

Co-movements between Stock Markets and Exchange Rates: Empirical Evidence from the G20 Nations

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Abstract

This study investigates the relationship between stock markets and exchange rate markets in the short and long run for G20 countries by analyzing weekly stock market returns and exchange rates from January 2008 to March 2023. This study uses the CD test for testing cross-sectional dependence in all the panel series, and unit root tests are employed to verify the stationarity properties of variables. Based on the above results, the panel ARDL model and PMG estimator are used to establish the long-run and short-run cointegrating relation between the stock and exchange rate markets. We have found a stable positive relationship between the stock markets and the exchange rate of G20 countries in the long run, but a negative association was found in the short run. These findings highlight the intricate dynamics between stock markets and exchange rates and the interconnectedness of G20 nations. The robust positive long-term correlation and the short-term negative association exhibit the differential impacts of macroeconomic variables over varying time horizons.

Keywords: Stock prices, Exchange rates, Panel data model, Portfolio diversifications, G20 Countries.

JEL Codes: E44, C23, F31

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1 Introduction

A vibrant and empowered international financial system has been one of the most positive impacts of globalization in the past few decades. Corporate foreign investments in securities, international trade, the functioning of central banks, and multilateral agreements between

government and private companies are linked to the exchange rates of currencies. Rapidly growing equity markets at the global level are motivated by the increased demand and supply of currencies. The variations in exchange rates have an impact on the equity markets of a country and its economy. The investors (including institutions, regulatory bodies, multinationals, and the like) in international business evaluate the performance of portfolio investments, assess net loss, and manage their assets based on volatility in exchange rates. The interdependence between stock markets and exchange rates has significantly increased across international financial markets, emphasizing the significance of market integration and exchange rates as essential prerequisites for policymakers, investors, and economists. This research explores these dynamics within the context of the G20 countries, a group representing the world's most significant and progressing economies. The critical interactions of stock markets and exchange rates across borders have intense repercussions for economic stability and investment strategies across nations and continents. These relationships are contemplated to assist in mitigating economy-specific systemic risks post-historical financial crisis.

The selection of G20 countries for this study is established on their extensive contribution to global economic activity and their varied economic structures. G20 comprises of both developed and emerging markets, providing a comprehensive perspective on global financial integration, economic policies and regulatory environments. Regardless of widespread researches done on market integration and exchange rates, majority of them are limited by region and specific crises. The present study has been thoroughly developed on the performance of equity markets and exchange rate markets of G20 countries. Section 2 provides a review of past researches on assessing the relationships between stock markets and exchange rates within various countries. Section 3 details the data and advanced panel data econometric techniques that are employed. Lastly, Section 4 and Section 5 discuss results and conclusion. This study seeks to provide valuable insights on the broader address on financial stability and integration through an empirical evidence and analytical findings to support effective economic policymaking.

2 Literature Review

This section presents a synthesis of the past researches related to this area. The selected studies provide diverse perspectives on co-integration and long-term dependencies, volatility and spill over effects, macroeconomic and international influences, co-movements and regional focus and market dynamics.

As far as the G20 countries are concerned, Co-movement and the effect of spill over among G20 stock markets have been investigated by (Chai et al., 2020) using a new method of independent component analysis and finds the existence of co-movements and the spill over effect in each group based on volatility. (Naeem et al., 2024) have examined the simultaneous return transmission mechanism across the G20 stock market returns (SMR) with a novel tool R^2 connectedness and found that stock markets in G20 markets have varying degrees of interconnectedness by the primary shocks transmitter of US. Looking at the research done in India on the same topic, (Agarwal et al., 2014) analysed the time series data and identifies Indian stock price movement is considerably affected by both the macroeconomic and the International factors. (Jacob et al., 2022) used the Johansen co-integration approach to test the possible long-term and short-term relationships that existed between the Indian equity market indexes and certain Asian and African nations. "They conclude that NSE Nifty and other key stock exchange indexes in Asian and African markets have a long-term relationship" (Jacob et al., 2022). Further, how Indian equity market returns are affected by the role of domestic and

foreign institutional investors is examined by (Mukherjee & Roy, 2016). The study reveals that Indian SMR have been significantly influenced by the institutional investors. And in one study of Pakistan's equity market with India, China, Japan, UK, USA, Taiwan, Malaysia, and Singapore equity markets by (Ali et al., 2011) found no significant co-movement in the selected markets.

When we consider literature on the existence of co-movement in stock markets in developed and developing countries, (Roy & Sarkar, 2013) investigated the impact of co-movement of stock returns on ten developed and emerging economies by a network approach and revealed strong harmonisation of co-movements in the stock returns in case of extreme financial crisis with the changing pattern of the international equity markets. (Mollah & Mobarek, 2016) have investigated the co-movement, crises, and efficiency in stock markets at the international level. They confirm the presence of interdependency and effect of integration between developed and emerging markets. By using alternative techniques to identify the co-movement among select developed and developing stock markets of the world with the daily returns data (Modi et al., 2010) have revealed the presence of the co-movement among selected global markets. (Wong et al., 2004) studied the issue of co-movement of stock prices in major developed countries along with developing countries in Asia and established the presence of co-movement between the developed and Asian emerging markets. Also they reported that interdependence has increased among developed and emerging markets. By employing DCC–GARCH model on weekly industry return data (C. C. Lee et al., 2017) examined the extent of the vibrant correlations between the industry returns of BRICS countries and the impact of special events related to BRICS. The result shows the significant increase of co-movement in industrial returns and the BRICS events have negative impact on volatility. (Chadha & Saxena, 2014) analysed the existence of long-term relationship between the indices of Indian and New York Stock Exchange by employing Granger Wald Causality and found long-term association between NSE and NYSE. As many Indian companies have listed their shares in the American equity markets, (Subha & Nambi, 2010) examined the extent of co-integration between the major Indian stock exchanges with the largest stock markets of America through Engle Granger Co-integration on the data and find no evidence for long-term dependencies between the Indian and American stock markets. (Dasgupta, 2014) studied the short and long-run vigorous linkages of Indian equity market with BRICS by the method of Granger's co-integration tests and found that the Indian stock market has strong impact on Brazilian and Russian stock markets.

By employing the nonlinear autoregressive distributed lags (NARDL) approach to study the long –run connection of stock prices and exchange rates of ASEAN-5 countries (Siew-Pong et al., 2021) estimated that stock prices are influenced by significant positive long run effect of exchange rate appreciation however exchange rate depreciation has not affected the stock prices. (Gokmenoglu et al., 2021) employed the quantile-on-quantile approach to reassess the connection between exchange rate and SMR of select emerging countries and concluded that except some specific market condition, exchange rate changes had no impact on stock market performances. (H. T. Wong, 2022) employed Asymmetric autoregressive distributed lag (ARDL) approach to ascertain whether stock prices are affected by the real exchange rates and asymmetric real exchange rates in selected Asian and European stock markets. “He concluded that stock prices are significantly affected by real output and real interest rates” (H. T. Wong, 2022). Additionally, (Carlos et al., 2016) measured the correlation between exchange rate changes and stock returns in the Chinese financial market and found a positive effect of exchange rate changes on stock markets and the same turns adverse during financial

emergencies. Dynamic heterogeneous panel method was applied by (Y. M. Lee & Wang, 2015) to examine the association between stock prices and exchange rates. The result showed a negative correlation existed between stock market and the foreign exchange market in the short run and positive association was found in the long run. (Goncalves & Rodrigues, 2023) studied the association between stock prices and exchange rates in Brazil in long-run and short-run and found no long-run relationship between stock prices and exchange rates. Manufacturing, service sectors share price movements and growth trend were compared with NIFTY data by (Prasad & Nair, 2021) to conclude that the manufacturing sector had higher growth rate and higher risk when compared to service sector. (Saji, 2022) studied financial integration of five Asian equity markets by using Granger causality test on daily stock index data and revealed short term integration of stock markets with significant differences.

With this backdrop, this study aims at analysing the interconnectedness between the stock markets and the exchange rate markets of G20 countries in the long run and the short run using panel data econometric techniques. As the above paragraphs unveil, the empirical literature on the selected area is limited, and thus this study enriches the literature in this respect. To the best of our knowledge, this is apparently the first study that examines the complex dynamics between the stock markets and exchange rate markets with reference to G20 countries.

3 Research Method

3.1. Data

The secondary data of SMR has been sourced from Yahoo Finance, wsj.com and data pertaining to exchange rates has been sourced from Bank of International Settlements website. Some of the missing values were completed from exchangerate.com and remaining by average values. The study period is January 2008 to March 2023 as G20's first summit was held in 2008 and the level of activity amongst this group of nations increased considerably post the summit. Weekly data for 16 indices has been downloaded for the same. As Italy, Germany, France and European Union have common currency and exchange rate data, we have used EURO STOXX 50 index data as a single proxy for indices of these three countries and EU.

The descriptive statistics of exchange rates, stock prices, exchange rate returns (ERR) and SMR for the pooled panel and for all 16 countries are presented in Table 1. As shown in the table, the average returns, and average standard deviation for stock markets are higher than the average returns, and average standard deviation for exchange rate markets. Further, Table 1 shows that while Argentina has the maximum mean in their SMR and ERR, China has the lowest mean in both the returns during the sample period. It may be seen from the table that for SMR, while Argentina depicts maximum standard deviation, the lowest standard deviation is shown in Australia during the sample period. On the other hand, for exchange rate markets, while the maximum standard deviation is shown in Russia while Saudi Arabia depicts the least standard deviation.

Table 1: Descriptive Statistics

Country	Statistics	LSP (log(stock price))	ler (log(exchange rate))	spr (stock price returns)	err (exchange rate returns)
All countries	Mean	8.546919	2.466777	0.000924	0.0010772
	Std. Dev.	1.767686	2.793815	0.034519	0.0157316
	Min	2.657459	-1.309333	-0.395174	-0.217082

	Max	12.45926	9.698728	0.3542423	0.2478976
Argentina	Mean	9.3007	2.649338	0.005988	0.0052675
	Std. Dev.	1.416566	1.274412	0.0558608	0.0163946
	Min	6.733164	1.10194	-0.395174	-0.0448484
	Max	12.45926	5.335083	0.2305937	0.2281792
Australia	Mean	8.59896	0.208875	0.0001627	0.0003452
	Std. Dev.	0.1833292	0.1501881	0.0233797	0.0147268
	Min	8.053728	-0.0943106	-0.1701632	-0.0598184
	Max	8.939699	0.5247285	0.0911379	0.1325467
Brazil	Mean	11.14253	1.068649	0.0006499	0.0013505
	Std. Dev.	0.3157765	0.4155252	0.0384156	0.01878
	Min	10.28994	0.4382549	-0.2926216	-0.0545591
	Max	11.78124	1.766442	0.2619324	0.1475354
Canada	Mean	9.575669	0.1656725	0.0004896	0.0003994
	Std. Dev.	0.2004167	0.1193566	0.0263251	0.0110694
	Min	8.931539	-0.0512933	-0.1829691	-0.0661398
	Max	10.00268	0.3646432	0.1494522	0.0639488
EU	Mean	8.048401	-0.2042942	8.10E-06	0.0003802
	Std. Dev.	0.1695256	0.1083536	0.031149	0.0119057
	Min	7.501071	-0.4620355	-0.1886363	-0.0680535
	Max	8.386216	0.0295588	0.1209955	0.0434851
India	Mean	10.18417	4.102534	0.0013181	0.0009282
	Std. Dev.	0.4634121	0.1949423	0.0284953	0.0086556
	Min	9.027117	3.667911	-0.1738071	-0.043184
	Max	11.0488	4.416428	0.1317091	0.0410986
Mexico	Mean	10.60106	2.762448	0.0008171	0.0006416
	Std. Dev.	0.2224981	0.2230955	0.0283756	0.0148184
	Min	9.734538	2.301584	-0.2075071	-0.0672407
	Max	10.93868	3.199081	0.1991234	0.1228116
South Africa	Mean	3.648588	2.427717	0.0002111	0.0012173
	Std. Dev.	0.2020204	0.3000682	0.0474186	0.0190112
	Min	2.657459	1.894617	-0.2737353	-0.0642915
	Max	4.018363	2.942332	0.2769301	0.1110086
UK	Mean	8.753	-0.3744884	0.0002341	0.0005819
	Std. Dev.	0.1537329	0.1236295	0.0255093	0.0130441
	Min	8.17256	-0.7133499	-0.1468325	-0.0377404
	Max	8.988983	-0.0833816	0.1426497	0.0833816
South Korea	Mean	7.622336	7.044572	0.0003576	0.0004133
	Std. Dev.	0.203169	0.0732422	0.0271881	0.0130771
	Min	6.844549	6.843856	-0.2292881	-0.0611258
	Max	8.102538	7.351024	0.1703191	0.105073

China	Mean	7.958325	1.885695	-0.0006193	-0.0000711
	Std. Dev.	0.1925718	0.0454866	0.0347052	0.0040448
	Min	7.449946	1.800058	-0.2184677	-0.0190761
	Max	8.612122	1.986503	0.1196675	0.0230602
Indonesia	Mean	8.404648	9.386166	0.0011735	0.0005908
	Std. Dev.	0.3958665	0.195904	0.0275664	0.0182993
	Min	7.044277	8.89028	-0.2329721	-0.2075739
	Max	8.887744	9.698728	0.1091471	0.2052975
Japan	Mean	9.686664	4.636739	0.0008131	0.0002323
	Std. Dev.	0.401658	0.1443702	0.0312523	0.0109212
	Min	8.878093	4.329548	-0.2788439	-0.0479956
	Max	10.32548	5.002469	0.1581707	0.04812
Russia	Mean	7.519204	3.839595	0.0004149	0.0014439
	Std. Dev.	0.3734415	0.3998566	0.041716	0.0313254
	Min	6.241484	3.144583	-0.3173938	-0.217082
	Max	8.357451	4.867457	0.3542423	0.2478976
Saudi Arabia	Mean	8.962111	-1.309333	-0.0000636	0
	Std. Dev.	0.2242653	0	0.0304476	0
	Min	8.326069	-1.309333	-0.2086258	0
	Max	9.52762	-1.309333	0.1376209	0
Turkey	Mean	6.744339	1.178556	0.0028298	0.0035141
	Std. Dev.	0.5679078	0.7603788	0.0371664	0.0195788
	Min	5.392081	0.1397619	-0.1927304	-0.1125274
	Max	8.614167	2.950735	0.1575789	0.1842102

Source: Authors' own estimation

3.2. Graphical Analysis

The trend in the logarithm of stock prices and exchange rates (vis-a-vis USD) of 16 countries is shown in Figure 1 (a-p). It may be seen from the Figure that Argentina, Australia, India, Japan, Turkey, Mexico, and Russia these two markets seem to be strongly positively correlated throughout the sample period. For Brazil, Canada, the EU, the UK, and South Korea, the two markets show both positive and negative correlations during different time periods in the sample. However, for Saudi Arabia, Indonesia, South Africa, and Turkey, graphs do not show a clear relationship between the two markets. To confirm the presence of a long-run and short-run association between stock markets and exchange rate markets of G20 countries, we utilize panel data estimation techniques that can incorporate heterogeneity between countries.

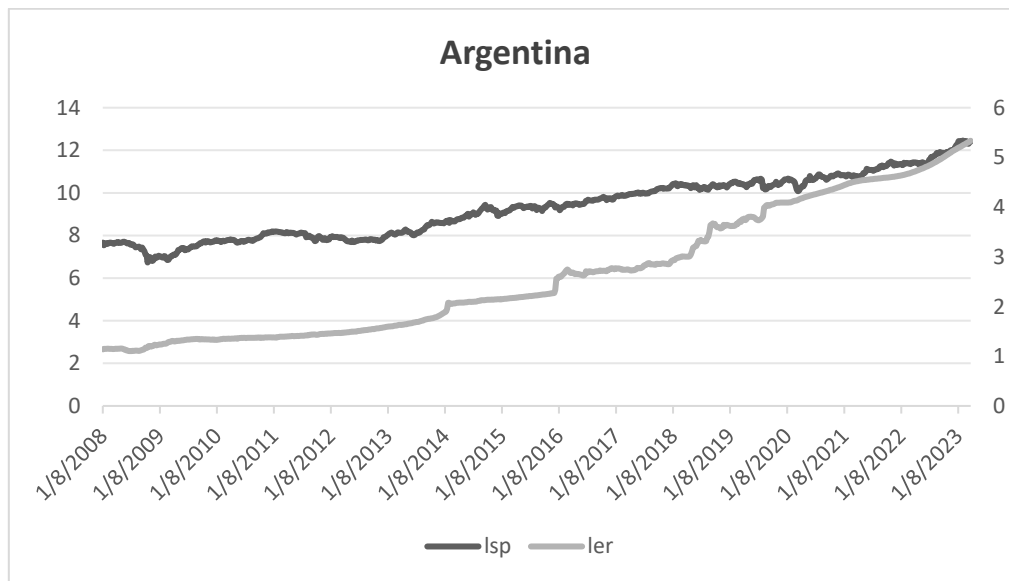


Figure 1 (a): Trends in logarithm of stock prices and exchange rates for Argentina

Source: Authors' own elaboration

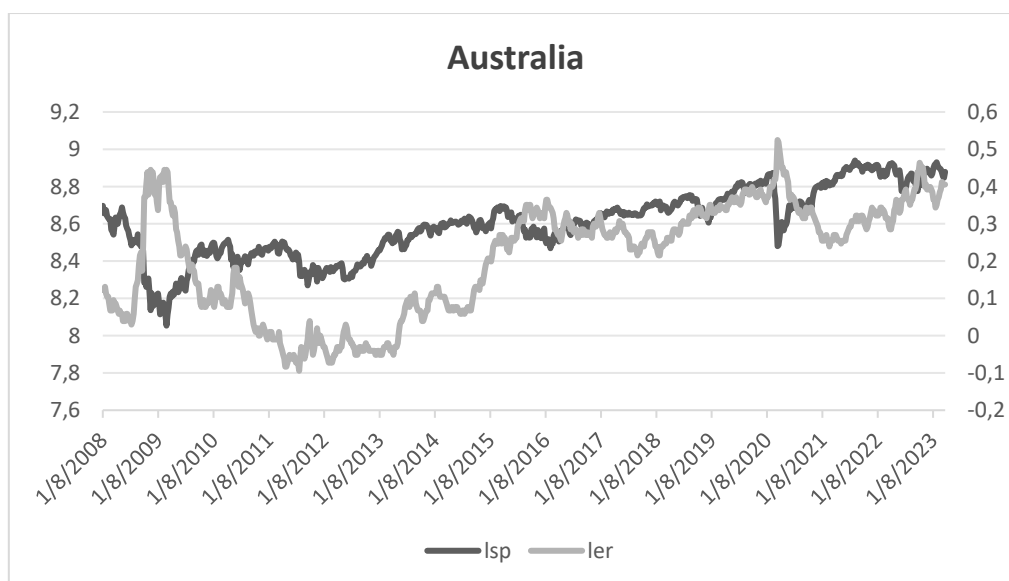


Figure 1 (b): Trends in logarithm of stock prices and exchange rates for Australia

Source: Authors' own elaboration

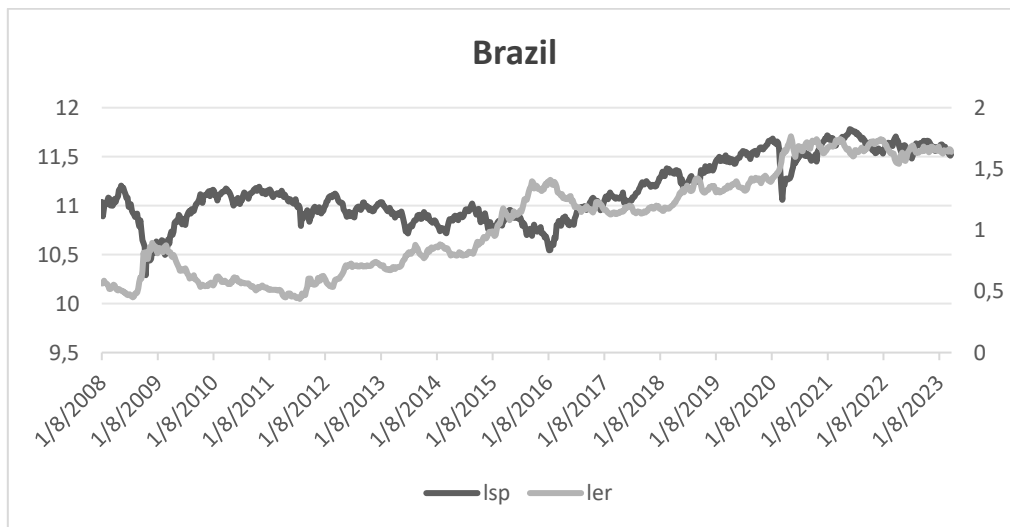


Figure 1 (c): Trends in logarithm of stock prices and exchange rates for Brazil

Source: Authors' own elaboration

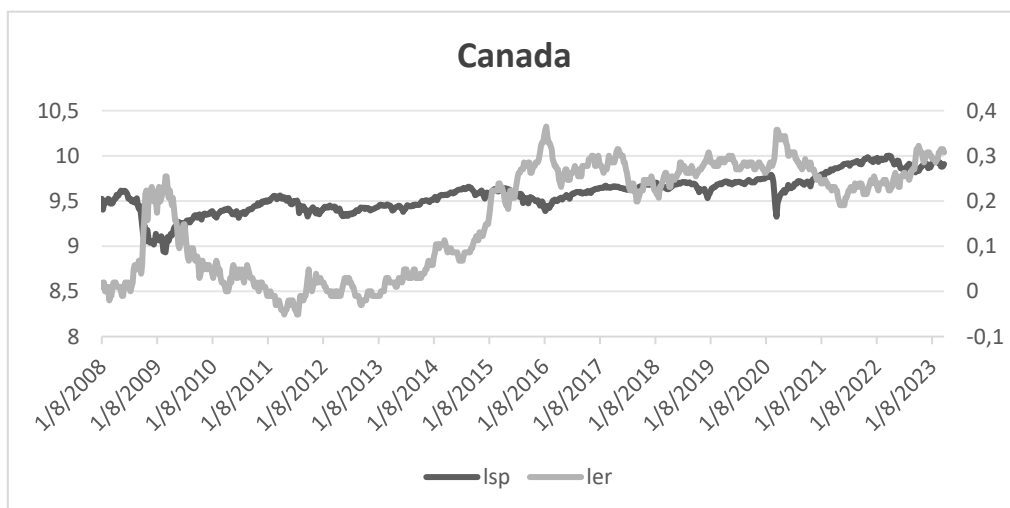


Figure 1 (d): Trends in logarithm of stock prices and exchange rates for Canada

Source: Authors' own elaboration

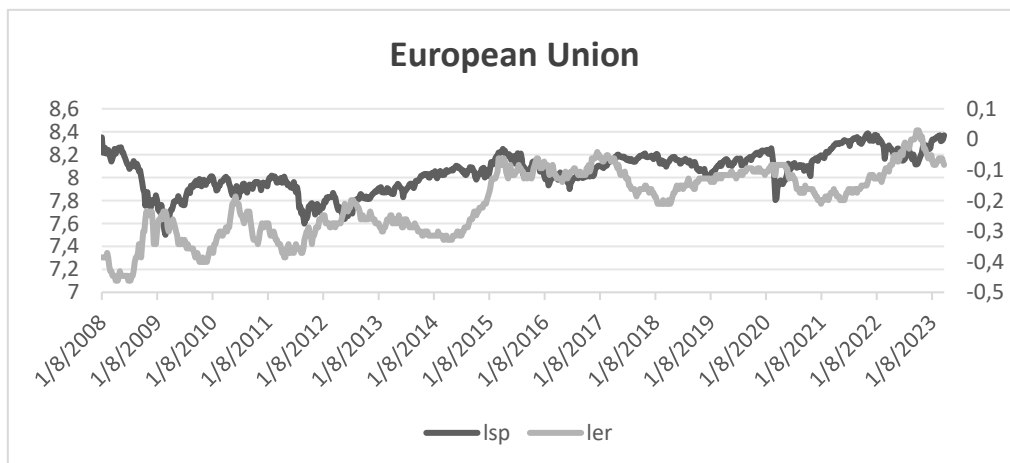


Figure 1 (e): Trends in logarithm of stock prices and exchange rates for European Union

Source: Authors' own elaboration

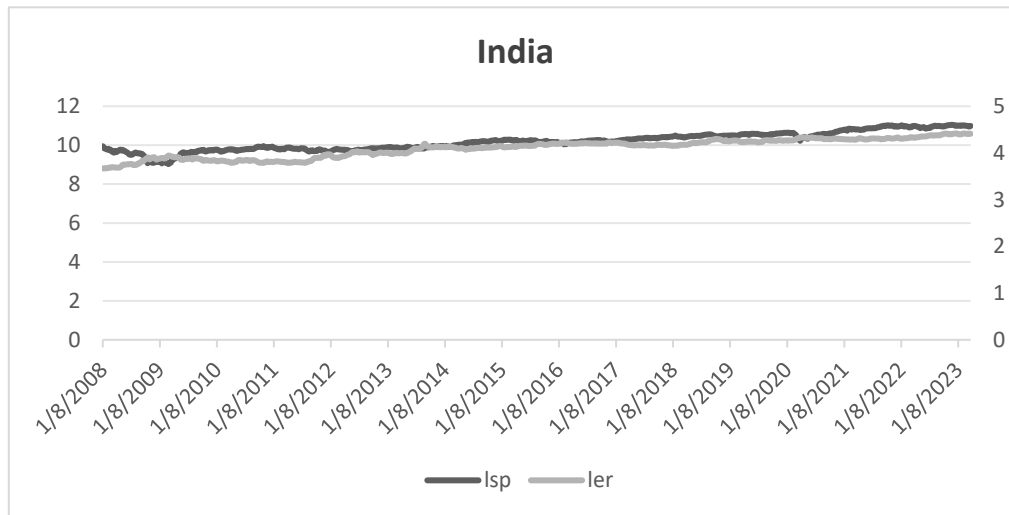


Figure 1 (f): Trends in logarithm of stock prices and exchange rates for India

Source: Authors' own elaboration

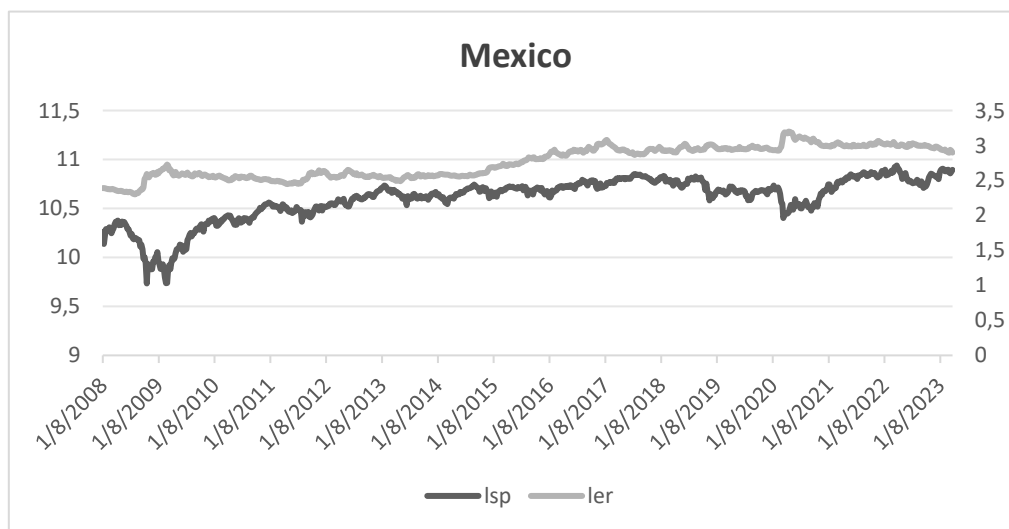


Figure 1 (g): Trends in logarithm of stock prices and exchange rates for Mexico

Source: Authors' own elaboration

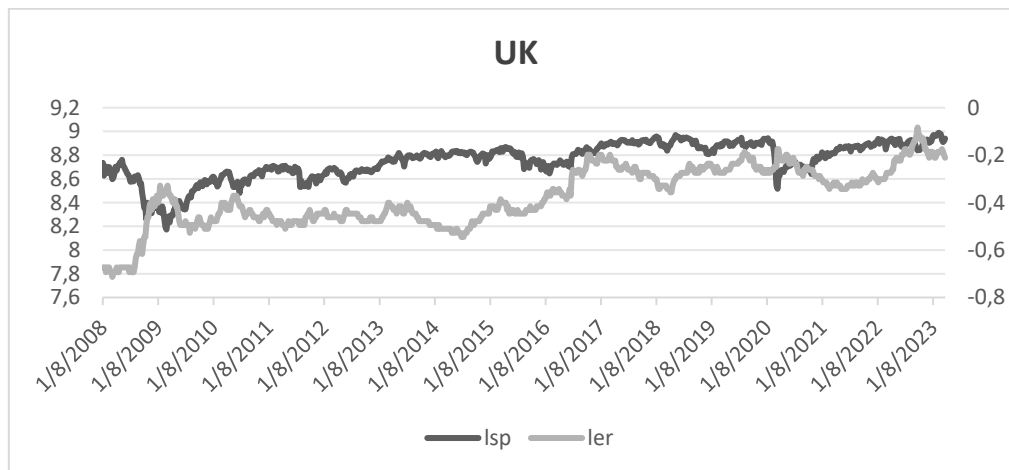


Figure 1 (h): Trends in logarithm of stock prices and exchange rates for UK
Source: Authors' own elaboration

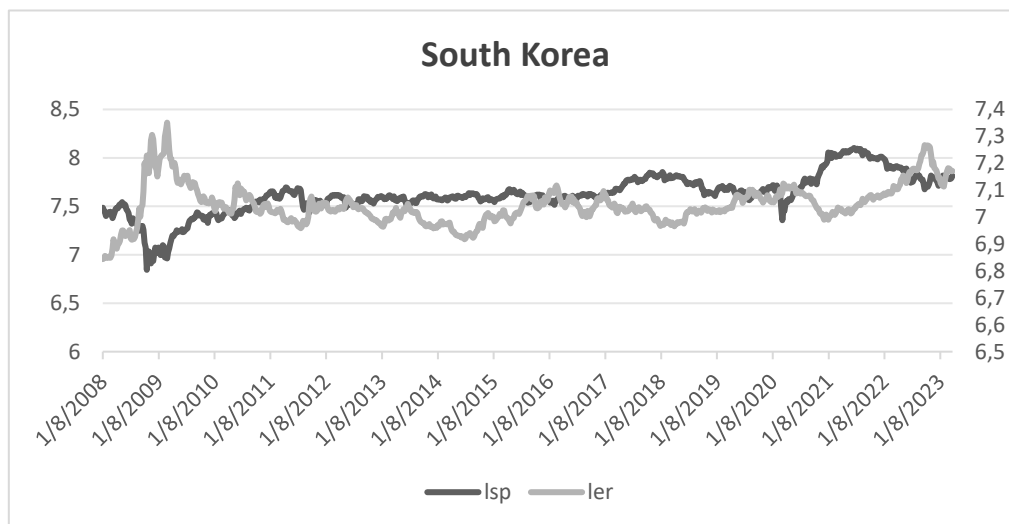


Figure 1 (i): Trends in logarithm of stock prices and exchange rates for South Korea
Source: Authors' own elaboration

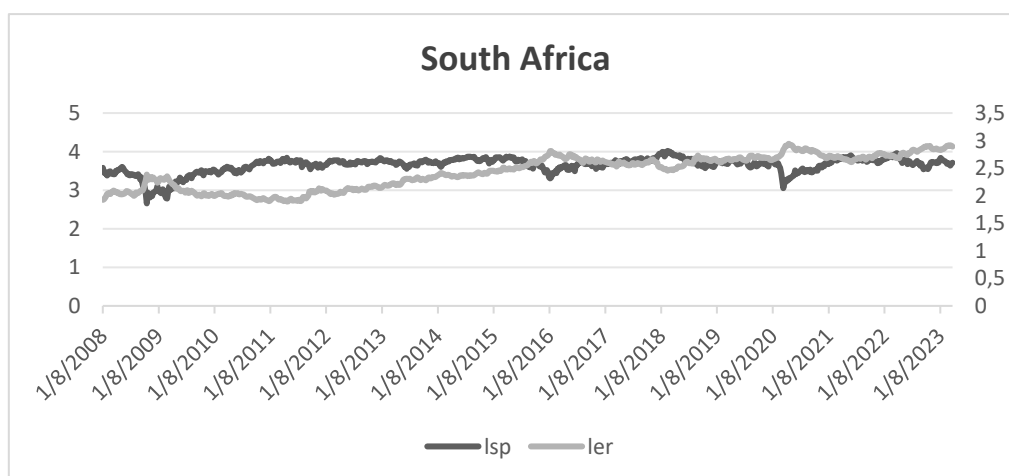


Figure 1 (j): Trends in logarithm of stock prices and exchange rates for South Africa

Source: Authors' own elaboration

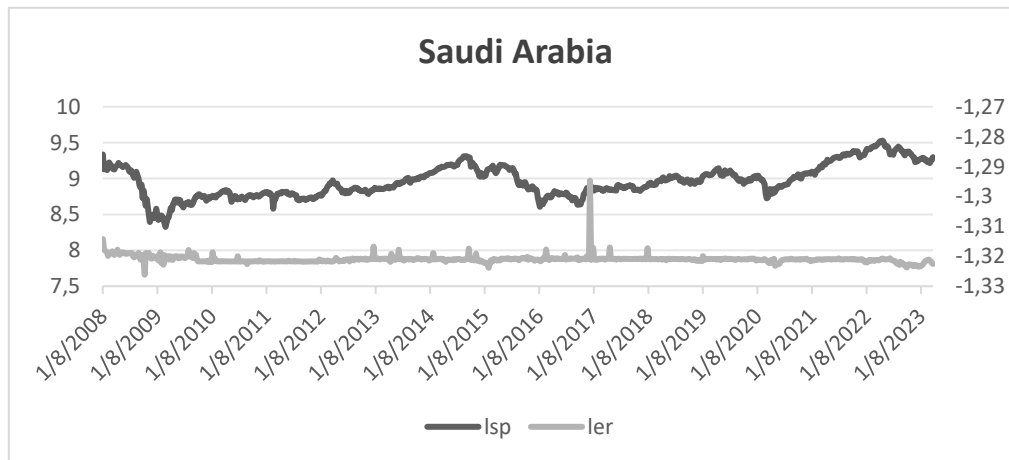


Figure 1 (k): Trends in logarithm of stock prices and exchange rates for Saudi Arabia

Source: Authors' own elaboration

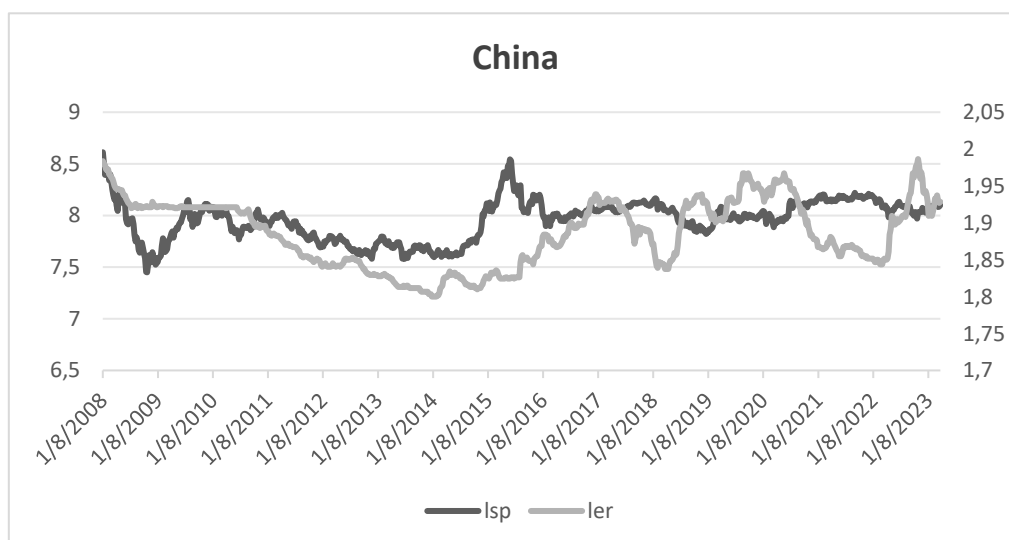


Figure 1 (l): Trends in logarithm of stock prices and exchange rates for China

Source: Authors' own elaboration

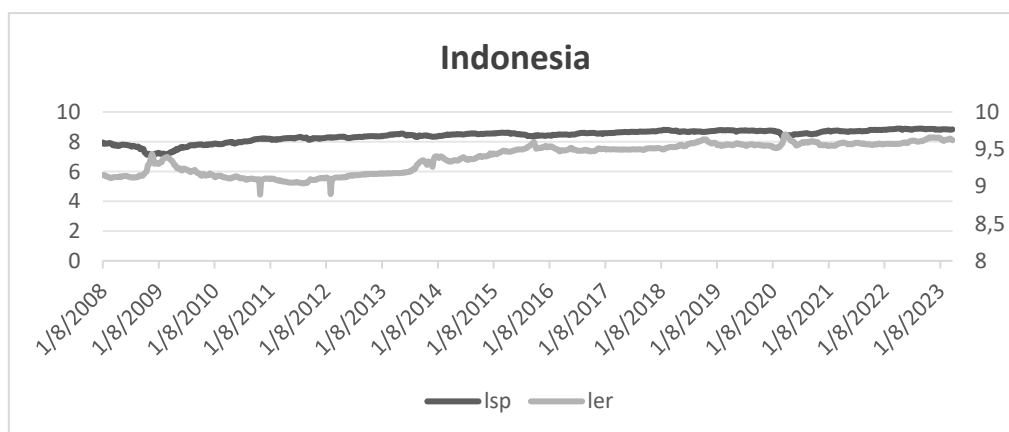


Figure 1 (m): Trends in logarithm of stock prices and exchange rates for Indonesia

Published by:

Source: Authors' own elaboration

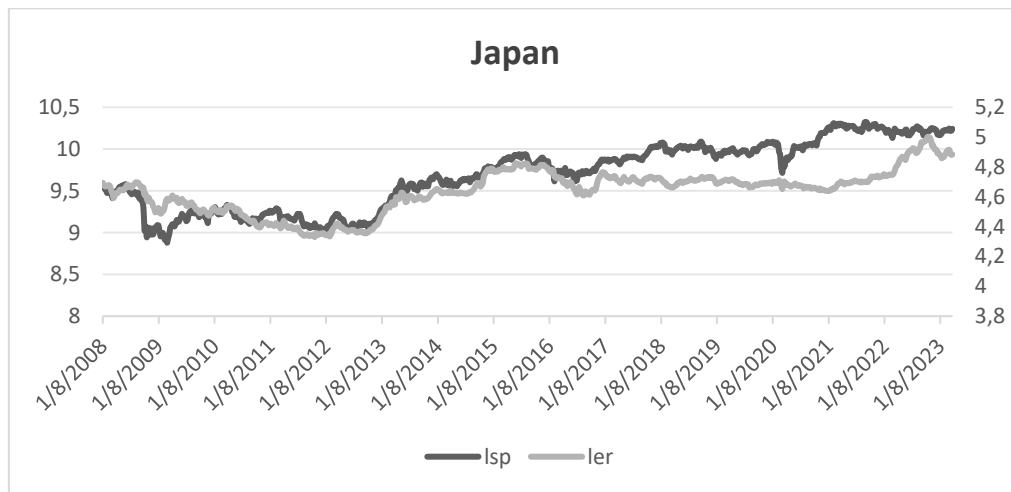


Figure 1 (n): Trends in logarithm of stock prices and exchange rates for Japan

Source: Authors' own elaboration

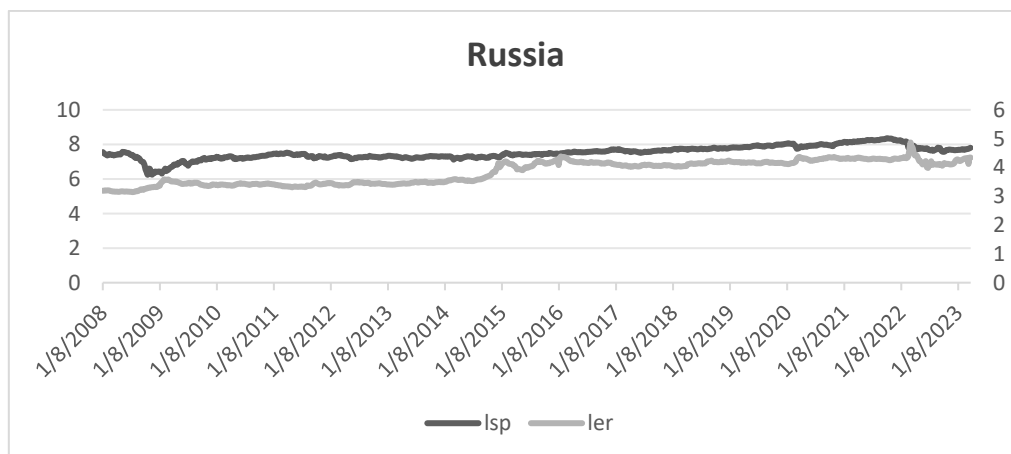


Figure 1 (o): Trends in logarithm of stock prices and exchange rates for Russia

Source: Authors' own elaboration

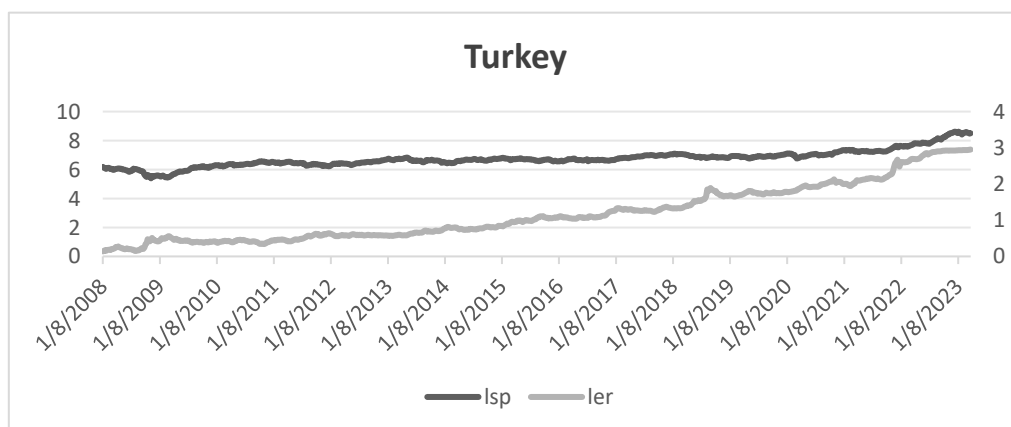


Figure 1 (p): Trends in logarithm of stock prices and exchange rates for Turkey

Published by:

Source: Authors' own elaboration

3.3. Econometric Methodology

An important element of panel data econometrics estimation is the examination of the cross sectional dependence (CSD) in the variables (Hsiao, 2014). So . Another vital component of macro panel data analysis is the examination of the stationarity properties of variables (Baltagi & Kao, 2000). For this purpose, in the second step, we estimate (Westerlund, 2007) unit root tests that are robust to the presence of CSD in panel data. Based on the results of earlier two steps, this study utilizes second generation panel cointegration test, viz. (Westerlund, 2007) test to confirm the presence of cointegrating relationship between the stock markets and exchange rate markets of G20 countries. This test uses error correction model and yields four statistics that are robust to the presence of CSD in the panel data. The last step involves estimation of the ARDL(1,1) model, i.e. estimation of long run and short run cointegrating relation between the stock markets and exchange rate markets of G20 countries, using pooled mean group (PMG) estimator developed by Pesaran et al. (1999). We use mean group (MG) estimator and dynamic fixed effects (DFE) estimator to check the robustness of our results.

3.4. Empirical model

This study follows (Pesaran et al., 1999) to construct the empirical model. The base model, i.e. ARDL(1,1) model between the stock price of country i ($i=1,2,\dots,N$) at time period t ($t = 1, 2, \dots, T$) is written as follows:

$$lsp_{it} = \alpha_{0,i} + \alpha_{1,i}lsp_{it-1} + \alpha_{2,i}ler_{it} + \alpha_{3,i}ler_{i,t-1} + \epsilon_{it} \quad (1)$$

where lsp is the log of stock price, ler is the log of exchange rate, the long run elasticities are given by α_1 , α_2 and α_3 , and ϵ_{it} is the white noise error term. The corresponding short run model between the stock prices and exchange rate as illustrated in Lee and Wang (2015) is given as follows:

$$\Delta lsp_{i,t} = \phi_i(lsp_{i,t-1} - \theta_{1i}ler_{it}) - \alpha_{3i}\Delta ler_{it} + \alpha_{0,i} + \epsilon_{it} \quad (2)$$

where $\Delta lsp_{i,t}$ is the stock market return, Δler_{it} is the exchange rate return, $\phi_i = -(1 - \alpha_{1,i})$ is the error correction coefficient. If there is cointegration between the stock prices and exchange rate, ϕ_i is negative and significant. $\theta_{1i} = \frac{\alpha_{2,i} + \alpha_{3,i}}{1 - \alpha_{1,i}}$ is the long run coefficient and $-\alpha_{3i}$ signifies the existence of short run relationship between the stock market and the exchange rate market. The signs of θ_{1i} and $-\alpha_{3i}$ are ambiguous. According to the flow oriented model (Dornbusch et al., 1980), stock prices can move in same or opposite direction in response to the changes in exchange rate. Further, (Y. M. Lee & Wang, 2015) advocates that a positive and significant θ_{1i} rationalizes the traditional approach whereas a negative and significant θ_{1i} supports the portfolio approach.

(Pesaran et al., 1999) suggests two different estimators to estimate equation (2), viz. PMG estimator and MG estimator. These estimators are consistent when T and N are large. In PMG estimator, while the coefficients θ_{1i} are constrained to be equal, the short run coefficients ϕ_i are allowed to differ across all cross sections. In the MG estimator, the coefficients are

calculated from the unweighted average of the unconstrained, fully heterogenous model. Another related estimator is dynamic fixed effects (DFE), where all estimators except the intercepts are constrained to be the same across all panels. We also conduct the Hausman test to test the presence of cross-sectional heterogeneity. Failure to reject the null hypothesis in this test indicates the superiority of the PMG estimator over the MG estimator.

4. Result and Discussion

The preliminary tests of cross-sectional dependence and unit roots are shown in Table 2. We find that the null hypothesis of cross-sectional independence is rejected for the stock prices and exchange rate series (at both levels and the first difference). Given the presence of cross-sectional dependence in the data, we tested for the presence of unit roots in the data using second generation unit root tests, viz., (Breitung & S. Das., 2005; Hadri, 2000). Table 2 shows the presence (absence) of a unit root in stock price and exchange rate levels (first differences), i.e. both the series are I(1).

Table 2. Cross Sectional Dependence and Unit Root Test

Variable	sp (log(stock price))	ler (log(exchange rate))	spr (stock price returns)	err (exchange rate returns)
Pesaran CD test	226.629***	190.086***	115.009***	73.336***
Breitung Test	-0.3813	1.4667	-40.2607***	47.7739***
Hadri Test	433.0603***	616.3428***	-0.8607	0.0689

Source: Authors' own estimation

The next step is to test the presence of long run comovement between the stock prices and exchange rate of G20 countries. As our results show cross sectional dependence, we use second generation cointegration test, viz. (Westerlund, 2007) test. All the four statistics of this test given in Table 3 show that the null hypothesis of no cointegration is rejected at 1% level of significance. This implies existence of long run comovement between the stock prices and the exchange rates of G20 nations. The last step involves estimation of the long run cointegrating relation and the short run relationship between stock prices and exchange rate (i.e. equation (2)) using PMG, MG and DFE estimators. The results of all these estimators are given in Table 3.

Table 3. Westerlund Panel Cointegration Test

Statistic	Value	Z-value	p-value	Robust p-value
Gt	-3.08	-3.513	0.000	0.000
Ga	18.043	-3.548	0.000	0.010
Pt	-11.613	-3.617	0.000	0.010
Pa	-15.346	-4.184	0.000	0.010

Source: Authors' own estimation

The results of the ARDL(1,1) model using PMG estimator presented in Table 4 reveal that the coefficient of error correction is negative and significant at 1% significance level. This indicates existence of stable and converging long run relationship between the stock markets and exchange rate markets of G20 countries. The long run coefficient θ_{1i} is positive and significant, indicating that the stock markets and exchange rate markets of G20 nations are

positively correlated. This result can be explained using the flow-oriented model. According to this model, a depreciation (appreciation) of domestic currency vis-a-vis foreign currency causes an increase (decrease) in trade competitiveness, higher (lower) exports, and profits of an export-oriented firm, leading to an increase (decrease) in share prices.

Table 4. Estimation Results of Dynamic Panel Model

Dependent Variable: spr (Stock market returns)

Methods	PMG	MG	Hausman Test	DFE
Error Correction effect (Coefficient) φ_i	-.0130*** (0.0018)	-.0153*** (0.002)	H0: PMG H1: MG Chi-square Statistic	-.0105*** (0.0011)
Long-run effect (Coefficient) - θ_{1i}	1.0182*** (0.082)	0.9688*** (0.1572)	0.13 [0.7139]	1.2491*** (0.0776)
Short-run effect (Coefficient) - α_{3i}	-.2922** (0.1439)	-.2947** (0.1435)		-.2530*** (0.0193)
Constant	.0859*** (0.0174)	.0954*** (0.0199)		.0590*** (0.0076)
Country number	16	16	16	16
Observation	12720	12720	12720	12720

Notes: The parenthesis (.) is standard deviation; [.] is P-value; *** and **denotes significance at 1% level and 5% respectively.

Source: Author's own estimation

However, the coefficient, $-\alpha_{3i}$, is negative and significant at 1% significance level indicating the negative correlation between the exchange rate returns and equity market returns of G20 countries in the short run. Flow oriented theory illustrates this negative correlation between the equity market and the exchange rate market for a less export oriented firm. As per this theory, for a less export oriented firm, a depreciation (appreciation) of domestic currency vis-a-vis foreign currency causes higher (lower) cost of imports, lower (higher) expected cash flows payments and share prices. Further, (Y. M. Lee & Wang, 2015) advocates portfolio approach

for explaining this negative correlation between the two variables. According to the theory, “rising stock prices cause higher demand for a country’s assets and, consequently, higher demand for domestic currency, which leads to the appreciation of the domestic currency”. The MG and DFE estimation results shown in Table 4 provide similar conclusions regarding the short run and long run interconnectedness between the equity market and exchange rate markets of G20 countries. The results of the Hausman test presented in Table 4, show that the null hypothesis of homogeneity among the cross sections cannot be rejected and therefore PMG estimator is preferred over the MG estimator.

5. Conclusion

This article examines the dynamics of cointegrating relation between the stock markets and exchange rate markets of G20 countries. For this purpose, this study uses weekly panel data of 16 countries from January 2008 to March 2023 and panel ARDL (1,1) model. (Westerlund, 2007) cointegration test statistics suggests existence of long -run cointegrating relation between stock prices and exchange rates of G20 countries. Further, the empirical results of PMG estimator also extend support to positive and stable cointegration in the long-run for G20 countries which is consistent with the results of the traditional approach. On the other hand, these variables are negatively related in the short-term supporting the results of the portfolio approach. Thus, the connection between the stock markets and exchange rate markets of G20 economies can be explained through the long run and short run adjustments (Y. M. Lee & Wang, 2015).

These results are useful for stock market investors, hedgers and, the policy decisions of G20. The findings of this study indicate the complex dynamic relationship between stock markets and exchange rates, particularly in G20 nations. The robust positive long-term correlation and the short-term negative association exhibit the differential impacts of macroeconomic variables over varying time horizons. The long term association supports the success of G20 nations progressing together but short run results open ample diversification opportunities in the short term within these countries. This research offers valuable insights for investors and policymakers to devise informed and strategic economic interventions.

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