

Do Shocks of Macroeconomic Variables Affect Stock Market? A Comparative Study on Asia-Pacific Region

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Abstract

Research purpose: This empirical study aims to portray exchange rate and inflation shocks and its impact on stock market of nine Asia-Pacific countries, which include Bangladesh, India, Indonesia, China, Malaysia, Philippines, Singapore, South Korea, and Thailand.

Design/methodology/approach: Time series econometric models are undertaken by utilizing the secondary data from 2003 to 2022, where the stationarity condition of each variable follows the test named Augmented Dickey-Fuller (ADF). To underscore this relationship, the Johansen Cointegration Test has been applied, and based on the cointegration results, the type of the Vector Autoregression model is confirmed.

Findings: Applying unified econometric methods to compare the selected countries, different scenarios have been noticed. Key outputs can be highlighted as China has a long-term relationship and India has a short-term relationship between the exchange rate, inflation, and the stock market.

Originality/value: Inconclusive findings in the existing empirical research have been noticed in cases related to the comparative exploration of interactions among exchange rate, inflation, and stock market in selected countries of the Asia-Pacific region. Thus, findings of the present study should indicate new insights.

Practical implications: A growing body of evidence suggests that fluctuations in the exchange rate and inflation affect the stock market. Hence, empirical findings will inform investment decisions for various stakeholders in the Asia-Pacific region.

Research limitations: Interactions among the selected variables are yet to be understood since the results of the study do not express a typical regional pattern. Further research can be conducted by including more monetary dynamics.

Keywords: Stock market, Exchange rate, Inflation, Vector autoregression, Cointegration

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1. Introduction

Macroeconomic variables significantly influence capital markets, particularly stock exchanges. Numerous global studies (e.g., Chang et al., 2020; Nyasha & Odhiambo, 2018; Jan & Khan, 2018) have elucidated the relationship between stock markets and the changing factors of the macroeconomy. Considering the shocks to the macroeconomic variables, the exchange rate and inflation are essential for analyzing the stock market since these influence corporate investment policies and ultimately the rate of return of securities (Mishkin, 1996). Different factors (for instance, net capital flow, market stability, risk level) affecting the stock market are explained in light of the shocks to the exchange rate and inflation (Chen et al., 1986). Nisha (2016) and Islam et al. (2020) have identified macroeconomic variables, such as the exchange rate, as a critical element for analyzing the rate of return in the stock market. However, existing research has considered variables such as inflation and interest rates, often yielding inconclusive results (Chowdhury et al., 2006; Muhammad & Rasheed, 2002). Economic theories suggest that rising interest rates can lead to currency depreciation, reduced foreign investment, and increased inflation, which in turn influence exports and the money supply (Khan & Ullah, 2015). Despite these insights, several questions remain about the nature of interaction among the indices of the stock market, exchange rate, and inflation, particularly in a comparative context within the stock markets of the Asia-Pacific region. Dornbusch and Fischer (1980) noted that several existing studies focus on individual countries. In contrast, Phylaktis and Ravazzolo (2005) indicated that comparative analyses depicting the interactions among variables for the emerging economies of the Asia-Pacific region are limited. Global interest in trade and finance among the countries of the Asia-Pacific region (Asian Development Bank, 2020) underscores the importance of analyzing shocks in exchange rates and inflation, as well as their impact on the stock market in the region.

This study provided empirical evidence for stock market where it has been focused on the change causes from the shock to the two selected variables- exchange rate and inflation. Nine developing countries of the Asia-Pacific region have been considered for examining the case. These countries are, namely, Bangladesh, India, Indonesia, China, the Philippines, Singapore, Malaysia, South Korea, and Thailand. In the finance literature, studies such as Chowdhury et al. (2006) and Rahman and Uddin (2009) showed that the exchange rate does not influence the stock market much. Although others (for example, Islam et al., 2020; Muhammad & Rasheed, 2002) found both have a significant relationship. Thus, the importance of conducting this empirical study cannot be denied. Furthermore, this study is expected to add value in the literature by presenting the comparative nature of the interactions among the macrovariables concerning exchange rate, inflation, and stock market due to the varying economic nature (Beirne et al., 2009) and different degrees of market structure (Kim & Singal, 2000) in the countries of the Asia-Pacific region.

Several time-series econometric models, for instance, the VAR (Vector Autoregression) technique, the IRF (Impulse Response Function), and the FEVD (Forecast Error Variance Decomposition) method, are chosen to be tested. IRF and FEVD present how shocks to one variable influence its own future behavior and the behavior of other variables,

showing dynamic interactions and the contribution of each shock within the system (Asmy et al., 2009). These econometric models have been applied in several other studies as well (for example, Barakat et al., 2016; Bhattacharya & Mukherjee, 2005; Hasan & Javed, 2009). Specifically, this study aimed to address the following research question: *How do the shocks of exchange rate and inflation influence the stock market of developing economies of the Asia-Pacific region in both the short-run and long-run?*

Time series data from 2003 to 2022, collected annually, were sourced from the World Bank (WB) and the World Federation of Exchanges (WFE) as secondary data to conduct this analysis.

Stationarity diagnostic test model ADF (Augmented Dickey-Fuller) test checks spuriousness of regression; thus, the ADF test has been applied first to check the stationarity condition of the dataset for the selected econometric models. The broad stock index of stock market for each of the selected country has been chosen as proxy for stock market whilst this index basically presents a market price index value as recorded in the WFE. Data for the variables exchange rate and inflation have been collected from WB where the first one represents the annual average rate of local currency for each of the selected countries against the U.S. dollar. However, the source of the data for exchange rate clarifies that the national authority of each country determines the official exchange rate as per the legally sanctioned exchange market. Additionally, the second one, inflation, presents year-wise change that occurs in the Consumer Price Index (CPI) in percentage form, for an individual country.

Although the study offers valuable insights into how inflation and exchange rates affect stock exchanges, it is considered that selecting variables poses limitations. Expanding the scope to include additional macroeconomic variables could provide a more comprehensive understanding; however, practical constraints, such as a limited sample size, restrict such exploration. This paper begins with an introduction, and it will then go on to a literature review as the second section, constructing an econometric model in the third section, findings of data analysis in the fourth section, and a conclusion follows in the last section.

2. Literature Review

The interaction among different macroeconomic variables and their impact on stock market emerged in various financial theories. Early examples of research in finance literature on the topic have been inspired by two prominent theories: the Efficient Market Hypothesis (EMH) and the Arbitrage Pricing Theory (APT), as proposed by Fama (1970) and Ross (1976), respectively. Both theories emphasize evaluating the impact of macroeconomic factors on determining security price, though the magnitude of this reflection varies across different economic changes. This changing nature of the variables has also been highlighted in a recent study conducted by Phylaktis and Ravazzolo (2005).

In recent years, Le et al. (2024) conducted a study on changes in macro-financial indicators in Asia-Pacific economies, where findings revealed that investment dominated in US currency affects asset prices and inflation due to the market-driven shocks. Bonga-

Bonga and Mpoha (2024) expressed that exchange rate exposure is taken into consideration in both developed countries like the US and emerging economies like South Africa. Another recent study, by Chancharat and Suwannapak (2024), showed that the exchange rate influences the stock market in several countries, such as Indonesia, Singapore, China, and India, where the cointegration method of both linear and non-linear augmented autoregressive distributed lag (ARDL) model was followed. However, by applying a non-linear ARDL model, Sia et al. (2024) explained that the exchange rate positively influences the Indonesian stock market, but there is no asymmetric effect for inflation. Conversely, Purnamasari et al. (2025) applied multiple regression and explained that inflation has a positive and significant impact on the stock market, while the impact of the exchange rate is also positive but not significant. Moreover, Zhang (2025) analyzed Chinese stock market where study revealed exchange rate and stock market are positively correlated. These indicate that macro variables affect stock market but the findings are not conclusive in recent years.

In addition, several studies such as, Chandrashekar et al. (2018), Chowdhury and Sharmin (2013), and Yartey (2010) empirically examined the interactions of several macroeconomic variables with stock market where the findings are also equivocal. For instance, Chandrashekar et al. (2018) identified a long-term relationship between stock markets, inflation, and exchange rates; Chowdhury and Sharmin (2013) observed that the impact of economic shocks differs by country, with contradictory empirical findings as per exchange rate theory; Yartey (2010) found a positive but statistically insignificant effect of inflation on stock markets. Hence, following these equivocal findings, the importance of conducting this study is justified.

Most of the existing literature applied econometric models to examine the relationship among macroeconomic variables for instance, Chandrashekar et al. (2018) analyzed monthly data using panel econometric techniques. The results of the study indicate that macroeconomic variables, such as inflation, exchange rates, and stock markets, make a considerable contribution to paving the way for economic development. Specifically, stock prices can be positively related to exchange rates, while having a negative relationship with inflation. On the contrary to this, using a multiple regression model, based on the empirical evidence, Al-Abdallah and Aljarayesh (2017) explained that the stock market might not have any relation with the exchange rate, whereas a relation can exist with inflation.

In the context of Bangladesh, evidence for the influence of exchange rate and inflation on stock market is mixed. For example, Hasan and Sharif (2019) summarized an empirically positive relationship between exchange rate and stock market whereas negative interaction found for inflation and stock market, which has been examined for stock market of Bangladesh. Their study also expressed that unidirectional causality exists towards stock market, from the variables inflation and exchange rate. Whereas Khan and Yousuf (2013) explained that the exchange rate has a negative influence on the stock market of Bangladesh. Additionally, study revealed insignificant interaction between inflation and stock market. Moreover, they discussed how an empirical study of the stock

market, based on the shocks to macroeconomic variables, explains the behavior of the stock market in a small proportion, which prevails in the long run. Applying econometric models such as, cointegration and causality techniques, Afzal and Hossain (2011) investigated causal interaction among stock market and several other variables from macroeconomy including exchange rate and inflation, to analyze Bangladeshi stock market. Findings highlight that the selected variables are cointegrated with stock exchange and indicating relationship in long-run. Causality from the stock market towards the exchange rate (in one direction) is found in the short run, while causality from the stock market to inflation is noticed in the long run. Collectively, existing findings for topics related to the interaction among variables taken from macroeconomy; specifically for stock market of, inflation, and exchange rate; are not conclusive. Furthermore, to date, there has no convincing empirical evidence in Bangladesh for identifying the relationship among the macro variables exchange rate, inflation, and stock market, specifically in comparison with different countries from Asia-Pacific region, by applying the selected econometric techniques altogether.

Theoretically, it is explained by Madura (2012) that the increasing trend in inflation leads to increase the exchange rate which can trace a negative influence on the value of a domestic asset such as, stock price. Dornbusch and Fischer (1980) referred that depreciation in the value of domestic currency put the export oriented companies in a good position thereby positively influences stock market through boosting stock price. This occurs because it helps grow market share amid competition at a decreased cost for importers (Dornbusch & Fischer, 1980). Thus, it is hypothesized that the macroeconomic variable inflation negatively relates to stock market and exchange rate positively relates to stock market, although findings of the existing empirical studies are inconclusive. Moreover, the findings may vary due to the differences of companies (Phylaktis & Ravazzolo, 2005) and such differences highlight the importance of conducting a comparative analysis of the impact of exchange rate, inflation, and stock market in Asia-Pacific. Therefore, this study fill a gap in the finance literature by providing new insights into the interaction among selected variables exchange rate, inflation, and stock market from macroeconomy for emerging economies of the Asia-Pacific region.

3. Constructing Econometric Model

To avoid the non-stationary problem of time series data, one of the most popular tests, named the Augmented Dickey-Fuller (ADF) tests, were first applied. After ensuring the stationarity of dataset, this research set out several econometric models step by step. To specify the VAR approach, Johansen Cointegration test was conducted in the beginning. And then, following the VAR model, IRF and FEVD were conducted applying the EViews 12 software. These techniques were also followed by others researchers (for example, Harjito & McGowan, 2007; Hasan & Javed, 2009; Khan & Yousuf, 2013; Baffour, 2017). Basic ADF model with constant (ϕ) and trend (Kt) follows (Gujrati et al., 2012);

$$\Delta Q_t = \phi + \kappa t + \nu Q_{t-1} + \sum_{i=1}^k \omega_i \Delta Q_{t-i} + \varepsilon_t \quad \dots\dots\dots(1)$$

In the equation (1), error term indicates ε_t ; lagged differences indicate $\Delta Q_{t-i} = (Q_{t-i} - Q_{t-i+1})$; and the unbiased coefficient estimate for the lagged value Q_{t-i} indicates v .

Appropriate lag length for the ADF method test was automatically selected by the software (EViews 12) at 5% level of significance. If findings ensure nonstationarity of the data set, then the variables were converted into stationary by taking the required differences or integrated (I) and (II) of order.

In this study, the methodology followed the Johansen cointegration test in order to identify cointegrating vectors for selected nonstationary time series variables in the long run. Cointegration shows that a linear combination of variables can be stationary, although the time series of these variables are individually nonstationary. Specifically, the output of the trace statistic and the maximum eigenvalue of the unrestricted cointegration rank test techniques are used. All variables appear as endogenous in these tests. Moreover, Brooks (2008) explained that test statistic of trace test follows joint test where it is hypothesized that there are less than or equal top cointegrating vector against the alternative with more than p cointegrating vectors. Author added, maximum eigenvalue test statistic is a separate test where null hypothesis states maximum number of cointegrating vector exist. The alternative hypothesis states that $p + 1$ number of cointegrating vectors exist on each eigenvalue used in the test statistics are taken from the VAR model. Following a linear deterministic trend (N), the equations of the trace statistic and the maximum eigenvalue were applied to run the Johansen cointegration test for selected variables at 5% level of significance.

$$\lambda \text{ trace}(p) = -N \sum_{i=p+1}^k \ln(1-\lambda_i) \dots \dots \dots (2)$$

$$\lambda \text{ max}(p, p+1) = -N(1-\lambda_{p+1}) \dots \dots \dots (3)$$

Here, p presents the number of cointegrating vector for null hypothesis while λ stands for the estimated eigenvalue in its order.

Upon output of identifying cointegration, the restricted form of the VAR method (which is addressed as VECM) is utilized by including an Error Correction Term (ECT) in the VAR (Gujarati et al., 2012). Conversely, if output does not indicate any cointegration then an unrestricted VAR model is applied. In the equation (4), k presents number of lagged in VAR model has been shown for certain endogenous dynamic Y_t .

$$Y_t = C + \sum_{i=1}^k \psi_i Y_{t-i} + u_t \dots \dots \dots (4)$$

In the equation (5), ECT adjusted in VECM with a coefficient (Ω) which follows;

$$Y_t = C + \sum_{i=1}^k \psi_i Y_{t-i} + \Omega ECT_{t-1} + u_t \dots \dots \dots (5)$$

Where C is a constant vector; ψ_i are matrices; Y_{t-i} is the vector of the endogenous variable; u_t is a vector of shocks.

Finally, to examine shocks to exchange rate as well as to inflation and their influence on stock market, the study applied IR Fand FEVD tests using Cholesky decomposition method. These derived from the specified VAR techniques (whether VAR or VECM). Additionally, to assess validity of VAR estimates from system equation model, several diagnostic tests (such as wald test) were conducted at a 5% significance level.

4. Findings

Following equation 1, table 1 displays the output of the ADF test for stationarity across various variables related to stock market indices (denoted as LogMidx) and other macroeconomic factors (LogEx for exchange rates, LogInf for inflation rates) for different countries. To check stationarity of time series, the ADF test is utilized, where the null hypothesis follows- selected variables have a unit root, implying the data series are not stationary. From table 1, it can be expressed that the log values found at the level do not follow stationarity for all variables. Tests have been conducted at 5% level of significance which implies that null hypothesis concerning stationarity of selected variables is rejected if p value is less than 0.05. The results of ADF reveal that variables across the countries exhibit a mixed order of integration. In Bangladesh, exchange rate and inflation are stationary at level, while stock market indicators become stationary after first differencing. For China, India, Indonesia, Malaysia, Singapore, South Korea, Thailand, and Philippines, exchange rates require second differencing, while inflation and stock market indicators are generally stationary at first difference. In India, South Korea, and Thailand, similar patterns emerge, with inflation requiring second differencing. The stationarity of stock market indices varies across countries. It is stationary at level for India and South Korea. For Bangladesh, Indonesia, Malaysia, Philippines, and Thailand, stationary data can be found after the first difference, thus, did not follow stationarity at level. In China and Singapore, it requires the second difference to achieve stationarity.

Table 1: ADF test result (following constant, linear trend)

Variables	P value (level)	P value (1 st difference)	P value (2 nd difference)
LogExBangladesh	0.0141		
LogInfBangladesh	0.0181		
LogMidxBangladesh	0.4623	0.0044	
LogExChina	0.2890	0.5894	0.0001
LogInfChina	0.2204	0.0021	
LogMidxChina	0.1469	0.0005	
LogExIndia	0.1203	0.7004	0.0000
LogInfIndia	0.2694	0.5907	0.0000
LogMidxIndia	0.0020		
LogExIndonesia	0.2089	0.1736	0.0002
LogInfIndonesia	0.0156		
LogMidxIndonesia	0.5712	0.0010	

Variables	P value (level)	P value (1 st difference)	P value (2 nd difference)
LogExMalaysia	0.5408	0.1572	0.0003
LogInfMalaysia	0.0305		
LogMidxMalaysia	0.8366	0.0459	
LogExPhilippines	0.6067	0.1892	0.001
LogInfPhilippines	0.1054	0.0021	
LogMidxPhilippines	1.0000	0.0002	
LogExSingapore	0.7620	0.0947	0.0001
LogInfSingapore	0.0694	0.0004	
LogMidxSingapore	0.6688	0.1265	0.0000
LogExSKorea	0.0622	0.3249	0.0011
LogInfSKorea	0.2165	0.0589	0.0000
LogMidxSKorea	0.0062		
LogExThailand	0.7109	0.3300	0.0001
LogInfThailand	0.1154	0.6259	0.0309
LogMidxThailand	0.7527	0.0001	

Source: Author's calculation

Following equation 2 of the Trace test for Johansen Cointegration, table 2 reveals varying levels of cointegration among the countries analyzed. Bangladesh, China, and Indonesia show two cointegrating equations, while India and South Korea have one. Malaysia and the Philippines exhibit three cointegrating equations, indicating strong long-term relationships among variables. Conversely, Singapore and Thailand show no cointegration, suggesting the absence of a long-run relationship among selected variables.

Table 2: Output for Trace Test as per Johansen Cointegration Test

Country	Lag Value	Hypothesis (No cointegration) P value	Hypothesis (At most 1 cointegration) P value	Hypothesis (At most 2 cointegrations) P value	Results
Bangladesh	7	0.0000	0.0225	0.8594	2 cointegrating
China	5	0.0000	0.0231	0.2722	2 cointegrating
India	6	0.0004	0.0802	0.9744	1 cointegrating
Indonesia	6	0.0000	0.0071	0.5148	2 cointegrating
Malaysia	5	0.0000	0.0122	0.0376	3 cointegrating
Philippines	7	0.0000	0.0001	0.0147	3 cointegrating
Singapore	1	0.4261	0.9228	0.4275	No cointegration
South Korea	4	0.0066	0.2937	0.2592	1 cointegrating
Thailand	2	0.1322	0.1779	0.0228	No cointegration

Source: Author's calculation

Furthermore, table 3 illustrates the output of three null hypotheses regarding no cointegration; at most one cointegration; and at most two cointegrations by following maximum eigen test statistics (equation 3 for unrestricted cointegration rank test). However, output of maximum eigenvalue approach align closely with the trace test, with only minor differences. Both methods identify two cointegrating equations for Bangladesh, China, and Indonesia, and one for India and South Korea. Malaysia and the Philippines consistently show three cointegrating equations, while Singapore and Thailand show no cointegration under either method. These similarities suggest robust results across both test types, with slight variations in p-values confirming the same cointegration patterns.

Table 3: Output for Maximum Eigenvalue Test as per Johansen Cointegration Test

Country	Lag	Hypothesis (No cointegration)	Hypothesis (At most 1 cointegration)	Hypothesis (At most 2 cointegration)	Results
		P value	P value	P value	
Bangladesh	7	0.0004	0.0137	0.8594	2 cointegrating
China	5	0.0000	0.0221	0.2722	2 cointegrating
India	6	0.0016	0.0531	0.9744	1 cointegrating
Indonesia	6	0.0000	0.0047	0.5148	2 cointegrating
Malaysia	5	0.0003	0.0369	0.0376	3 cointegrating
Philippines	7	0.0000	0.0003	0.0147	3 cointegrating
Singapore	1	0.2132	0.9385	0.4275	No cointegration
South Korea	4	0.0066	0.3245	0.2592	1 cointegrating
Thailand	2	0.3411	0.5624	0.0228	No cointegration

Source: Author's calculation

Result indicate cointegration from tests which determine exact vector autoregression model (whether VEC or VECM) which has been addressed in the equation number five (5). To be precise, the output cointegration indicates the interactions among the variables in long-run as well as short-run. Table 4 (appendix) exhibits the output of the system equations model of VEC estimates for the individual country. In the VEC model, the existence of joint cointegration between the exchange rate and inflation toward the stock market has been identified. Moreover, following equation 4, the VAR model has also been shown in Table 4 (appendix) for the countries that do not have any long-run cointegration. Statistical evidence from the VAR, VEC, and system equation models shows country-specific dynamics and their interactions among stock exchange, exchange rate, and inflation. Singapore and Thailand use the VAR model, focusing on lagged values of stock index, exchange rate, and inflation following simpler structures. In contrast, Bangladesh, China, India, Indonesia, Malaysia, and the Philippines employ the VEC model, which accounts for both long-term cointegrating relationships and short-term dynamics involving lagged values of stock indices, exchange rates, and inflation. These models reveal complex interactions, with the influence of exchange rates and inflation varying across countries.

From table 4, the VEC Estimates from the System Equation Model indicate that only China exhibits significant long-run causality, with both coefficients showing p-values below 0.05, confirming a meaningful relationship between its variables. In contrast, countries like Bangladesh, India, Indonesia, Malaysia, and the Philippines show the existence of long-run causality, but none of these relationships are statistically significant, with high p-values. Singapore, South Korea, and Thailand do not display any cointegration, meaning no statistical evidence for existing causality in the long run in these countries of the Asia-Pacific region.

Here, C(1) specifies a key coefficient for the cointegrating model. If the value of C(1) is found to be negative and statistically significant, then long-run causality from selected explanatory variables (exchange rate and inflation) toward the target variable (stock market) is identified (Gujarati et al., 2012).

Table 4: Output of VEC Estimates from System Equation Model

Country		Value of Coefficient	Std. error	t-Statistic	Prob.	Result: long-run causality
Bangladesh	C(1)	-0.144696	0.481816	-0.300313	0.7727	Exist (not significant)
	C(2)	-0.479496	4.750970	-0.100926	0.9224	
China	C(1)	-1.116568	0.393520	-2.837387	0.0219	Exist
	C(2)	-22.13984	6.540707	-3.384930	0.0096	
India	C(1)	-0.061319	0.038630	-1.587349	0.1407	Exist (not significant)
Indonesia	C(1)	-0.094418	0.135416	-0.697241	0.5015	Exist (not significant)
	C(2)	-0.655420	4.308966	-0.152106	0.8821	
Malaysia	C(1)	-0.076899	0.056283	-1.366297	0.2050	Exist (not significant)
	C(2)	-4.549189	3.320109	-1.370193	0.2038	
Philippines	C(1)	-0.136985	0.511401	-0.267861	0.7978	Exist (not significant)
	C(2)	-4.769649	16.41072	-0.290642	0.7811	
Singapore		No cointegration				Do not exist
South Korea	C(1)	0.017862	0.052067	0.343063	0.7353	Do not exist
Thailand		No cointegration				Do not exist

Source: Author's calculation

The results from the Wald test of the VEC Estimates System Equation Model (Table 5) show that short-run causality does not exist for most countries, as indicated by high p-values implying null hypotheses cannot be rejected (no causality). Specifically, countries like Bangladesh, China, Indonesia, Malaysia, the Philippines, Singapore, South Korea, and Thailand show no significant short-run causality. However, India stands out, with significant evidence of short-run causality for both the exchange rate (p value = 0.0004) and inflation (p value = 0.0095), indicating meaningful short-run relationships.

Table 5: Output of Wald test for VEC Estimates of System Equation Model

Country		Hypothesis	Prob.	Result: short-run causality
Bangladesh	Ex	$C(10) = C(11) = C(12) = C(13) = C(14) = C(15) = C(16) = 0$	0.2835	Do not exist
	Inf	$C(17) = C(18) = C(19) = C(20) = C(21) = C(22) = C(23) = 0$	0.7791	Do not exist
China	Ex	$C(8) = C(9) = C(10) = C(11) = C(12) = 0$	0.1573	Do not exist
	Inf	$C(13) = C(14) = C(15) = C(16) = C(17) = 0$	0.1222	Do not exist
India	Ex	$C(8) = C(9) = C(10) = C(11) = C(12) = C(13) = 0$	0.0004	Exist
	Inf	$C(14) = C(15) = C(16) = C(17) = C(18) = C(19) = 0$	0.0095	Exist
Indonesia	Ex	$C(9) = C(10) = C(11) = C(12) = C(13) = C(14) = 0$	0.7031	Do not exist
	Inf	$C(15) = C(16) = C(17) = C(18) = C(19) = C(20) = 0$	0.1653	Do not exist
Malaysia	Ex	$C(8) = C(9) = C(10) = C(11) = C(12) = 0$	0.7101	Do not exist
	Inf	$C(13) = C(14) = C(15) = C(16) = C(17) = 0$	0.3178	Do not exist
Philippines	Ex	$C(10) = C(11) = C(12) = C(13) = C(14) = C(15) = C(16) = 0$	0.3836	Do not exist
	Inf	$C(17) = C(18) = C(19) = C(20) = C(21) = C(22) = C(23) = 0$	0.9790	Do not exist
Singapore	Ex	$C(2) = 0$	0.8569	Do not exist
	Inf	$C(3) = 0$	0.7718	Do not exist
South Korea	Ex	$C(6) = C(7) = C(8) = C(9) = 0$	0.0692	Do not exist
	Inf	$C(10) = C(11) = C(12) = C(13) = 0$	0.5380	Do not exist
Thailand	Ex	$C(3) = C(4) = 0$	0.2713	Do not exist
	Inf	$C(5) = C(6) = 0$	0.9718	Do not exist

Source: Author's calculation

To elucidate how the shocks to the exchange rate and inflation influence the stock market, econometric models IRF and FEVD were analyzed using the Cholesky decomposition method.

Based on earlier results, Table 4 shows statistically significant long-run causality only for China, and Table 5 highlights that only India has significant short-run causality; therefore, IRF and FEVD are presented only for these two countries, as shocks from others were not statistically significant. Figure 1 and Figure 2 shows long run relation in China whereas, figure 3 and 4 represents short run relation in India for exchange rate, inflation, and stock market.

Figure 1: Impulse response for the selected variables in China

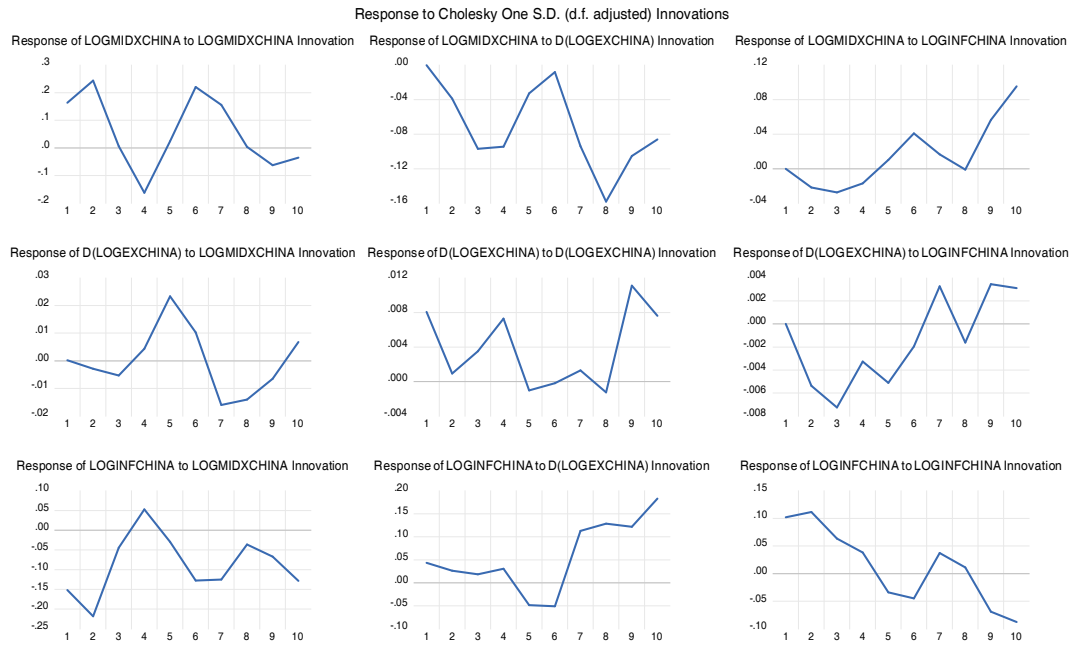


Figure 2: Variance decomposition for the selected variables in China

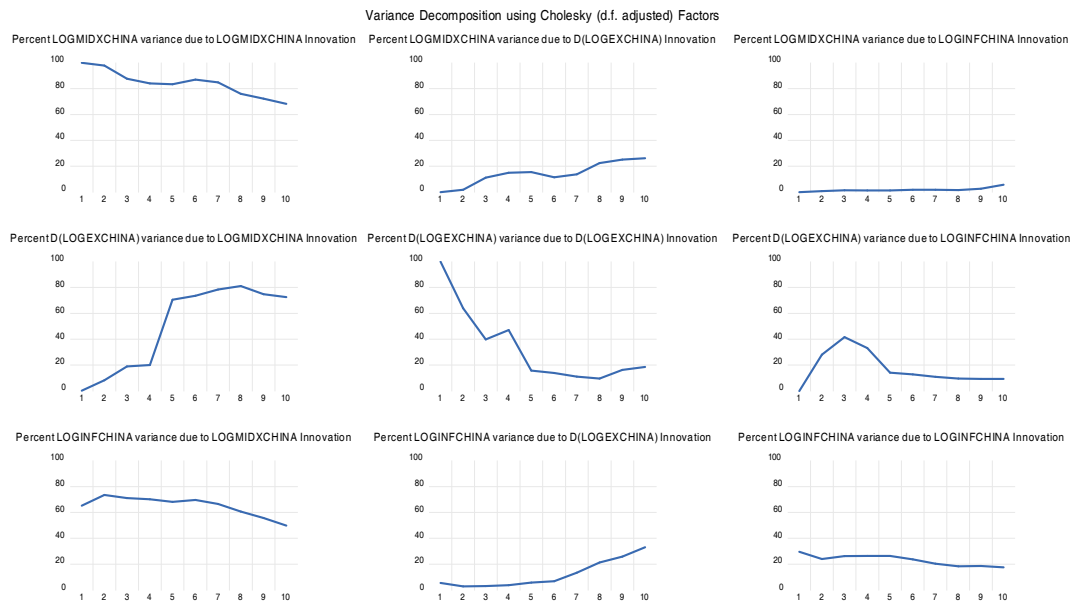


Figure 3: Impulse response for the selected variables in India

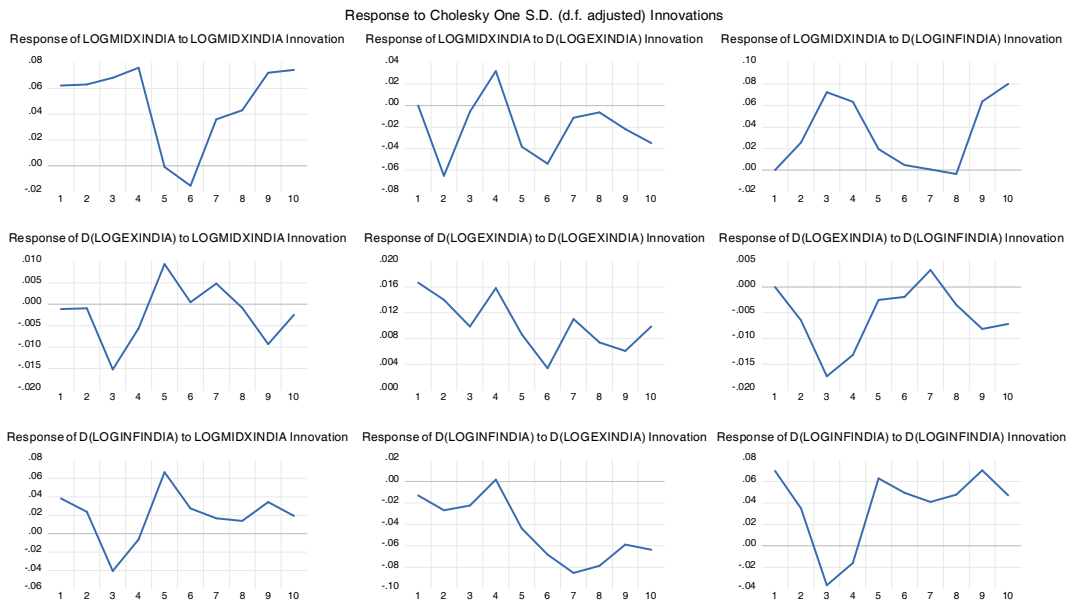
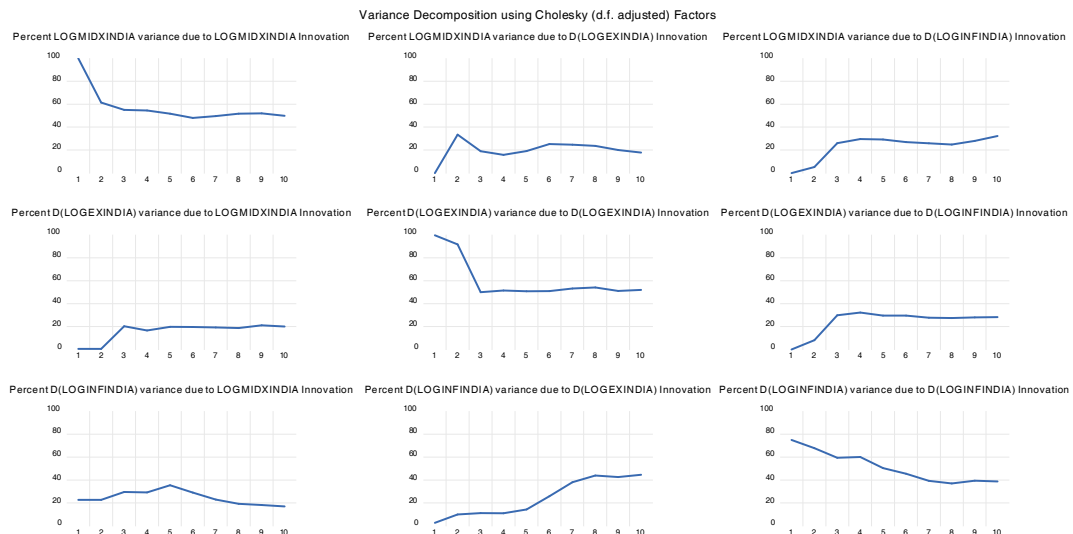


Figure 4: Variance decomposition for the selected variables in India



The result outlines an analysis of the interactions of the selected macroeconomic variables. Precisely, shocks to the exchange rate and inflation and their impact on the stock market were analyzed by applying two key econometric tools: the IRF and the FEVD, with the Cholesky decomposition method for identifying structural shocks. The IRF measures the

stock market's response to a one-time shock in inflation, exchange rates, and the stock market by itself over time. Moreover, the magnitude of shocks to the forecast error variance of stock market has been depicted by the assessment of FEVD. Figures 1 and 2 illustrate the long-term relationships in China, showing the effects of these shocks, whereas Figures 3 and 4 focus on the short-term relationships in India, capturing the immediate effects of similar shocks to the selected variables and its influence on stock market.

5. Conclusion

Unified econometric models have been used in this empirical study to examine the case for all of the selected countries with a view to testing the duration of shocks to the selected variables and their influence on the stock market. For validating the robustness of applied econometric models, additional diagnostic tests have also been conducted to meet the conditions. The nature of the interaction among the exchange rate, inflation, and the stock market for Asia-Pacific countries can be revealed, according to the evidence presented in this research. The prime output emerges from this study is that selected macroeconomic variables do not significantly influence the stock market indices of the Asia-Pacific countries. However, long-run relations in China and short-run relations in India have been found. This variation in results supports other existing studies as well. For instance, Chowdhury et al. (2006) reported no relationship between the stock market and exchange rate, but identified one-way causality from the stock market to inflation; similarly, Rahman and Uddin (2009) found no association between the stock market and exchange rate, whereas the study of Islam et al. (2020) revealed the existence of significant relationship. Similar findings are also observed in another study of Muhammad and Rasheed (2002).

Investment in the stock market is a vital element for the economic development of any country; therefore, the government continuously makes efforts to strengthen the stock market's structure. Therefore, the present findings are relevant to the stakeholders involved in the stock market. Among various stakeholders, makers, including the government, general investors, institutional investors, and policy-makers, the study's comparative evidence suggests that they are expected to benefit. The key strength of current research is to analyze the comparative scenario of datasets for exchange rate, inflation, and stock market from different regions of Asia-Pacific, including Bangladesh, for a long time series, where the consequences of the relationship were empirically tested based on yearly data from 2003 to 2022. Study limitations prevent an overall conclusion about the joint impact of the interactions among these selected variables. Thus, future research is recommended to be conducted, taking into consideration other factors such as equity inflows, different dynamics of monetary policy, and structural changes for each country.

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