driven by manufacturing, exports, and state-led investments, whereas India's growth has been driven by services, domestic consumption, and investment in human capital. This independence likely accounts for why China's GDP growth has not significantly predicted India's growth.
- Geopolitical and Trade Relations: Although China and India share a large trading relationship, their geopolitical dynamics, especially trade tensions and border disputes (such as the 2020 Galwan Valley incident), may have reduced economic integration, thus limiting the impact of China's economic performance on India's GDP.

Hypothesis 2: Does India's GDP Granger-cause China's GDP?

- F-Statistic: 138.141
- p-value: 0.0005
- Decision: Since the p-value (0.0005) is less than 0.05, we reject the null hypothesis (H_{02}) and accept the alternative hypothesis (H_{12}).

Implications: The rejection of the null hypothesis suggests that India's GDP Granger-causes China's GDP. This indicates that changes in India's economic growth can predict future trends in China's GDP. This result may reflect India's growing economic influence in the region and how its demand and production capacities could be shaping China's economic performance.

Real-Life Context and Contributing Factors:

- India's Role in Global Supply Chains: As India's economy expands, its role in global supply chains has increased. India is a major importer of Chinese goods, especially in electronics, machinery, and raw materials. Growth in India's economy increases demand for Chinese products, thus positively impacting China's GDP. For example, during India's economic boom in the early 2000s, its imports from China surged, benefiting China's export-driven economy.
- India's Rising Consumption and Investments: The growth of India's middle class and increased investments in infrastructure and industry have led to greater economic activity, not only domestically but also in terms of demand for goods and services from other economies, including China. Initiatives like Digital India and Make in India have stimulated demand for technology and equipment, much of which is sourced from China.

Conclusion: Unidirectional Causality and Economic Insights

The Granger causality test results suggest a unidirectional relationship between India's GDP and China's GDP, where India's economic growth helps predict China's GDP, but not vice versa.

- India's GDP Drives China's Growth: The results indicate that India's economic expansion contributes to China's economic performance, particularly through increased demand for imports and its integration into global supply chains.
- China's GDP Does Not Drive India's Growth: Despite China's global economic dominance, the test suggests that its GDP does not have a significant predictive influence on India's GDP. This underscores the relative independence of India's growth trajectory, driven largely by domestic factors and less by external influences like China.

Policy Implications

- Strengthen India's Domestic Capabilities: Since India's GDP growth is a significant predictor of China's GDP, there is an opportunity for India to leverage its growth to enhance its position in global trade. Continued investment in domestic infrastructure, manufacturing, and services will not only boost India's economy but also increase its global influence.
- Leverage Trade Relations for Mutual Growth: The unidirectional causality suggests that India's growing demand for Chinese products can be leveraged to negotiate more balanced trade agreements. By focusing on areas of comparative advantage, India could reduce its trade deficit with China while fostering greater cooperation in critical sectors like technology and manufacturing.
- Enhance Economic Integration through Regional Initiatives: Given the interdependency highlighted in the analysis, regional economic initiatives like the Regional Comprehensive Economic Partnership (RCEP) can serve as platforms to enhance the economic ties between China and India, allowing for more coordinated growth strategies that benefit both economies

Chapter 9: Methodology

This research adopts a comparative analysis approach to examine the financial systems of BRIC nations (Brazil, Russia, India, and China), with a primary focus on India's financial landscape in relation to the other countries. Quantitative data on macroeconomic indicators—including GDP, inflation, FDI inflows, unemployment rates, and fiscal policies—were sourced from reputable financial databases such as the World Bank, IMF, and national statistical agencies.

While the main period of study spans the last 10 years (2013-2023), certain analyses required extending the time frame to 1960-2023 to better understand long-term trends and causal relationships between key financial variables.

Statistical tools such as correlation and regression analyses were employed to investigate the relationships between these financial indicators, while Granger causality tests were conducted to establish causality between macroeconomic variables across different countries.

The analysis was performed using MS Excel for basic statistical computation and data visualization, and E-Views for more advanced econometric modeling and hypothesis testing. This mixed-method approach, combining both historical and quantitative data, provides a comprehensive view of the evolution of financial systems and their current dynamics within the global economy.

Chapter 10: Conclusion

This research provides a comprehensive analysis of the financial systems of BRIC nations, with a focus on India's macroeconomic performance from 2013 to 2023. The correlation analysis conducted in this study highlights several important relationships between key macroeconomic variables. The correlation between GDP and FDI is weak, with a coefficient of 0.09088, indicating that FDI has a minimal direct impact on GDP growth in India. The correlation between GDP and inflation is also weakly positive, while the relationship between GDP and unemployment remains inconclusive, suggesting that these factors alone are not strong predictors of GDP growth. Conversely, the correlation between GDP and the fiscal deficit is much stronger, implying that India's fiscal health plays a significant role in driving its economic output.

The regression analysis further reinforces this conclusion, showing that the fiscal deficit has a more substantial impact on GDP than FDI, inflation, or unemployment. This highlights the critical importance of fiscal discipline and effective government spending in shaping India's economic trajectory. Over the past decade, India's ability to manage its fiscal deficit has proven

crucial, particularly during periods of economic uncertainty, such as the COVID-19 pandemic. This finding underscores the need for continued focus on prudent fiscal policies to maintain long-term growth.

Inflation control, while largely successful over the past decade, remains a challenge due to persistent food price volatility. Despite this, India's overall inflation management has been effective, contributing to macroeconomic stability. Unemployment, on the other hand, remains a structural issue, with ongoing challenges in absorbing a growing labour force. Labor market reforms and skill development initiatives are needed to address this gap and ensure that economic growth translates into broader employment opportunities.

In comparison to the other BRIC nations, India's performance stands out for its relative resilience in managing inflation and fiscal discipline. Brazil and Russia have faced more significant economic volatility, driven by higher inflation and unemployment, while China has maintained stability through state-controlled mechanisms. However, India's growth, while impressive, requires continued reforms, particularly in labour markets and infrastructure development, to sustain its competitive edge.

Our findings of this research indicate that India's economic success is driven more by internal factors such as fiscal discipline and sound economic management than by external factors like FDI. The ability to control the fiscal deficit, manage inflation, and address labour market challenges will be crucial for ensuring sustainable growth. Moving forward, India's path to continued economic success lies in strengthening internal economic structures, investing in infrastructure, and creating a more flexible labour market, while maintaining openness to global trade and investment. By focusing on these areas, India can continue to enhance its position within the BRIC framework and achieve long-term economic resilience.

Appendix

	India	China	Brazil	Russia
2013	1.6	7.8	3	1.8
2014	9.8	7.4	0.5	0.7
2015	3.2	7	-3.5	-2
2016	9.1	6.8	-3.3	0.2
2017	15.5	6.9	1.3	1.8
2018	2	6.7	1.8	2.8
2019	4.9	6	1.2	2.2
2020	-5.7	2.2	-3.9	-2.7
2021	17.9	8.1	4.6	5.6
2022	7.6	3	2.9	-2.1
2023	7.8	5.2	2.9	3.6
2024	6.8	4.6	2.2	3.2

Figure A1 – GDP Growth Rate (in %)

	India	Growing trend	China	Brazil	Russia
2013	1438.06	1438.06	7039.57	12752	15946
2014	1559.68	1559.68	7645.88	12601	14024.38
2015	1590.17	1590.17	8034.29	9183	9266.73
2016	1714.28	1714.28	8063.45	9117	8731.2
2017	1957.97	1957.97	8760.26	10419.58	10726.77
2018	1974.38	1974.38	9848.95	9629.6	11257.88
2019	2050.16	2050.16	10170.06	9364.24	11554
2020	1915.55	1915.55	10525	7344.53	10160
2021	2250.18	2250.18	12572	8269.71	12635
2022	2366.31	2366.31	12642	9612.06	15488
2023	2500.36	2500.36	12413	10642.44	13647.81

Figure A2 – GDP Per Capita (in \$)

	Inflow	Outflow
2013	28.20	1.68
2014	34.58	11.78
2015	44.06	7.57
2016	44.48	5.07
2017	39.90	11.14
2018	42.16	11.45
2019	50.56	13.14
2020	64.07	11.11
2021	44.76	17.25
2022	49.35	14.54

Figure A3 – FDI Inflow & Outflow of India

	FDI (%)
United States of America	17.2
Mauritius	14.9
United Kingdom	14.2
Singapore	13.2
Netherlands	10
Japan	8
Switzerland	5.4
Other	17.1

Figure A4 – FDI (%)

	India
2015	4.10%
2016	3.90%
2017	3.50%
2018	3.50%
2019	3.40%
2020	4.70%
2021	9.20%
2022	6.70%
2023	6.40%

Figure A5 – Fiscal Deficit of India (% GDP)

	India	China	Brazil	Russia
2013	1.68	107.84	-0.48	70.68
2014	11.78	123.12	-3.26	64.20
2015	7.57	145.67	-11.64	27.09
2016	5.07	196.15	-5.90	26.95
2017	11.14	158.29	19.04	34.15
2018	11.45	143.04	-16.34	35.82
2019	13.14	136.91	19.03	22.02
2020	11.11	153.71	-12.94	6.78
2021	17.25	178.82	20.45	64.07
2022	14.54	146.50	25.24	10.44

Figure A6 – FDI Outflow

	Brazil	India
2013	6.20	10.02
2014	6.33	6.67
2015	9.03	4.91
2016	8.74	4.95
2017	3.45	3.33
2018	3.66	3.94
2019	3.73	3.73
2020	3.21	6.62
2021	8.30	5.13
2022	9.28	6.70
2023	4.59	5.65

Consumer Price (annual %)

Figure A7 – Consumer Price of Brazil & India (annual %)

	India
2013	8.088
2014	7.992
2015	7.894
2016	7.8
2017	7.723
2018	7.652
2019	6.51
2020	7.859
2021	6.38
2022	4.822
2023	4.172

Unemployment (modelled ILO estimate)

Figure A8 – Unemployment in India (modelled ILO estimate)

	India	China	Brazil	Russia
2013	1.6	7.8	3	1.8
2014	9.8	7.4	0.5	0.7
2015	3.2	7	-3.5	-2
2016	9.1	6.8	-3.3	0.2
2017	15.5	6.9	1.3	1.8
2018	2	6.7	1.8	2.8
2019	4.9	6	1.2	2.2
2020	-5.7	2.2	-3.9	-2.7
2021	17.9	8.1	4.6	5.6
2022	7.6	3	2.9	-2.1
2023	7.8	5.2	2.9	3.6
2024	6.8	4.6	2.2	3.2

Figure A9 – GDP Growth Rate (in %)

	India	China	Brazil	Russia
2013	28.19942	123.9112	59.08935	53.39714
2014	34.5821	128.5016	63.84589	29.15166
2015	44.0641	135.5766	49.96137	11.85781
2016	44.48057	133.7114	53.70038	37.17577
2017	39.90384	136.3151	66.58493	25.95354
2018	42.15619	138.3059	59.80241	13.22764
2019	50.55833	141.2246	65.38604	32.07562
2020	64.07224	149.3423	28.31845	10.40987
2021	44.76268	180.9572	50.65117	38.63891
2022	49.35461	189.1324	86.05036	-18.6811

Figure A10 – FDI Inflow

	India	China	Brazil	Russia
2013	10.02	2.62	6.20	6.75
2014	6.67	1.92	6.33	7.82
2015	4.91	1.44	9.03	15.53
2016	4.95	2.00	8.74	7.04
2017	3.33	1.59	3.45	3.68
2018	3.94	2.07	3.66	2.88
2019	3.73	2.90	3.73	4.47
2020	6.62	2.42	3.21	3.38
2021	5.13	0.98	8.30	6.69
2022	6.70	1.97	9.28	
2023	5.65	0.23	4.59	

Figure A10 – Consumer Price (annual %)

	BSE Sensex	MOEX Russia Index	Shanghai Composite Index	BOVESPA Index
2019	14.38	28.55	22.1	31.58
2020	15.75	7.98	13.87	2.92
2021	21.99	15.15	4.8	-11.93
2022	4.44	-43.12	-15.13	4.69
2023	18.74	43.87	-3.7	12.24

Figure A11 – Annualized Returns (in %)

.	volatility
BSE Sensex	5.92%
MOEX Russia Index	32.95%
Shanghai Composite Index	14.58%
BOVESPA Index	15.87%

Figure A12 – Volatility (Last 5 years average)

.	Brazil	China	India	Russian Federation
2001	57.62	5.85	12.08	17.91
2002	62.88	5.31	11.92	15.70
2003	67.08	5.31	11.46	12.98
2004	54.93	5.58	10.92	11.44
2005	55.38	5.58	10.75	10.68
2006	50.81	6.12	11.19	10.43
2007	43.72	7.47	13.02	10.03
2008	47.25	5.31	13.31	12.23
2009	44.65	5.31	12.19	15.31
2010	39.99	5.81	8.33	10.82
2011	43.88	6.56	10.17	8.46
2012	36.64	6.00	10.60	9.10
2013	27.39	6.00	10.29	9.47
2014	32.01	5.60	10.25	11.14
2015	43.96	4.35	10.01	15.72
2016	52.10	4.35	9.67	12.60
2017	46.92	4.35	9.51	10.56
2018	39.08	4.35	9.45	8.87
2019	37.48	4.35	9.47	8.75
2020	29.04	4.35	9.15	6.78
2021	30.02	4.35	8.70	7.18
2022	39.40	4.35	8.57	11.46
2023	43.60	4.35		11.62

Figure A13 – Lending Interest Rate %

	Brazil	China	India	Russian Federation
1990.0000	0.0000	4.7832	17.5035	
1991.0000	0.0002	5.3234	22.7424	
1992.0000	0.0020	5.5146	25.9181	
1993.0000	0.0383	5.7620	30.4933	0.9917
1994.0000	0.6647	8.6187	31.3737	
1995.0000	0.9177	8.3514	32.4271	
1996.0000	1.0051	8.3142	35.4332	5.1208
1997.0000	1.0780	8.2898	36.3133	5.7848
1998.0000	1.1605	8.2790	41.2594	9.7051
1999.0000	1.8139	8.2783	43.0554	24.6199
2000.0000	1.8294	8.2785	44.9416	28.1292
2001.0000	2.3496	8.2771	47.1864	29.1685
2002.0000	2.9204	8.2770	48.6103	31.3485
2003.0000	3.0775	8.2770	46.5833	30.6920
2004.0000	2.9251	8.2768	45.3165	28.8137
2005.0000	2.4344	8.1943	44.1000	28.2844
2006.0000	2.1753	7.9734	45.3070	27.1910
2007.0000	1.9471	7.6075	41.3485	25.5808
2008.0000	1.8338	6.9487	43.5052	24.8529
2009.0000	1.9994	6.8314	48.4053	31.7404
2010.0000	1.7592	6.7703	45.7258	30.3679
2011.0000	1.6728	6.4615	46.6705	29.3823
2012.0000	1.9531	6.3123	53.4372	30.8398
2013.0000	2.1561	6.1958	58.5978	31.8371
2014.0000	2.3530	6.1434	61.0295	38.3782
2015.0000	3.3269	6.2275	64.1519	60.9377
2016.0000	3.4913	6.6445	67.1953	67.0559
2017.0000	3.1914	6.7588	65.1216	58.3428
2018.0000	3.6538	6.6160	68.3895	62.6681
2019.0000	3.9445	6.9084	70.4203	64.7377
2020.0000	5.1552	6.9008	74.0996	72.1049
2021.0000	5.3944	6.4490	73.9180	73.6544
2022.0000	5.1640	6.7372	78.6045	68.4849
2023.0000	4.9944	7.0840	82.5993	85.1620

Figure A14 – Official Exchange Rate (LCU per US\$, Period Average)

	India	Brazil
2013	8.088	7.071
2014	7.992	6.755
2015	7.894	8.538
2016	7.8	11.58
2017	7.723	12.792
2018	7.652	12.33
2019	6.51	11.936
2020	7.859	13.697
2021	6.38	13.159
2022	4.822	9.231
2023	4.172	7.95

Figure A15 – Unemployment, total (% of total labour force) (modelled ILO estimate)

NET INTEREST INCOME		NET INTEREST INCOME CHANGE													
		in billion USD (US\$)													
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
Digital Banks		6.92	6.87	8.93	11.36	15.27	18.06	21.21	23.81	25.58	26.58	27.32	28.13	30.91	
Traditional Banks		222.50	229.00	289.00	293.60	348.10	385.00	418.00	435.80	439.50	433.20	421.30	412.30	449.50	
Total		229.50	235.90	297.90	304.90	363.40	403.00	439.20	459.60	465.10	459.80	448.60	440.50	480.50	

Notes: Data shown is using current exchange rates.
 Most recent update: Jun 2024
 Source: Statista Market Insights

Figure A16 – Net Interest Income (NII) - India

VALUE OF DEPOSITS

● in trillion USD (US\$)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Digital Banks	0.01	0.01	0.03	0.05	0.08	0.12	0.17	0.21	0.24	0.26	0.28	0.29	0.31
Traditional Banks	6.47	6.88	7.39	8.24	9.15	9.92	10.64	11.28	11.86	12.39	12.87	13.30	14.12
Total	6.47	6.89	7.42	8.29	9.23	10.05	10.80	11.49	12.10	12.65	13.15	13.59	14.43

Notes: Data shown is using current exchange rates.

Most recent update: Jun 2024

Source: Statista Market Insights

Figure A16 – Value of Deposits in Banks - India

BANK ACCOUNT PENETRATION

● in percent

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Bank Account Penetration	65.79	68.98	72.07	75.04	77.89	80.59	83.16	85.58	87.85	89.99	91.98	93.83	95.55

Most recent update: Jun 2024

Source: Statista Market Insights

Figure A17 – Bank Account Penetration - India

SHARE OF MOBILE BANKING

● in percent

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mobile Banking Share	47.00	44.90	39.25	42.00	48.00	50.85	51.00	48.97	49.43	49.85	50.22	50.45	50.64

Most recent update: Jun 2024

Source: Statista Market Insights

Figure A18 – Share of mobile banking - India

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