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Labour Underutilisation in the BRICS-4: Do Exchange Rates and Foreign Direct Investment Matter?

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Abstract–This study aims to examine unemployment dynamics in BRICS-4 countries (Brazil, India, China, and Indonesia), with a particular emphasis on the effects of foreign direct investment and exchange rates within the framework of sustainable development. The primary issue addressed is the persistently high level of unemployment despite positive trends in economic growth and foreign investment inflows. A quantitative approach is employed using panel data analysis covering the period 2009–2023, in which all variables are transformed into natural logarithmic form to stabilise data variance. Model selection is conducted through the Chow, Hausman, and Lagrange Multiplier tests, which indicate that the Fixed Effects model represents the most appropriate estimation technique. The analysis encompasses classical assumption testing, partial and simultaneous significance tests, as well as the coefficient of determination. The novelty of this study lies in its cross-country integration of unemployment, foreign direct investment, and exchange rate variables within a sustainable development perspective. The empirical results demonstrate that foreign direct investment exerts a negative and statistically significant effect on unemployment, with a coefficient value of −0.12 and a probability value of 0.02, while the exchange rate exhibits a positive effect of 0.06 but remains statistically insignificant, as reflected by a probability value of 0.49. These findings underscore the critical role of foreign investment in employment generation and suggest that the influence of exchange rates is indirect and contingent upon the structural characteristics of individual countries.

Keywords: Unemployment; Foreign Direct Investment; Exchange Rates; BRICS Countries

1. INTRODUCTION

Economic development is a long-term process aimed at increasing per capita income and improving societal welfare (S. J. Lee et al., 2024). Over time, development has no longer been understood solely as an expansion of economic output, but has come to encompass improvements in quality of life, the expansion of employment opportunities, and the reduction of social inequality (Kumar Pradhan et al., 2024). This shift has given rise to the paradigm of sustainable development, which emphasises a balance between economic growth, social equity, and environmental sustainability (Ikram & Nahdi, 2025). This paradigm has become increasingly relevant in the face of global economic uncertainty and environmental crises, and has emerged as a central focus of economic policy in many developing countries (Huynh & Tran, 2025). Within the framework of sustainable development, inclusive and long-term oriented economic growth constitutes a fundamental prerequisite (Nguyen et al., 2024). Development outcomes are highly dependent on a country's capacity to generate productive employment (S. J. Lee et al., 2024) . Employment plays a critical role in raising household incomes and reducing poverty levels. Conversely, when economic growth is not accompanied by job creation, unemployment may evolve into a structural problem that constrains development progress (Erumban & Vries, 2024).

From an economic perspective, unemployment reflects an imbalance between labour supply and labour demand (Abdi et al., 2025). High unemployment rates may undermine national productivity, exacerbate income inequality, and disrupt social and economic stability (Carranza et al., 2025). These challenges tend to be more pronounced in developing and emerging economies due to limitations in industrial structures and labour market institutions (Misra et al., 2024). Such conditions have been further aggravated by global crises, notably the COVID-19 pandemic, which significantly suppressed economic activity and labour market performance (Putra et al., 2023). Despite their important role in the global economy, many countries experience divergent labour market dynamics (Zhang et al., 2025). Brazil and India have recorded relatively high unemployment rates, largely attributable to economic instability and fragile labour market structures (Çakmaklı et al., 2023). In contrast, China has maintained more stable unemployment levels, supported by strong state involvement in industrial sector management (Wang et al., 2026). Indonesia has exhibited a consistent downward trend in unemployment, although challenges related to job quality persist.

In the development economics literature, foreign direct investment (FDI) is widely regarded as a key instrument for promoting economic growth (Chen et al., 2024b). FDI contributes through capital provision, technology transfer, and improvements in domestic productive capacity and efficiency, while also holding the potential to stimulate job creation and entrepreneurial activity (Arthur et al., 2024). However, its impact on unemployment is not uniformly positive, as it critically depends on the destination sectors of investment and the quality of human capital (Gehrke et al., 2025). Investment directed towards labour-intensive sectors is generally more effective in reducing unemployment than investment concentrated in capital-intensive industries (Tafese et al., 2025).

Beyond FDI, exchange rates constitute a crucial macroeconomic variable influencing economic stability and labour market outcomes (Kuokštis et al., 2022). Exchange rate movements affect import costs, export competitiveness, and domestic production performance (K. Y. Lee & Naknoi, 2024). Exchange rate volatility heightens economic

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uncertainty, potentially delaying investment decisions and slowing employment creation. A growing body of empirical research suggests that exchange rate fluctuations have significant implications for unemployment in developing economies, with effects that vary according to national trade structures (Contessi et al., 2026).

Although numerous studies have examined foreign direct investment and exchange rates, empirical evidence regarding their effects on unemployment remains inconclusive. Recent empirical research provides contradictory findings about the relationship between unemployment, exchange rates, and foreign direct investment. Deregulation of foreign direct investment has been shown to greatly boost employment in China, however, existing evidence remains restricted to a single-country setting and fails to account for cross-country structural variation (Chen et al., 2024a). Foreign direct investment is found to lower unemployment in Asia-Pacific nations only when labor quality is taken into account, while exchange rate dynamics are excluded from the analysis as a macroeconomic factor (Nguyen et al., 2024). Exchange rate regime flexibility is shown to influence employment decisions at the firm level, yet foreign direct investment is not incorporated as an additional external determinant of labor market outcomes (Contessi et al., 2026). Moreover, studies linking foreign direct investment, unemployment, and sustainable development remain empirically confined to single developing country contexts, limiting their broader comparative relevance (Ikram & Nahdi, 2025).

Despite these contributions, a clear research gap remains. First, there is a lack of comparative panel studies focusing on BRICS countries that simultaneously examine foreign direct investment and exchange rates as joint determinants of unemployment. Second, existing studies tend to analyze unemployment without adequately accounting for country-specific structural characteristics, which are particularly relevant in heterogeneous emerging economies such as Brazil, China, India, and Indonesia. Third, empirical evidence remains limited regarding whether exchange rate movements exert a direct or indirect influence on unemployment when foreign direct investment and unobserved country effects are jointly considered. This study provides a direct cross-country assessment for Brazil, China, India, and Indonesia, thereby clarifying whether FDI contributes to unemployment reduction and whether exchange rate dynamics matter for labour market outcomes under structurally heterogeneous emerging economies.

The novelty of this study is reflected in its integrated panel data approach, which simultaneously examines the effects of foreign direct investment and exchange rate dynamics on unemployment across BRICS-4 countries using a fixed effects model. Unlike previous studies that mainly rely on single-country analyses or assess these variables separately, this research provides comparative long-term evidence by controlling for unobserved country-specific characteristics. From a theoretical perspective, this study contributes to the development economics literature by reinforcing the understanding that economic growth driven by foreign direct investment does not automatically result in employment creation without supportive economic and labor market structures. From a practical perspective, the findings offer important policy implications for emerging economies, suggesting that governments should prioritize the quality and sectoral allocation of foreign direct investment, while maintaining macroeconomic stability, to support sustainable and inclusive reductions in unemployment.

2. RESEARCH METHODS

2.1 Research Design and Data Sources

This study adopts a quantitative approach with an explanatory research design to examine the effects of macroeconomic variables on unemployment rates in the BRICS-4 countries, namely Brazil, Indonesia, India, and China. The data utilised are secondary panel data, combining time-series and cross-country observations, thereby enabling a comprehensive depiction of unemployment dynamics across countries and over time. The data are sourced from official and reputable institutions, specifically the World Bank, covering an annual observation period from 2009 to 2023, as summarised in Table 1. The dependent variable in this study is the unemployment rate, while the independent variables comprise foreign direct investment, and exchange rate. All data are standardised into consistent units and analysed using panel data regression with a Fixed Effect Model to empirically test the causal relationships among the variables. The empirical estimation results of the Fixed Effect Model are presented in Table 2. This method also helps to control for unobserved individual heterogeneity across countries, thereby producing coefficient estimates that are more accurate than those obtained from conventional time-series or cross-sectional regressions (Freeman & Weidner, 2023)

Table 1. Variables and Data Sources

Variable	Notation	Variable Definition	Unit	Source
Unemployment	TPT	The unemployment rate refers to the proportion of the labour force that is not employed but is actively seeking work or awaiting the commencement of employment within a given period (Wardani Umi & Yoga Kundhani, 2023)	Per cent (%)	Word Bank
Foreign Direct Investment	FDI	Foreign Direct Investment (FDI) refers to the inflow of capital from abroad into a country for the purpose of undertaking long-term investment through substantial	US Dollar (current US$)	Word Bank

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		ownership of capital or productive assets within the host country's economic sectors. FDI encompasses capital investment, the establishment of production facilities, as well as the acquisition or control of foreign business assets operating domestically (Fadlian et al., 2025)		
Exchange Rate	ER	The exchange rate is the price of a domestic currency relative to another foreign currency in the foreign exchange market. This variable represents the rate at which the domestic currency can be exchanged for foreign currencies, reflecting a country's international competitiveness, trade costs, and broader macroeconomic conditions (Teker et al., 2024)	Local Currency Unit (LCU) per US Dollar (US$)	Word Bank

Source: Word Bank, (2023)

Table 2. Results of Panel Data Regression (Fixed Effect Model)

Variable	Coefficient	Std.Error	T-Statistic	Prob.
TPT	4.673795	1.429380	3.269806	0.0019
FDI	-0.127011	0.054854	-2.315421	0.0244
ER	0.063460	0.092847	0.683490	0.4972

2.2 Research and Population and Sample

The type of research employed in this study is quantitative explanatory research. The population comprises all member countries of BRICS, while the research sample is limited to four countries, namely Brazil, Indonesia, India, and China. The sample was selected using purposive sampling, based on the availability of complete and consistent data throughout the observation period. This study is conducted within an international scope, covering an annual observation period from 2000 to 2023.

2.3 Research Hypotheses

This study proposes the hypothesis that foreign direct investment exerts a negative effect on unemployment levels, while exchange rates influence unemployment, both partially and simultaneously, across BRICS-4 countries.

H1: Foreign Direct Investment has a negative effect on unemployment rates in BRICS-4 countries.

H2: Exchange rates have an effect on unemployment rates in BRICS-4 countries.

H3: Foreign Direct Investment and exchange rates simultaneously affect unemployment rates in BRICS-4 countries.

2.4 Conceptual Framework

Based on the conceptual framework presented in Figure 1, Foreign Direct Investment and exchange rates are assumed to exert an influence on unemployment levels in BRICS-4 countries. These effects are examined both partially and simultaneously in order to assess the respective contributions of each independent variable to changes in unemployment.

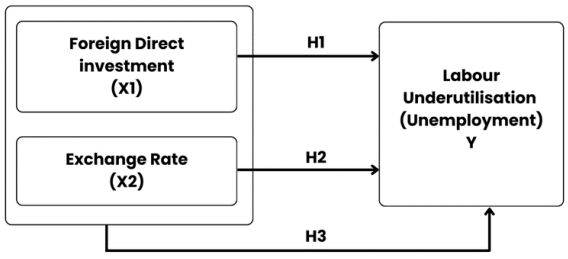

Figure 1. Research Conceptual Framework

2.5 Data Analysis and Testing Techniques

The analysis in this study employs panel data regression, as the panel structure allows for the integration of both cross-country and time-series variation within a single estimation framework. This approach addresses the issue of unobserved heterogeneity, namely time-invariant factors that differ across cross-sectional units (countries) but cannot be directly measured. The fixed effects model is selected on theoretical grounds, as it assigns a distinct intercept to each country, thereby controlling for unobserved variables that remain constant over time and reducing potential bias in the estimation of coefficients (W. Lee, 2025)

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The estimated model is specified as follows:

$$Y_{it} = \beta_0 + \beta_1 X1_{it} + \beta_2 X2_{it} + e_{it} \quad (1)$$

where Y_{it} denotes the open unemployment rate in BRICS countries in year t; X_{1it} represents foreign direct investment; X_{2it} refers to the exchange rate; and ε_{it} is the error term.

The selection of the panel regression model in this study follows the Chow test, the Hausman test, and the Lagrange Multiplier test in order to determine the most appropriate specification among the Common Effects Model, the Fixed Effects Model, and the Random Effects Model. The Chow test is employed to assess whether the pooled (common effects) model or the fixed effects model provides a more suitable estimation. The Hausman test is subsequently used to choose between the fixed effects and random effects models, based on whether the individual effects are correlated with the independent variables. The Lagrange Multiplier (LM) test is applied to examine the necessity of random effects relative to pooled regression. These three testing stages constitute a standard procedure in panel data analysis to ensure that the selected model is valid and consistent with the characteristics of the panel data under investigation (W. Lee, 2025)

Once the optimal model has been selected (with fixed effects frequently chosen in many panel data studies), the research proceeds to evaluate the classical regression assumptions, such as multicollinearity and heteroskedasticity, in order to ensure the validity of the estimation results. Subsequently, the *t*-test is employed to assess the partial effects of each independent variable on the dependent variable, while the *F*-test is used to evaluate their joint (simultaneous) effect. The coefficient of determination (R^2) indicates the proportion of variation in the dependent variable explained by the independent variables included in the model. This procedure is consistent with widely accepted empirical practices in macroeconomic panel data research, particularly in panel regression studies examining economic variables such as FDI, exchange rates, and unemployment.

3. RESULTS AND DISCUSSION

3.1 Research Results

This study examines unemployment dynamics in BRICS-4 countries, namely Brazil, India, China, and Indonesia by placing particular emphasis on the role of foreign direct investment and exchange rates in supporting sustainable development. The study utilises secondary data in the form of annual panel data spanning the period 2009–2023, selected on the basis of data consistency and their relevance to global economic dynamics in the aftermath of the financial crisis and the COVID-19 pandemic.

3.1.1 An Analysis of Foreign Direct Investment (FDI) Dynamics in BRICS-4 Countries

Foreign direct investment can be defined as a flow of external capital whereby firms from one country expand their operations and establish enterprises in another country. Consequently, this process facilitates the transfer of resources and the exercise of managerial control over companies operating abroad (Hasbi et al., 2024).

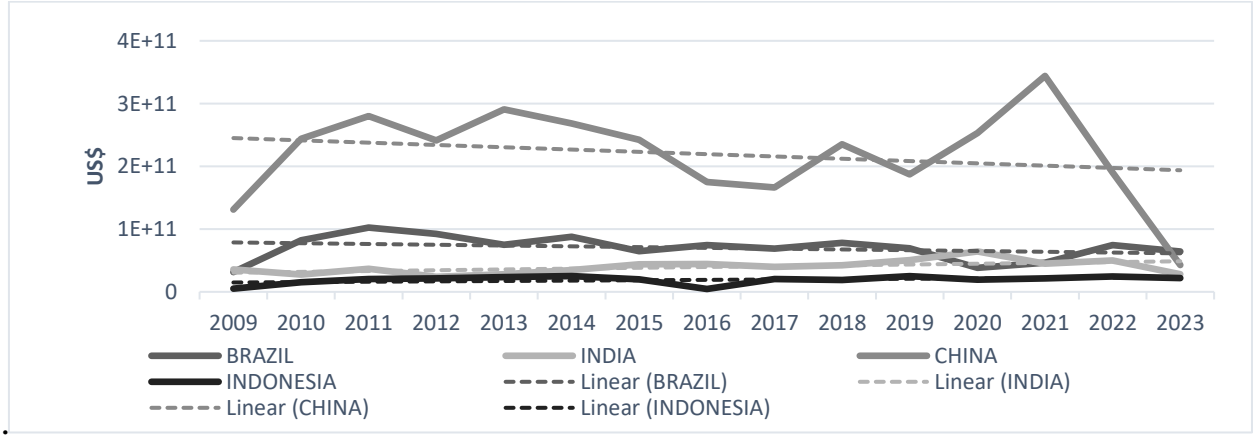

Figure 2. Foreign Direct Investment Data in BRICS Countries, 2009-2023
Source: Word Bank (2023)

Foreign direct investment in BRICS countries (Brazil, India, China, and Indonesia) exhibited considerable heterogeneity over the period 2009–2023. Overall, China remained the largest FDI magnet among BRICS economies, reaching a peak in 2021 with inflows exceeding USD 344 billion, before experiencing a marked decline in 2022–2023 due to geopolitical tensions and domestic policy adjustments (see Figure 2). India demonstrated a generally positive trajectory, with steady FDI growth since 2015, despite a sharp downturn in 2023, supported by structural reforms and an increasingly favourable investment climate. Meanwhile, FDI inflows to Indonesia expanded rapidly, underpinned by abundant natural resources, a large labour force, and a growing domestic market. Economic stability, even during the 2008–2009 global financial crisis, continued to attract investor interest. Although FDI declined from 2012 onwards,

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political stability following the 2014 presidential election contributed to a renewed increase in foreign investment inflows (Winpor & Hidayat, 2024)

3.1.2 An Analysis of Exchange Rate Dynamics in BRICS-4 Countries

The exchange rate refers to the value of the Rupiah per one US dollar and constitutes a crucial indicator in the economy, particularly for countries engaged in international trade. It reflects the rate of exchange between currencies used in trade transactions, tourism, international investment, and short-term cross-border capital flows. Beyond signalling economic strength, the exchange rate also influences international competitiveness, price stability, and national economic growth (Rasyid *et al*., 2025). Under a freely floating exchange rate regime, the forces of supply and demand prevail (Liu, 1990). Consequently, exchange rate fluctuations depend on the conditions of demand and supply for the national currency in the foreign exchange market (Winpor & Hidayat, 2024b).

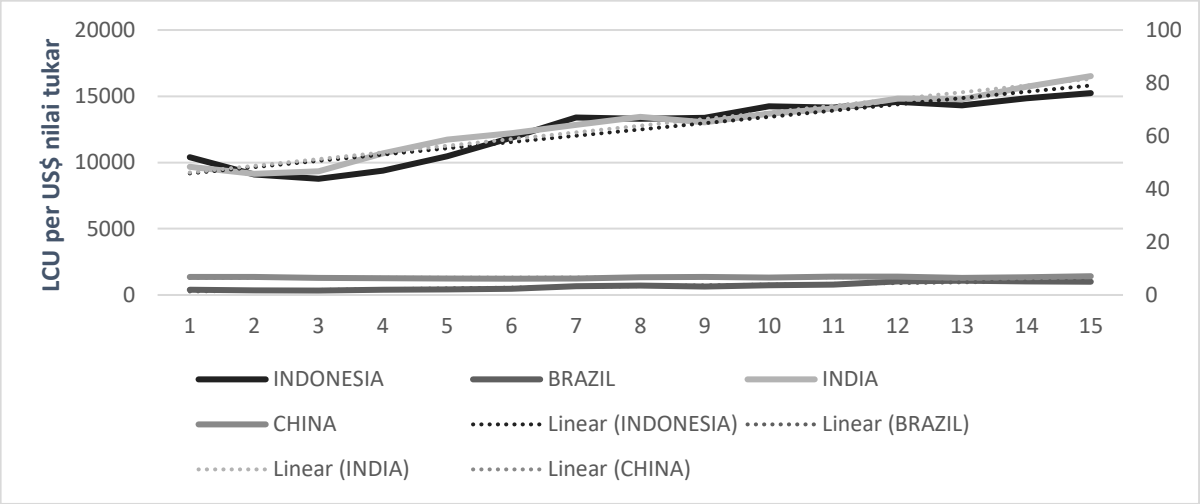

Figure 3. Exchange Rate Data in BRICS Countries, 2009-2023
Source: Word Bank (2023)

Based on exchange rate data (LCU per US dollar) for the period 2009–2023 across BRICS-4 countries and Indonesia, as illustrated in Figure 3, all countries generally experienced a depreciation trend against the United States dollar. Brazil exhibited a relatively pronounced depreciation, from 1.99 in 2009 to 4.99 in 2023, reflecting the impact of persistent economic instability and escalating external pressures. India also underwent a consistent depreciation from 48.41 to 82.60, in line with the implementation of a managed floating exchange rate regime that allows controlled fluctuations but remains inclined towards long-term weakening (Fadilah et al., 2024). China demonstrated the most stable exchange rate, moving marginally from 6.83 to 7.08, attributable to its semi-fixed exchange rate system, which helps maintain currency stability and export competitiveness in international markets. Meanwhile, Indonesia experienced a depreciation from 10,389 to 15,237, reflecting the effects of current account deficits, external pressures, and a high dependence on imports. This depreciation trend warrants careful analysis, as it can significantly affect export competitiveness, domestic inflation dynamics, and the balance of payments position of these countries (Fadilah et al., 2024).

3.1.3 Descriptive Statistics

Based on the descriptive statistics presented in Table 3, the unemployment variable records a mean value of 1.80 with a standard deviation of 0.37, indicating a relatively homogeneous data distribution. Foreign direct investment exhibits the highest mean value, at 24.72, with a standard deviation of 0.99, reflecting the relative stability of incoming foreign investment. In contrast, the exchange rate variable has a mean of 4.14 and a considerably high standard deviation of 3.28, indicating substantial fluctuations over the observation period. The distribution of the exchange rate variable also tends to deviate from normality, as evidenced by a Jarque–Bera statistic of 8.499 and a p-value of 0.014, which is significant at the 5 per cent level. Meanwhile, the unemployment and foreign direct investment variables record p-values of 0.148 and 0.900, respectively, suggesting that both follow a normal distribution.

Table 3. Descriptive Statistics

Indicator	Unemployment	FDI	Exchange Rate
Mean	1.796365	24.72493	4.142979
Median	1.682421	24.54265	2.890251
Maximum	2.617177	26.56413	9.631474
minimum	1.196344	22.23657	0.514516
Std.Dev.	0.371588	0.991938	3.276302
Skewness	0.505990	0.010447	0.778374

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Kurtosis	2.292064	2.711940	2.011961
Jarque-bera	3.813195	0.208538	8.499211
Probability	0.148585	0.900983	0.014270
Sum	107.7819	1483.496	248.5787
Sum Sq.Dev	8.146569	58.05250	633.3150
Observations	60	60	60

3.1.4 Heteroskedasticity Test

Based on the results of the heteroskedasticity test, all independent variables, namely foreign direct investment and exchange rates, exhibit probability values exceeding 0.05, at 0.0647 and 0.2703, respectively. Similarly, the constant term representing the unemployment variable records a probability value of 0.1223 (see Table 4)**.** As all probability values are greater than the 5 per cent significance level, it can be concluded that the regression model does not suffer from heteroskedasticity. This indicates that the residual variance is constant (homoskedastic), thereby confirming the suitability of the model for further analysis.

Table 4. Heteroskedasticity Test

Variable	Coefficient	Stf.Error	T-Statistic	Prob.
C	0.333826	0.212643	1.569891	0.1223
FDI	-0.015388	0.008160	-1.885622	0.0647
ER	0.015383	0.013812	1.113706	0.2703

3.1.4 Multicollinearity Test

Based on the results of the multicollinearity test presented in Table 5, the correlation coefficient between foreign direct investment and the exchange rate is −0.754987, indicating a strong negative correlation between the two variables. However, as this correlation value remains below the commonly accepted thresholds for severe multicollinearity (±0.85 or ±0.90), it can be concluded that no serious multicollinearity problem is present in the model. Accordingly, foreign direct investment and exchange rate variables can be jointly included in the regression analysis without generating significant distortions in the estimated results

Table 5. Multicollinearity Test

	FDI	Nilai Tukar
FDI	1.000000	-0.754987
Nilai Tukar	-0.754987	1.000000

3.1.5 Regression Estimation Results

Based on the regression estimation using the Fixed Effects model, as reported in Table 6, foreign direct investment is found to exert a negative and statistically significant effect on the unemployment rate, with a coefficient of −0.127011 and a probability value of 0.0244 ($p < 0.05$). This indicates that an increase in foreign direct investment tends to reduce unemployment levels in BRICS-4 countries. In contrast, the exchange rate (ER) variable exhibits a positive coefficient of 0.063460 but is statistically insignificant, with a probability value of 0.4972 ($p > 0.05$), suggesting insufficient evidence to confirm a significant effect of exchange rates on unemployment, as shown in Table 6. The R-squared value of 0.799154 implies that approximately 79.91 per cent of the variation in unemployment is explained by the model. Furthermore, the F-test confirms that the model is jointly significant (p-value = 0.000000), while the Chow and Hausman tests both yield p-values of 0.0000, indicating that the Fixed Effects model is more appropriate than the Pooled OLS and Random Effects specifications (see Table 6).

Tabel 6. Fixed Effect Model

Dependent Variable : Unemployment (TPT)				
Variable	Coefficient	Std.Error	T-Statistic	Prob.
TPT	4.673795	1.429380	3.269806	0.0019
FDI	-0.127011	0.054854	-2.315421	0.0244
ER	0.063460	0.092847	0.683490	0.4972
R-Squared	0.799154		Mean dependent var	1.796365
Adjusted-R-Squared	0.780557		S.D.dependent var	0.371588
F-Statistic	42.97256		Sum squared resid	1.636205
Prob(F-Statistic)	0.000000		Durbin-watson stat	0.519392
Uji Chow	0.0000			
Uji Hausman	0.0000			
Cross Section Effect				
Brazil	0.678793			
India	0.100817			

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China	0.043126
Indonesia	-0.822736

Based on the estimation results using the Fixed Effects approach, each country exhibits a distinct influence on unemployment levels, even after controlling for foreign direct investment and exchange rate variables. Brazil records the highest fixed effect, amounting to 0.678793, indicating that its unemployment rate is consistently higher than the average of the other countries included in the model. India and China also display positive fixed effects, at 0.100817 and 0.043126 respectively, although the magnitudes are relatively modest. In contrast, Indonesia presents a markedly different outcome, with a negative fixed effect of −0.822736, suggesting that its unemployment rate tends to be lower than that of the other countries examined in this analysis. These variations reflect country-specific structural characteristics that cannot be fully captured by variables such as foreign direct investment and exchange rates alone. Consequently, the Fixed Effects approach is considered appropriate for accounting for persistent cross-country differences of this nature.

3.2 Discussion

3.2.1 The Impact of Foreign Direct Investment on Unemployment

Foreign direct investment exerts a negative and statistically significant effect on the unemployment rate, as indicated by a coefficient of −0.127011 ($\beta = -0.127$, $p < 0.05$) and a probability value of 0.0244. This implies that a one-unit increase in FDI leads to a reduction in unemployment by 0.127 points, ceteris paribus. These results demonstrate that FDI plays a crucial role in generating employment opportunities in the countries under analysis. Statistically, this relationship is robust, given that the level of significance falls below the 5 per cent threshold, indicating that the observed effect is not attributable to random variation but is supported by strong empirical evidence

From an economic perspective, these findings are consistent with development and economic growth theories, which posit that inflows of foreign direct investment generate positive effects by fostering technology transfer and knowledge spillovers. These processes, in turn, contribute to higher productivity and the development of local capacity within labour markets and entrepreneurial activitie (Barboza et al., 2025). When foreign firms invest in a host country, they typically establish production facilities, expand supply chains, and absorb local labour, both directly and indirectly. This process contributes to a reduction in unemployment, particularly in labour-intensive and manufacturing sectors. Moreover, the presence of FDI often stimulates the growth of micro, small, and medium-sized enterprises through partnerships and increased demand for supporting goods and services, thereby amplifying multiplier effects within the domestic economy (Lakemann et al., 2025)

Furthermore, in the context of developing economies such as the BRICS-4 members, FDI serves as a vital source of external financing for infrastructure development and for enhancing efficiency in strategic sectors (Fadilah et al., 2024). Consequently, strategies aimed at attracting greater FDI inflows are not only pertinent to accelerating economic growth but also constitute an essential instrument for achieving sustained reductions in unemployment. Accordingly, governments in these countries should foster a conducive investment climate through incentive-based policies, regulatory simplification, and improvements in workforce quality in order to maximise the benefits derived from incoming foreign investment.

3.2.2 The Impact of Exchange Rates on Unemployment

The exchange rate variable exhibits a positive coefficient of 0.063460; however, with a probability value of 0.4972, this effect is statistically insignificant at conventional significance levels (for example, 5 per cent). This finding indicates that, within the Fixed Effects model employed, there is insufficient empirical evidence to conclude that exchange rate fluctuations exert a direct influence on unemployment levels in the countries analysed. The positive coefficient theoretically suggests that exchange rate appreciation (an appreciation of the domestic currency) may be associated with higher unemployment, potentially due to a decline in export competitiveness. Nevertheless, given the lack of statistical significance, this relationship appears weak or inconsistent across countries and over the observation period.

From a theoretical standpoint, exchange rates play a crucial role in shaping the performance of a country's external sector. Currency depreciation is generally expected to enhance export competitiveness by lowering the prices of domestic goods in international markets, thereby stimulating production and employment in export-oriented sectors (Herliani & Sukarniati, 2024). Conversely, currency appreciation tends to render domestic products more expensive for foreign buyers, potentially reducing external demand and leading to contractions in production and employment. However, this relationship is often indirect and mediated by a range of factors, including economic structure, export–import composition, labour market flexibility, and domestic fiscal and monetary policies (Jannah, 2024).

In the context of developing and emerging market economies such as Brazil, China, India, and Indonesia, the impact of exchange rate movements on unemployment can vary considerably. Dependence on imported inputs, differences in the sensitivity of export sectors to exchange rate fluctuations, and heterogeneous policy transmission mechanisms all influence how exchange rate changes are translated into labour market dynamics (Fadilah et al., 2024). Accordingly, the statistically insignificant effect of exchange rates on the unemployment rate in this model reflects this underlying complexity and highlights the need for further analysis that incorporates interaction effects between exchange rates and other macroeconomic variables. While exchange rate stability remains an important policy objective, efforts to reduce unemployment should be supported by more integrated and sector-based policy approaches.

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3.2.3 The Impact of Foreign Direct Investment and Exchange Rates on Unemployment

Simultaneously, foreign direct investment and exchange rates are shown to make a substantial contribution to explaining variations in unemployment across the countries analysed. This is reflected in an R-squared value of 0.799154, indicating that approximately 80 per cent of changes in unemployment levels are explained by the model incorporating both variables alongside country-specific fixed effects. The adjusted R-squared of 0.780557 further confirms the robustness of the model after accounting for the number of independent variables, suggesting that the specification does not suffer from overfitting. Moreover, the high F-statistic (42.97256) and its highly significant probability value (0.000000) reinforce the conclusion that the model is statistically valid and suitable for empirical analysis of unemployment determinants in developing economies.

Although, on an individual basis, only foreign direct investment exhibits statistical significance (p-value = 0.0244), while the exchange rate remains insignificant (p-value = 0.4972), the joint results remain economically meaningful. They indicate that, within a macroeconomic context, external variables such as foreign direct investment and exchange rates collectively shape labour market dynamics, even though their direct effects differ in terms of statistical significance and direction. Foreign direct investment, for instance, directly contributes to job creation through the establishment of new industries and technology transfer, whereas exchange rates tend to influence employment more indirectly via trade mechanisms, investment flows, and input price dynamics.

These findings underscore the importance of comprehensive and cross-sectoral economic policy formulation. In efforts to reduce unemployment, governments should not only promote increased foreign direct investment through a conducive investment climate, but also maintain macroeconomic stability, including exchange rate stability, to foster an environment supportive of long-term growth. In other words, even when individual effects are not always statistically significant, an integrated and simultaneous approach to external factors is essential for explaining unemployment variation and for designing inclusive and sustainable economic development strategies.

4. CONCLUSION

This study demonstrates that foreign direct investment within the framework of sustainable development has a statistically significant effect in reducing unemployment rates in BRICS countries, namely Brazil, China, India, and Indonesia, although the magnitude of this effect remains relatively modest. This limitation reflects the structure of FDI inflows, which continue to be dominated by capital-intensive sectors, thereby generating suboptimal labour absorption and failing to induce a broad-based reduction in unemployment. Meanwhile, the exchange rate is not found to have a statistically significant effect on unemployment, indicating that the impact of exchange rate fluctuations on labour markets is largely indirect and highly contingent upon the structural and institutional characteristics of each country. These findings underscore the heterogeneity of economic conditions and labour market structures across BRICS countries, which in turn shape divergent unemployment patterns. Accordingly, the policy implications of this study highlight the need for strategies that go beyond merely increasing the volume of foreign investment, and instead prioritise its allocation towards labour-intensive sectors such as light manufacturing, agribusiness, and productive services. Such strategies should be supported by policies aimed at enhancing workforce quality through education and vocational training, strengthening micro, small, and medium-sized enterprises, and improving labour productivity. The limitations of this study lie in its reliance on a relatively narrow set of macroeconomic variables and a methodological approach that does not fully capture the structural and social dimensions of labour markets. Future research is therefore encouraged to incorporate additional variables, including educational quality, informal sector dynamics, and labour force participation rates, as well as to apply more advanced analytical methods in order to achieve a more comprehensive understanding of unemployment dynamics in developing and emerging economies.

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