



Understanding the Moderating Role of Dollar Exchange Rate in Shaping the Linkages Between Foreign Direct Investment and Pakistan Stock Exchange Performance

Khawar Abbas¹, Muhammad Idrees² & Fahad Laiquat Syed³

¹Visiting Lecturer, Department of Commerce, Thal University Bhakkar, Pakistan

²Asst. Accountant, Ch. Ent., Reg. Manufacturer & Exporter, FSD, Punjab, Pakistan

³Business Solutions Expert, Broadridge Financials Inc, Toronto, Canada

ABSTRACT

Article History:

Received:	July	21, 2023
Revised:	Aug	13, 2023
Accepted:	Nov	11, 2023
Available Online:	Dec	30, 2023

Keywords: Pakistan Stock Exchange, Macro-Economic Variables, Cointegration, Granger Causality, Pakistan.

Funding:

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

The stock exchange market is a crucial component of the economy, providing investors with the opportunity to participate in the shares of different enterprises. This study investigates the influence of the United States Dollar exchange rate and foreign direct investment (FDI) on the Karachi Stock Exchange-100 index, a key component of the Pakistan Stock Exchange. Utilizing monthly data from July 2008 to March 2023, the research employs an Augmented Dickey-Fuller test for stationarity and Johnson Cointegration test for model confirmation. Results from the Granger Causality test highlight significant long-term relationships between FDI, inflation, interest rates, balance of payments, and the Karachi Stock Exchange-100 index. Conversely, the exchange rate and FDI exhibit statistical insignificance in the short term. Introducing moderation effects, the exchange rate demonstrates negligible long-term impact but reveals a negative short-term association with the Karachi Stock Exchange-100 index. Impulse response analysis indicates positive reactions to shocks for FDI, balance of payments, and the dollar exchange rate, with inflation and interest rates exhibiting negative responses. The study's novel contribution lies in uncovering the nuanced temporal dynamics between economic indicators and the stock market, offering valuable insights for policymakers crafting investment strategies to navigate market volatility and enhance stock market returns.

© 2022 The Authors, Published by CISSMP. This is an Open Access article under the Creative Common Attribution Non-Commercial 4.0

Corresponding Author's Email: fahaadsayed@gmail.com

DOI: <https://doi.org/10.61503/ciissmp.v2i4.103>

Citation: Abbas, K., Idrees, M., & Syed, F. L. (2023). Understanding the Moderating Role of Dollar Exchange Rate in Shaping the Linkages Between Foreign Direct Investment and Pakistan Stock Exchange Performance. *Contemporary Issues in Social Sciences and Management Practices*, 2(4), 290-303

1.0 Introduction

The stock market plays a pivotal role in any economy, influenced significantly by factors such as foreign direct investment (FDI) and exchange rates, serving as crucial indicators of economic performance (Mukolu & Ilugbemi, 2020; Maqsood et al., 2022). The stock market's importance lies in providing a platform for investors to allocate their savings, contributing to enhanced economic conditions through increased production and financial resources for capital projects (Gautam, 2017; Sharif & Afshan, 2016). Over the past 25 years, financial reforms and globalization have brought substantial changes to the stock market, leading to heightened volatility and transaction volumes (Afonso & Reimers, 2022).

In this context, the KSE-100 index represents the top 100 companies listed on the Pakistan Stock Exchange (PSX), and various theories, including capital market theory and contemporary portfolio theory, shape the dynamics of the stock exchange market. Understanding the relationship between stock price returns and future investments is critical, reflecting the broader impact on economic health. Equally important are interest rates and equity markets, intertwined economic indicators influencing national monitoring and fiscal policy (Chang & Meo, 2019). Interest rate fluctuations impact stock prices, with elevated rates initially causing reduced business stock values. Financial theory suggests that diversified portfolios of equities and bonds can manage the correlation between stock prices and interest rates (Akbar & Noor, 2019).

Inflation, the continuous rise in price levels, negatively affects the stock market by diminishing the currency's value and decreasing purchasing power. In Pakistan, high inflation rates pose a significant macroeconomic challenge, hindering economic improvement (Siddiqui & Iqbal, 2020). The balance of payments (BOP), encompassing economic exchanges between a country and non-residents, further influences foreign demand, exports, remittances, and financial flows (Sultani & Faisal, 2022; Rahman & Dilanchiev, 2021). Simultaneously, exchange rates, reflecting the value of one US dollar in rupees on an international level, serve as a crucial component of monetary policy and impact stock market indices globally (Lastrapes, 1992; Abbas et al., 2011).

Considering the global perspective, research indicates that FDI influences stock markets, prompting a need for examination in the context of the Pakistan Stock Exchange (PSX) and its relationship with the United States Dollar (USD) exchange rate. This study aims to analyze the impact of FDI on the PSX moderated by the USD exchange rate, offering insights for policymakers and investors in formulating effective financial regulations and investment strategies amidst market volatility.

2.0 Literature Review

Stock Exchange and Foreign Direct Investment

John and Dauda (2022) researched the impact of Foreign Direct Investment (FDI) on the Nigerian stock exchange market using data collected from 2001 to 2021. Analyzed by Ordinary Least Squares (OLS) regression, the data showed a significant positive correlation between Foreign Direct Investment (FDI) and the growth of the stock exchange market. Ishaq and Malik (2022) conducted a study in Pakistan to examine the correlation between stock market performance and Foreign Direct Investment (FDI). Data was collected from the World Bank and State Bank of

Pakistan between 1996 and 2020. It was examined with Autoregressive Distributed Lag (ARDL) analysis, which uncovered a strong and positive relationship among the Foreign Direct Investment (FDI) variables.

Verma and Bansal (2021) performed an in-depth study on the stock markets' performance in emerging economies and its relationship with macroeconomic factors. Data was collected from 1972 to 2021 from databases including Emerald Insight, JSTOR, and ScienceDirect. The results showed that Foreign Direct Investment (FDI) has a significant and positive impact on the stock markets of emerging economies. An American study done from 1990 to 2020 discovered a positive and noteworthy correlation between Foreign Direct Investment (FDI) and stock market performance (Wang, 2021). Ngobe's research produced similar findings to Emenike's (2020) study, emphasizing a strong and enduring relationship between Foreign Direct Investment (FDI) and the progress of stock markets in developing nations.

Demir (2019) conducted an empirical study to investigate the influence of economic factors on the stock market. Researchers utilized ARDL to analyze quarterly data from the Borsa Istanbul-100 index between 2003 and 2017 and found that foreign direct investment (FDI) and economic growth positively impact stock market indices. The analysis concluded that interest rates and crude oil had a detrimental effect on the stock index. Onyinyechi & Ekwe (2016) conducted comparable research on the Nigerian stock market. Secondary data collected between 1985 and 2014 were analyzed using multiple regression analyses. They concluded that Foreign Direct Investment (FDI) has a minimal and unimportant impact on macroeconomic factors that influence stock market performance.

Stock Exchange and Inflation,

A study conducted in India analyzed the relationship between currency rate, inflation, and stock market volatility using monthly data from January 2000 to June 2020. Analyzed data using ARDL, GARCH, and ECM revealed a long-term association between inflation and stock market volatility, with no short-term relationship identified (Sreenu, 2022). An analysis comparing the stock markets of Indonesia, Thailand, and the Philippines was conducted to assess the influence of oil prices and inflation on the stock market index. The data was collected monthly from 2015 to 2019 for this purpose. The research revealed that inflation positively and significantly affects the stock market in Indonesia, but has no impact on the stock markets in Thailand and the Philippines (Hersugondo, 2021).

An investigation in India analyzed the correlation between inflation and stock prices using monthly data from January 1990 to June 2016. The analysis found a notable negative link between both factors (Raghutla, 2020). An empirical study was undertaken in Nigeria by Okechukwu et al. (2019) to examine the impact of inflation on stock market volatility. Data was collected monthly from 1995 to 2014. The GARCH model examined the data and determined that inflation has a positive impact on the stock market. Sokpo et al. (2017) utilized volatility modeling to examine the correlation between inflation and stock returns in Nigeria. Monthly data was collected and analyzed using GARCH models. The conclusion indicated that inflation was not a significant factor in explaining stock market volatility within the Nigerian economy. A study conducted in

Ghana showed that inflation has a positive and strong long-term correlation with market return (Kwofie & Ansah, 2108).

Stock Exchange and Interest Rate

A study in Pakistan investigated how macroeconomic factors affect stock market equity returns by gathering monthly data from 2006 to 2018. The data was evaluated using regression analysis, which found a significant correlation between interest rates and stock market returns (Zeeshan, 2022). Alam et al. (2020) performed a comparative analysis of Chinese and Pakistani stock markets to examine the impact of macroeconomic variables, such as interest rates, on the stock market. Analyzed time series annual data from 1995 to 2019 using multiple regression approaches revealed a substantial positive relationship between interest rates and stock returns in Pakistan.

Demir (2019) did an empirical study to examine how economic issues affect the stock market. An Autoregressive Distributed Lag (ARDL) analysis of quarterly data from the Borsa Istanbul-100 index between 2003 and 2017 indicated that both crude oil prices and interest rates had a detrimental impact on the stock index. Khalid (2017) performed an empirical investigation. Analyzed data from 1990 to 2017 using cointegration and VEC models. An adverse association was observed between stock index performance and interest rates in the results. Market capitalization declines with rising interest rates, and this relationship is also shown in stock index performance.

Stock Exchange and Balance of Payments

Ogunlowo & Owoade (2020) did a study in Nigeria to examine the correlation between trade openness and stock market performance. Data was gathered monthly from 1981 to 2017 and examined using the Johnson Cointegration Granger Causality test and VECR model. The study found that the balance of payments has a considerable impact on stock market performance. Kisoso (2019) did a study in Nairobi by collecting annual data from 2007 to 2017 to assess the influence of BOP on the Nairobi Stock Exchange. The Granger causality test found that Balance of Payments (BOP) influences the volatility of the Nairobi Stock Exchange. A study in Sri Lanka investigated the influence of the balance of payment on the stock market's performance. The data was gathered between 1980 and 2012. The OLS regression results indicated that the balance of payment does not have a major role in influencing stock market.

Research Hypotheses

To determine the impact of FDI on PSX through the moderating variable of the USD exchange rate, the following are the objectives of this research article:

H₁: Foreign direct investment impacts Pakistan stock exchange KSE-100 index.

H₂: US dollar exchange rate moderates the relationship between foreign direct investment and the Pakistan stock exchange KSE-100 index.

Regression Model

To find the impact of FDI, inflation, interest rate, and the balance of payment on the Pakistan stock exchange with the moderation of the USD exchange rate, based on the results of previous studies for panel data, the following regression model is developed.

$$KSE_{nt} = C_n + \beta_1 FDI_{nt} + \beta_2 EXR_{nt} + (\beta_1 FDI_{nt} * \beta_2 EXR_{nt}) + \beta_3 INF_{nt} + \beta_4 INT_{nt} + \beta_5 BOP_{nt} + U_{nt}$$

KSE = KSE-100 index as dependent variable

C = Constant

β = Coefficient of variable

FDI = Foreign direct investment as independent variable

EXR = USD exchange rate as moderator variable

INF = Inflation as control variable

INT = Interest rate as control variable

BOP = Balance of payment as control variable

n = Number of observations

t = Time period for study

U = error term

3.0 Methodology

Research methodology is explained in this section which includes research design, the population of the study, sample size, period of data, source of data collection, and research analysis tools. This study is both descriptive and exploratory, aiming to collect data on values and traits, as described by Creswell (2017). Time series data from secondary sources is utilized to examine the correlation between foreign direct investment and PSX while moderating the US dollar exchange rate. The data exhibits time-series characteristics due to the monthly-end date observations collected.

Moreover, the research methodology is quantitative in nature as statistical data was collected from secondary sources. PSX has multiple indexes to show the overall results of financial events. The study population consists of the PSX-KMI all-share index, KSE-100 index, KSE all-shares index, KMI-30 index, BKT index, and OGT index. The KSE-100 index is considered a reliable indicator of economic activity on the stock market inside PSX due to its inclusion of the top 100 businesses based on market capitalization. This study utilizes purposive sampling since it aligns with the study's aims and the population by using the KSE-100 index as a sample for conducting different procedures. This study analyzes the factors that impact the KSE-100 index in Pakistan using data collected from July 2008 to March 2023, comprising 177 observations. Monthly time-series data with monthly-end date statistics are utilized to analyze the impact of FDI on the KSE-100 index with the inclusion of a moderator variable.

Sources of Data

The KSE-100 index is the dependent variable, foreign direct investment is the independent variable, while Inflation, interest rates, and the balance of payments are control variables, and the US dollar exchange rate is the moderator variable. The study relies on quantitative secondary data. The data collecting source is outlined in the table below.

Table 1. Sources of Data Collection

Variable	Description	Source
KSE-100 Index	Monthly-ended date closing KSE-100 index	PSX Data Portal
Foreign direct invest	Net inflows of FDI on the last day of each month	SBP

US\$ Exchange Rate	Amount of PKR exchanged for 1 US\$ on month-ended date	SBP
Inflation	CPI inflation rate on month-ended date	SBP
Interest Rate	Policy rate of SBP on month-ended date	SBP
Balance of Payment	Balance of payment on month-ended date	SBP

4.0 Data Analysis

Data gathered in this area is examined using statistical software. The first component covers descriptive statistics analysis using STATA. The second component covers the unit-root test, which assesses stationarity through an Augmented Dickey-Fuller (ADF) test in E-Views. The final portion involves doing cointegration tests, causality tests, and a vector error correction model in E-Views.

4.1 Descriptive Statistics

The descriptive statistics indicate that there are 201 observations. The results indicate variability in the KSE-100 index when its standard deviation diverges from its mean. The average of all variables exceeds the standard deviation.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Median	Std. Dev.	Maximum	Minimum
KSE	177	25320.0	24302	14237.23	50592	5377
FDI	177	210.81	163.87	173.9	1262.87	7.77
INF	177	9.08	8.5	4.72	25.3	1.3
INT	177	9.72	9.5	2.72	15	5.75
BOP	177	685.68	566	542.45	2467	5
EXR	177	103.15	98.91	33.05	182.92	59.62

4.2 Correlation Analysis

The correlation matrix is used to evaluate the relationship and level of correlation between variables. KSE has a positive relationship with FDI, the balance of payments, and the exchange

rate, and a negative connection with inflation and interest rate, as shown in the correlation matrix. Foreign Direct Investment (FDI) has a minor positive correlation with the interest rate, while inflation has a negative correlation with the balance of payments.

Table 3. Correlation Analysis

Correlation	KSE	FDI	INF	INT	BOP	EXR
KSE	1					
FDI	0.1690	1				
INF	-0.5191	0.1666	1			
INT	-0.6961	0.0289	0.7886	1		
BOP	0.3455	0.1786	-0.0046	-0.2680	1	
EXR	0.7837	-0.2894	-0.1338	-0.2622	0.1424	1

**Variable is significant at (5%) significance level

4.3 Unit Root Test

The stationarity of time-series data is evaluated by the unit root test. Based on the ADF unit root test results, all variables are stationary when differenced once. Johnson's cointegration test will be utilized to analyze cointegration among variables by doing the unit root test using the ADF test.

Table 4. Unit Root Test

Variables	ADF Test		
	Level	First Diff	Second Diff
LKSE	-	-12.84714**	-
LFDI	-	-12.41974**	-
LEXR	-	-11.33983**	-
LINF	-	-12.56767**	-
LINT	-	-6.200216**	-
LBOP	-	-12.94206**	-

4.4 Lag Order Selection Criteria

The results of VAR lag order selection criteria, show that the AIC is lowest at lag 1; therefore, the appropriate lag length for this model is 1.

Table 5. Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-589.7825	NA	1.82e-05	6.110590	6.211297	6.151365
1	774.0376	2629.725	2.21e-11*	-7.508078*	-6.803125*	-7.222651*
2	805.5771	58.87364	2.32e-11	-7.462329	-6.153129	-6.932250
3	844.9975	71.15886	2.24e-11	-7.497410	-5.583964	-6.722678
4	858.6297	23.76909	2.83e-11	-7.267997	-4.750305	-6.248614
5	901.7425	72.51780*	2.66e-11	-7.340948	-4.219010	-6.076913
6	926.9599	40.86516	3.00e-11	-7.230358	-3.504174	-5.721670

* Indicates lag order selected by the criterion

4.5 Model Selection Criteria

In the table, "large" indicates that the trace statistics exceed the crucial value of 0.05, while "small" indicates that the trace statistics are below the critical value of 0.05 in models used for selecting a suitable model for further study. The first piece of trace statistics in the table is found in model 3 in relation to the row. Thus, model 3 is suitable for conducting the Johnson Cointegration Test

Table 6. Model Selection Criteria

Hypothesis	M1	M2	M3	M4
0	Large	Large	Large	Large
1	Large	Large	Large	Large
2	Large	Large	Small	Small
3	Small	Small	Small	Small
4	Small	Small	Small	Small
5	Small	Small	Small	Small

4.6 Johnson Cointegration Test

The Johnson Cointegration test shows two cointegration equations with a significance level of 0.05, indicating the presence of two common patterns in the model. The Granger causality test can determine the direction of the relationship between variables.

Table 7. Johnson Cointegration Test

Hypothesized Cointegration Eqn(s)	Eigenvalue	Trace Statistic	0.05 (Critical Value)	Prob.**
None *	0.351113	188.4604	95.75366	0.0000
At most 1 *	0.270676	102.3934	69.81889	0.0000
At most 2	0.118757	39.58173	47.85613	0.2378
At most 3	0.049363	14.42383	29.79707	0.8160
At most 4	0.021311	4.349883	15.49471	0.8734
At most 5	0.000318	0.063212	3.841466	0.8015

4.7 Granger Causality Test

The Granger causality test results indicate that FDI, inflation, interest rate, and balance of payment have a unidirectional link with the stock market index, namely the KSE-100 index.

Table 8. Granger Causality Test,

Variable	Null Hypothesis		Observations	F-Stat.	Prob.
LFDI	LFDI	LKSE	177	4.51796	0.0348
	LKSE	LFDI		0.97172	0.3255
LINF	LINF	LKSE	177	4.62934	0.0326
	LKSE	LINF		0.01802	0.8933
LINT	LINT	LKSE	177	4.23909	0.0408
	LKSE	LINT		0.13490	0.7138
LBOP	LBOP	LKSE	177	11.7547	0.0007
	LKSE	LBOP		3.09673	0.0800

4.8 Granger Causality Test with Moderation effect of USD Exchange Rate

The Granger causality test results indicate that FDI, inflation, interest rate, and balance of payment significantly influence the KSE-100 index, whereas the exchange rate does not have a statistically significant impact. When the moderation effect is introduced, it becomes significant and influences the KSE-100 index.

Table 9 Granger Causality Test with Moderation effect of USD Exchange Rates

Variable	Null Hypothesis		Observations	F-Stat.	Prob.
LFDI	LFDI	LKSE	200	4.51796	0.0348
	LKSE	LFDI		0.97172	0.3255
LINF	LINF	LKSE	200	4.62934	0.0326
	LKSE	LINF		0.01802	0.8933
LINT	LINT	LKSE	200	4.23909	0.0408
	LKSE	LINT		0.13490	0.7138
LBOP	LBOP	LKSE	200	11.7547	0.0007
	LKSE	LBOP		3.09673	0.08
LEXR	LEXR	LKSE	200	1.10697	0.294
	LKSE	LEXR		0.19155	0.6621
LFDI_LEXR	LFDI_LEXR	LKSE	200	3.35202	0.0068
	LKSE	LFDI_LEXR		5.7922	0.017

Discussion and Conclusion

All selected variables were found to be stationary at the first difference based on the ADF test results. These findings are also consistent with the research of Balagobei & Bandara (2022) and Imran et al. (2010). The primary requirement for cointegration tests is to assess the stationarity level through the first difference, which can be done using the Augmented Dickey-Fuller (ADF) test. The results demonstrated a sustained, favorable, one-way connection between Foreign Direct Investment (FDI) and the KSE-100 index. This outcome validates the previous research by Demir (2019), Tsagkanos et al. (2019), and Rajapakse (2018) indicating that foreign direct investment (FDI) has a beneficial impact on the stock index. In the long term, inflation has a one-way connection and a negative short-term correlation with the KSE-100 index. This finding is supported by previous research undertaken by Okechukwu et al. (2019) and Kwofie & Ansah (2018). The study found that BOP has a statistically significant and unidirectional positive relationship with the KSE-100 index, as previously documented by Ogunlowo & Owoade (2020) and Kisoso (2019). The interest rate has a one-way long-term connection with the KSE-100 index, and a notable adverse correlation with the dependent variable. The results confirm the findings of Demir (2019) and Khalid (2017). In the long term, the exchange rate is not statistically significant on its own, but when a moderator variable is introduced, it shows a one-way long-term association with the KSE-100 index.

Implications of the study and future recommendations

This research is significant for policymakers as it can aid financial managers and treasurers in creating strategies to efficiently allocate funds for investing in the stock market during periods of market instability. This study will facilitate potential corporate and individual investors in determining the optimal timing for purchasing and selling shares. The new empirical data from this study will be beneficial for Pakistani literature that examines the impact of Foreign Direct Investment (FDI) on the stock exchange, with a focus on how it is moderated by the USD exchange rate. The study's future recommendations are as follows:

1. Future studies could explore the impact of oil price moderation on the effects of FDI in a specific PXS business.

2. A future study will analyze the performance of stock exchanges in Pakistan and other countries by adjusting the USD exchange rate.

3. Due to current data constraints, GDP could be included as an independent variable in future research using monthly time series data.

Khawar Abbas: Problem Identification and Model Development,

Muhammad Idrees: Supervision and Drafting

Fahad Laiquat Syed: Literature search, Methodology

Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest in this article's research, authorship, and/or publication.

References

- Abbas, Z., Khan, S., & Rizvi, S. T. (2011). Exchange rates and macroeconomic fundamentals: linear regression and cointegration analysis on emerging Asian Economies. *International Review of Business Research Papers*, 7(3), 250-263.
- Afonso, A., & Reimers, M. (2022). Does the introduction of stock exchange markets boost economic growth in African countries? *Journal of Comparative Economics*, 50(2), 627-640.
- Akbar, M., Iqbal, F., & Noor, F. (2019). Bayesian analysis of dynamic linkages among gold price, stock prices, exchange rate and interest rate in Pakistan. *Resources Policy*, 62, 154-164.
- Alam, I., Mohsin, M., Latif, K., & Zia-ur-Rehman, M. (2020). The Impact of Macroeconomic Factors on Stock Market: An Evidence from China and Pakistan. *NICE Research Journal*, 1-26.
- Asiedu, E. (2002). On the determinants of foreign direct investment to developing countries: Is Africa different? *World Development*, 30(1), 107-119.
- Bagchi, B. (2017). Volatility spillovers between Crude oil price and stock markets: Evidence from BRIC countries. *International Journal of Emerging Markets*, 12(2), 352-365.
- Balagobei, S., & Bandara, D. R. N. K. K. (2022). Impact of Macroeconomic Variables on Stock Market Performance: Evidence from Sri Lanka. *Wayamba Journal of Management*, 13(1).
- Chang, B. H., Meo, M. S., Syed, Q. R., & Abro, Z. (2019). Dynamic analysis of the relationship between stock prices and macroeconomic variables: An empirical study of Pakistan stock exchange. *South Asian Journal of Business Studies*.

- Creswell, J.W. and Creswell, J.D. (2017) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 4th Edition, Sage Publication.
- Demir, C. (2019). Macroeconomic Determinants of stock market fluctuations: The case of BIST-100. *Economies*, 7(1), 01-14.
- Dzomonda, O., Ngwakwe, C. C. (2020). The Link between foreign direct investment and stock exchange value. *Journal of Business Administration & Business Economics*, Vol. 3(39), 38-47.
- Gautam, D. R. (2017). Impact of firm-specific variables on stock price volatility and stock returns of Nepalese Commercial Banks. *International Journal of Research in Business Studies and Management*, 4(6), 33-44.
- Hersugondo, H. (2021). The Effect of Oil Price Shock and Inflation on Stock Returns: A Comparative Study on ASEAN-3. *Jurnal Penelitian Ekonomi dan Bisnis*, 6(1), 28-34.
- Hoque, M.E, Yakob, N.A. (2017). Revisiting stock market development and economic growth nexus: The moderating role of foreign capital inflows and exchange rates. *Journal of Cogent Economics & Finance*, 5(1), 1-17.
- Imran, A., Kashif, U. R., Ayse, K. Y., Muhammad, A. K., & Hasan, A. (2010). Causal relationship between macro-economic indicators and stock exchange prices in Pakistan. *African journal of business management*, 4(3), 312-319.
- Ishaq, M., N. and Malik, F., M. (2022). Role of stock market performance and exchange rate volatility in the inflow of foreign direct investment: Evidence from Pakistan, *Journal of Management*, Vol. 4(1).
- John., Dauda, D. (2022). Effect of Foreign Direct Investment on Capital Market Development in Nigeria, *Bingham University Journal of Accounting and Business*, Vol. 7(1), 344-357.
- Khalid, W. (2017). Effects of Interest Rate and Exchange Rate on the Stock Market Performance of Pakistan: A Cointegration Approach. *Journal of Finance and Economics*, 5(5), 219-232.
- Kisoso, S. (2019). The Effect of macroeconomic variables on stock return volatility in the Nairobi Securities Exchange (NSE) (Doctoral dissertation, Strathmore University).
- Kwofie, C., & Ansah, R. K. (2018). A study of the effect of inflation and exchange rate on stock market returns in Ghana. *International Journal of Mathematics and Mathematical Sciences*.
- Lastrapes, W. (1992). Sources of fluctuations in real and nominal exchange rates. *The Review of Economics and Statistics*, 74(3), 530-539.
- Maqsood, H., Maqsood, M., Yasmin, S., Mehmood, I., Moon, J., & Rho, S. (2022). Analyzing the Stock Exchange Markets of EU Nations: A Case Study of Brexit Social Media Sentiment. *Systems*, 10(2), 24.
- Martineza, P., & Lapena, R. (2015). Interest rate changes and stock returns in Spain: A wavelet analysis. *Business Research Quarterly*, 18(2), 95-110.
- Mukolu, M. O., & Ilugbemi, A. O. (2020). The Relationship between Inflation and Stock Prices: A Case of The Nigeria Stock Exchange Market. *International Journal of Research in Commerce and Management Studies*, 2(1), 166-177.

- Musawa, N., & Mwaanga, C. (2017). The impact of commodity prices, interest rate and exchange rate on stock market performance: Evidence from Zambia. *Journal of Financial Risk Management*, 6(03), 300-313.
- Ngobe, D., & Emenike, K. O. (2020). Relationship between foreign direct investment and stock market development in a small Southern Africa economy. *Jurnal Akuntansi dan Keuangan Indonesia*, 17(2), 4.
- Nijam, H. M., Ismail, S. M. M., & Musthafa, A. M. M. (2015). The impact of macro-economic variables on stock market performance; Evidence from Sri Lanka. *Journal of Emerging Trends in Economics and Management Sciences*, 6(2), 151-157.
- Ogunlowo, D. T., & Owoade, N. L. (2020). The Effects of Trade Openness and Exchange Rate on Stock Market Capitalization Growth in Nigeria. *International Journal of Social Science and Humanities Research*, 3(12), 18-32.
- Okechukwu, I. A., Mbadike, N. S., Geoffrey, U., & Ozurumba, B. A. (2019). Effects of exchange rate, interest rate, and inflation on stock market returns volatility in Nigeria. *International Journal of Management Science and Business Administration*, 5(6), 38-47.
- Onyinyechi, C., & Ekwe, M. (2016). Impact of foreign direct investment (FDI) on the stock market performances in Nigeria (1985-2014). *Applied Finance and Accounting*, 3(1), 36-48.
- Pakistan Economic Survey of Pakistan (2019). Islamabad: Ministry of Finance.
- Raghutla, C., Sampath, T., & Vadivel, A. (2020). Stock prices, inflation, and output in India: An empirical analysis. *Journal of Public Affairs*, 20(3), 1-5.
- Rahman, M. H., & Dilanchiev, A. (2021). Does current account increase the economic growth in Bangladesh? The analysis of GMM technique. *European Online Journal of Natural and Social Sciences*, 10(1), pp-52.
- Rajapakse, R. P. C. R. (2018). The Relationship between the Stock Market and Foreign Direct Investment (FDI) in Sri Lanka-Evidence from VAR and Co-Integration Analysis. *Global Journal of Management and Business Research: B Economics and Commerce*, 18(5).
- Sharif, A. A., & Afshan, S. (2016). Impact of stock market on economic growth of Pakistan. *International Journal of Economics and Empirical Research*, 4(10), 562-570.
- Siddiqui, A., & Iqbal, A. (2020). Pakistan Stock Exchange and Macroeconomic Indicators: A Case Study of KSE 100 Index. *Karachi University Business Research Journal*, 1(1), 25-37.
- Sreenu, N., Rao, K. S., & Naik, S. (2022). Impact of exchange rate and inflation rate on stock market return volatility in India. *Academy of Marketing Studies Journal*, 26, 1-11.
- Sultani, A. H., & Faisal, U. (2022). Determinants of Balance of Payment: A Comparative Review of Developing and Least Developed Countries. *IJRAR-International Journal of Research and Analytical Reviews (IJRAR)*, 9(2), 18-36.
- Tarza Sokpo, J., Iorember, P. T., & Usar, T. (2017). Inflation and stock market returns volatility: Evidence from the Nigerian stock exchange 1995Q1-2016Q4: An E-GARCH approach. *International Journal of Econometrics and Financial Management*, 5(2).

- Tsagkanos, A., Siriopoulos, C. and Vartholomatou, K. (2019). Foreign direct investment and stock market development: Evidence from a “new” emerging market, *Journal of Economic Studies*, Vol. 46(1), 55-70.
- Usman, M. and Siddiqui, DA (2019). The Effect of Oil Price on Stock Market Returns with Moderating Effect of Foreign Direct Investment & Foreign Portfolio Investment: Evidence from Pakistan Stock Market. *Asian Journal of Economic Modelling*, 7(2), 45-61.
- Verma, R.K. and Bansal, R. (2021). Impact of macroeconomic variables on the performance of stock exchange: a systematic review, *International Journal of Emerging Markets*, Vol. 16(7), 1291-1329.
- Wang, X. (2021). Effect of Foreign direct investment on stock market performance in USA, *Journal of Advances in Economics, Business and Management Research*, Vol. 185, 304-311.
- Yang, B. Z., & Zeng, T. (2014). A note on the real currency exchange rate: Definitions and implications. *Journal of International Business and Economics*, 2(4), 45-55.
- Zeeshan, A. (2022). The Impact of Macro-economic Factors on Equity Market Return of Pakistan Stock Exchange. *International Journal of Business & Administrative Studies*, 10(2), pp-91-10.