Publisher homepage: www.universepg.com, ISSN: 2707-4641 (Online) & 2707-4633 (Print)
https://doi.org/10.34104/ijma.022.00890096
International Journal of Management and Accounting
Journal homepage: www.universepg.com/journal/ijma

Causality among Stock Returns of Major South Asian Markets

Md. Kamrul Bari*

Institute of Business Administration, University of Dhaka, Dhaka, Bangladesh.

*Correspondence: bari.sarkar@gmail.com (Md. Kamrul Bari, MIPA, AFA, Doctoral Researcher, Institute of Business Administration, University of Dhaka, Dhaka-1000, Bangladesh).

ABSTRACT

The objective of this research is to investigate the existence of a causal connection between the daily stock returns of the key South Asian stock markets. To benefit from such integration, if there is any, investors and policymakers must craft and execute strategies that take this relationship into account. Researchers can also benefit from the findings since they will be able to craft research strategies based on this study while answering their respective research agendas. This paper considers daily returns of BSE Sensex 30, DSEX, and Karachi All Share indices as representatives of returns from stock markets of India, Bangladesh, and Pakistan respectively since these are the broad indices of their respective markets. Sri Lanka has been disqualified from the tests due to its recent economic fragility. Using 7,113 data points from the aforementioned markets between January 31, 2013, and August 31, 2022, Granger causality and augmented Dickey-Fuller test (ADF) has been applied to evaluate if these are stationary and exhibit any causal links. Results show that returns of all markets are stationary, disqualifying them from undergoing a co-integration test. Additionally, the Indian and Pakistani stock markets exhibit bidirectional causality, indicating that these markets' returns influence one another.

Keywords: Granger Causality, Augmented Dickey-Fuller test (ADF), and Karachi All Share Index (KSI).

INTRODUCTION:

The development of research in the field of capital market has undoubtedly been crucial for comprehending the role it plays in the macroeconomic and investment environment of a nation as a whole. But there has not been much research done on how the markets are interconnected. More importantly, researchers have rarely paid attention to the South Asian markets in the past. Only a small amount of research is available to understand how returns interact in these markets, as will be demonstrated in this paper in the later section, leaving investors and policymakers in the major South Asian economies to prognosticate the underlying factors causing the return volatilities. Keeping these issues in mind, this paper aims to identify the nature of time series stationarity of these markets, investigate cointegration among them, and also determine if there is any causality moving from one market to the other (s) and vice versa.

It is a well-known phenomenon that the COVID and the war in Ukraine have affected the world economy in many dimensions (Ciravegna & Michailova, 2022). Ongoing quantitative tightening, the consequence of the aforementioned factors, in the developed economies to tackle high inflation have put tremendous pressure on the emerging and developing world making lives miserable for the general population (Canuto, 2022; Dulaney, 2022; Ha *et al.,* 2022; The Editorial Board, WSJ, 2022). The pandemic, the war and the ongoing macroeconomic predicament, as mentioned above, have made it imperative to investigate what factors are affecting the capital flows and returns of different equity markets. It is only evident through previous research that the macroeconomic uncertainties and issues everely

affect the equity markets of both developed and developing economies (Gunay & Can, 2022; Karanasos *et al.,* 2022; Ma *et al.,* 2022). Moreover, previous research also identified that several economies are often interconnected and they may also change due to changes in the macroeconomic factors (Cooray & Wickremasinghe, 2007; Smith *et al.,* 1993). Hence, the recent macroeconomic developments of the world, which is a consequence of the developments in the macroeconomic environment of the world following the global recession in 2008, the COVID – 19 pandemic, and the recent macro-economic debacle as a consequence of the war in Ukraine, have made the author of this paper to lift the veil of opacity and reveal the intertwined relationships among the major South Asian markets of this region, namely India, Bangladesh, and Pakistan.

An inquisitive mind may be interested in the reasons for choosing the South Asian region and only the THREE aforementioned economies, not the others. To reply to their potential queries, a rationale is being laid out here. First of all, India, Bangladesh, and Pakistan are USD 3.38 Trillion, USD 465 Billion, and USD 383 Billion economies, respectively (Finance Division, Ministry of Finance, 2022; Khan, 2022; Natti, 2022). The world GDP right now is USD 95 Trillion (Dimitropoulou, 2022). Therefore, the aforementioned THREE South Asian economies collectively account for around 4.45% of world GDP. India alone accounts for around 3.56% of world GDP. Market Capitalization of the major stock exchanges of India, Bangladesh, and Pakistan are USD 3.402 Trillion, USD 55.65 Billion, and USD 32.84 Billion respectively (Dhaka Stock Exchange, 2022; Guagenti, 2022; Mumbai, PTI, 2022; PSX, 2021; PTI, 2022). The aforementioned data indicate that market capitalization to GDP ratios for India, Bangladesh, and Pakistan are 100.67%, 11.97%, and 8.57% respectively. These data indicate that the growth of the capital market relative to GDP in most of these economies are not good and may be indicative of economies with underdeveloped financial institutions (Khrawish *et al.,* 2010). More importantly, these markets are most likely to be undervalued (CFI, 2022). It is intuitive that one of the sources of this undervaluation may very likely be the interrelationships among the markets themselves. This is why, an investigation into this matter is extremely important. Moreover, total population of India, Bangladesh, and Pakistan as a ratio of the world population (as calculated by the author based on data from the world bank group) is around 22.72% (The World Bank Group, 2022b, 2022c, 2022a). Therefore, any research that ignores around one fourth of the world population seems to be incomplete. In addition, as will be discussed later, this region has hardly received any attention from the researchers of the world. However, the growth potential of these regions is tremendous. Despite the ongoing macroeconomic predicament, different projections by multilateral development banks have shown that India, Bangladesh, and Pakistan economies are likely to grow at 6.7-8.2%, 6.6%, and 3.5% respectively in the coming year despite grim economic outlook for the world economy as evident by only a 3.2% growth projection in 2022 and 2.9% in 2023 (Asian Development Bank, 2022; Harshita Tyagi, 2022; Murali & Maiorano, 2022; TBS Report, 2022). Consequently, findings from research on any factor(s) or phenomenon affecting the stock market in this area are likely to result in new knowledge. In addition, economic integration among the economies of this region has been tested earlier only to find that, India has been consistently influencing the growth of this region (Jayaraman & Choong, 2012). However, this research was only carried out concerning a few relevant macro variables, not the integration among the equity markets. Only one study was found on the topic of concern of this paper, which was also conducted prior to the global financial crisis in 2008, the COVID impact, the on-going inflationary macroeconomic phenomenon, and a major stock market crash in Bangladesh (however, there are arguments about whether to call it a crash or a severe market correction), which brought about a plethora of changes including introduction of new indices (Saha, 2012). It is argued in that research paper that the stock markets of this region are not even efficient in the semi strong form, despite the fact that there is no causality among returns (Cooray & Wickremasinghe, 2007). Owing to these and the other motives listed above, the author developed a keen interest in investigating if there were any causal relationships between the daily returns of the key stock markets in India, Bangladesh, and Pakistan.

Review of Literature

Causality tests have long been a well-liked technique for researchers looking for underlying the occurrences of countless economic phenomena. Causality tests in the capital market and the macroeconomic

domains have historically provided solutions to many unanswered "How" and "What" questions. Historically, different literature used different methods to establish relationships among key interest variables concerning market returns and other relevant macroeconomic variables. Smith *et al.* (1993), for example, used Granger causality on weekly returns from markets in the United States, the United Kingdom, West Germany, and Japan from 17 January 1979 to 26 June 1991 to find evidences of unidirectional causality running from the United States to the rest of the world immediately after the October 1987 global crash. They also found evidence of brief periods of causality running from other markets to the US (Smith *et al.,* 1993). Another study employed linear and nonlinear Granger causality tests to examine dynamic link between daily Dow Jones stock returns and percentage changes in trading volume on the New York Stock Exchanges only to find compelling evidence for a causal link between returns and volume that is nonlinear in both directions (Hiemstra & Jones, 1994). Rjoub *et al.* (2009) examined dynamic connections between stock returns and dividend yields in the American and Japanese equity markets using Granger-causality tests. They concluded that real returns cannot be caused by growth rates of dividends. The dividend growth rate does not Granger cause real returns, but the ratio of dividends to price (with and without lagged dividends) can predict returns (Rjoub *et al.,* 2009).

Studies, such as the ones conducted by Ramasamy & Yeung (2005), find that investigating the links between exchange rates and stock markets has also sparked considerable interest. They, Ramasamy & Yeung (2005), used typical Granger causality approach on nine east Asian economies (Hong Kong, Malaysia, Singapore, Thailand, South Korea, the Philippines, Taiwan, Indonesia, and Japan) to examine causal relationships. According to the duration of the chosen time, they discovered that the direction of causation frequently exhibits sot of a hit-and-run behavior suggesting that the Granger causality conclusions needs be interpreted with care(Ramasamy & Yeung, 2005). Another research used daily return data collected from 1995 to 2001 to investigate the connection between exchange rates and stock prices in Bangladesh, India, Pakistan, and Sri Lanka(Smyth & Nandha, 2003).This study by Smyth & Nandha, (2003) applied Engle-Granger two-step and the Johansen cointegration methods to conclude that no long-run equilibrium relationship is present between the two underlying financial interest variables in any one of the four aforementioned countries. Another study examines causal relationships between stock returns and exchange rate fluctuations for India, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand from 1 January 1997 to 16 August 2010 using the Granger causality test in quantiles to find that there are various quantile causal relationships in different times and quantiles (Yang *et al.,* 2014). A study by Ning *et al.* (2019) aimed to examine the link between Hong Kong and Shanghai's overall market return, interest rate, money supply, exchange rate, and inflation rate using the APT, VECM, and Granger-Causality tests. They found that long- and short-term stock market returns in Hong Kong and Shanghai do have a link with the chosen macroeconomic factors (Ning *et al.,* 2019; Alam, 2020).

Researchers also had interests in predicting causal relationship among other macro variables (other than the ones specified above), stock market phenomena and stock returns. For example, the industrial production index has been found to have a bidirectional causal relationship with the BSE Sensex, a significant Indian stock market index, according to a study by Singh, (2010) that used correlation, unit root stationarity tests, and Granger causality tests on monthly data between April 1995 and March 2009 (Singh, 2010). Zahid *et al.* (2022) used Granger causality test and ARCH-GARCH (1,1) models to conclude that environmental pricing, as exhibited by the energy market, and the stock markets in Bangladesh, Pakistan, and India have a bidirectional causal relationship (Zahid *et al.,* 2022). Another research based on China used wavelet method to indicate that stock returns and investor sentiment have a strong bi-directional nonlinear causal link at different time frames (Chu *et al.,* 2016).

Apart from the dimensions mentioned above, COVID impact on causality of stock returns has also been tested in different markets. Gherghina *et al.* (2020) tested the same in USA, Spain, Italy, France, Germany, UK, China, and Romania. It has been identified using auto regressive distributed lag (ARDL) and Granger causality that there existed no impact of Chinese COVID-19 records on the Romanian financial market, both in the short-term and the

long-term (Gherghina *et al.,* 2020). Another study using Granger causality and targeting Bangladesh, India, Pakistan, and Sri Lanka finds that there exists a unidirectional causality running from the number of confirmed COVID cases on market returns of the concerned markets (Rahman *et al.,* 2022).

However, number of research papers on the inter-relationship of market returns is really scarce. A study on the efficiency of the stock markets of India, Pakistan, Sri Lank, and Bangladesh used Granger causality only to find that these markets do not have any interrelationships (Cooray & Wickremasinghe, 2007). Another study by Valadkhani & Chancharat, (2008) examines whether there is cointegration and causality between the stock market price indices of Thailand and Australia, Hong Kong, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, Taiwan, the UK, and the US using monthly data from December 1987 to December 2005.The study of Valadkhani & Chancharat, (2008) finds that there is no long-term association present between the stock prices of Thailand and these other nations. In the short term, however, Granger causalities running from Thailand's stock market to Malaysia, Singapore, and Taiwan, as well as from Thailand to Hong Kong, the Philippines, the UK, Indonesia, and the US have been found. Bidirectional causalities have also been found among stock returns of Thailand, Malaysia, Singapore, and Taiwan (Valadkhani & Chancharat, 2008). Nonparametric test for Granger non causality and the conventional parametric Granger non causality test have been used in another study to find that after the Asian financial crisis, the stock markets in Asia, including those in Hong Kong, Japan, Singapore, India, Malaysia, South Korea, and Taiwan, have grown increasingly globally connected with those in Germany, the United Kingdom, and the United States (DeGooijer & Sivarajasingham, 2008). Another study used Granger causality on stock market indices from several Asian, European, and US markets to discover that Asian indices Granger-cause all other indices, and the same is true for US indices as well (Baumöhl & Výrost, 2011).

A study by Dash, (2015) used ADF and Granger causality to imply that the Indian stock market is highly co-rrelated with the stock markets of South-East Asia and Japan, the Chinese stock market is influenced by the Indian market but not the others, and also the fact that the markets of India and Japan are integrated, whereas the Chinese market is more isolated (Dash, 2015).

These studies reviewed and listed above, however, fail to fill out gaps from several dimensions. First of all, all of these studies except one were conducted on either East Asian or on the developed nations leaving out major South Asian economies. India, however, has received some attention. Secondly, most of the studies were conducted to see the integration between stock returns and major macro variables. Inter-relations among the markets themselves were not studied. Thirdly, no research have been found, to the best of the knowledge of this author, to test the interconnections among the stock returns of Indian, Bangladeshi, and Pakistani stock markets following the global recession in 2008. Therefore, the impact of ongoing COVID crisis (which extends beyond TWO years by now), recent inflationary effects and the impacts of extended periods of monetary easing as well as short term tightening, interest rate hikes along with associated spillbacks (which are already translated into the stock prices) and stock market integration could not be captured by the prior research works. As a few studies cited earlier reveals, major macro phenomena are very much likely to affect integration among the stock markets(De Gooijer & Sivarajasingham, 2008; Smith *et al.,* 1993). As a result, fresh research in this context is required. More importantly, this author could not ignore the rights of approximately one-fourth of the world's population who have economies with enormous development potential and deprive them of the opportunity to learn about the interrelationships that may exist between the markets of their respective countries. Aside from that, this research will help the policymakers of all the THREE countries to develop effective macroeconomic policies for running their respective economies more efficiently, researchers in developing advanced findings based on this research's findings, and investors develop and implement effective strategies to better understand and reap the benefits of their investments in this region's stock markets.

MATERIALS AND METHODS:

To test cointegration and causality, at first Augmented Dicky-Fuller (ADF) unit root test will be conducted using the following equation:

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \sum \delta_i \Delta y_{t-1} + \varepsilon_{t-1} \quad (1)$$

In equation (1), y is the daily returns; model parameters are denoted by α, β, γ, and ε_t indicates the white noise error term (Alhussayen, 2022; Samman & Al-Jafari, 2015). For the purpose of the study, daily returns from BSE Sensex30, DSEX, and KSI indices for the period January 31, 2013, and August 31, 2022 were taken. Altogether 7,113 data points will be included in this analysis. Granger causality will be applied to see if returns of M Granger causes N by estimating the following equations (Cooray & Wickremasinghe, 2007; Gherghina *et al.,* 2020)

$$R_{m,t} = \alpha_0 + \alpha_1 R_{m,t-1} + \dots + \alpha_p R_{m,t-p} + \beta_1 R_{n,t-1} + \dots + \beta_p R_{n,t-p} + \varepsilon_t \quad (2)$$

$$R_{n,t} = \alpha_0 + \alpha_1 R_{n,t-1} + \dots + \alpha_p R_{n,t-p} + \beta_1 R_{m,t-1} + \dots + \beta_p R_{m,t-p} + u_t \quad (3)$$

For applying cointegration test, it is essential to see if the returns are a *I(1)* processes. If not, cointegration tests cannot be applied(International Burch University *et al.,* 2022; Majumdar, 2021; Mohite & Bhandari, 2022). The ADF test will offer that information. Johansen's cointegration test will be applied similar to Mohite & Bhandari, (2022) to test for cointegration among the given markets. STATA will be used to apply all of the aforementioned tests.

RESULTS:

Following table summarizes the results of the ADF test for all the return series of the THREE given markets:

Table 1: Summary of ADF test.

Index	Country	Test Statistics	MacKinnon approximate p-value
BSE Sensex30	India	- 48.430	0.000
DSEX	Bangladesh	- 41.667	0.000
Karachi All Share Index (KSI)	Pakistan	- 42.137	0.000

(1%, 5%, and 10% critical values are – 3.430, – 2.860, and – 2.570 respectively)

Table 2: Granger Causality.

Direction of Causality	Chi^2	df	P value	Presence of causality
BSE Sensex30 to DSEX	1.7901	2	0.409	No
Dsex to BSE Sensex 30	0.40105	2	0.818	No
KSI to BSE Sensex30	5.8778	2	0.053**	Yes
BSE Sensex30 to KSI	10.249	2	0.006***	Yes
DSEX to KSI	2.9958	2	0.224	No
KSI to DSEX	3.6541	2	0.161	No

* significant at 10%, ** significant at 5%, *** significant at 1%

DISCUSSION:

As **Table 1** shows, the returns of all the markets are stationary at level or I(0) processes. Therefore, cointegration tests cannot be performed. The results of Granger causality, as presented in **Table 2**, show that there are bidirectional causalities between returns of India and Pakistan's stock markets. It implies that the returns of Indian stock market Granger Cause the returns of Pakistani stock market and vice versa. Therefore, events that are likely to have an impact on overall market in any one of these markets will likely to affect the other. As a result, anyone with an interest in the equity markets of either India or Pakistan must stay up to date on all developments in both markets (India and Pakistan) in order to effectively analyze their collective impact on the returns of the market of their choice.

CONCLUSION:

This study tested causal links among the major South Asian markets, namely India, Bangladesh, and Pakistan. Granger Causality and ADF have been used to test causality and unit roots of the daily return of all these stock markets. Results confirm that there are no causalities among the market returns of Bangladeshi and Indian stock markets. However, bidirectional causalities have been found between the market returns of Indian and Pakistani stock markets. These findings imply that investors in both of these markets should be cautious and well-informed about the other in order to predict how their returns will behave in the future. Policymakers in one country must monitor developments in the other in order to craft and implement prudent policies for the growth of their own equity market.

ACKNOWLEDGEMENT:
The authors would like to express gratitude to those people who are supporting this research study and helps providing the necessary information and continuous support as well.

CONFLICTS OF INTEREST:
The author does not declare any conflict of interest.

REFERENCE:

1) Alam QN. (2020). Impacts of macroeconomic variables on the stock market returns of South Asian region, *Can. J. Bus. Inf. Stud*., **2**(2), 24-34. https://doi.org/10.34104/cjbis.020.24034
2) Alhussayen, H. (2022). The Relationship between Trading Volume and Market Ret-urns:A VAR/GrangerCausalityTesting Approach in the Context of Saudi Arabia. *Organizations and Markets in Emerging Economies*, **13**(1), 260–275. https://doi.org/10.15388/omee.2022.13.79
3) Asian Development Bank, (2022). Pakistan Economy to Slow in 2023 Amid Strong Climate Headwinds - ADB, *News Releases*. https://www.adb.org/news/pakistan-economy-slow-2023-amid-strong-climate-headwinds-adb
4) Baumöhl, E., & Výrost, T. (2011). Stock Market Integration: Granger Causality Test-ing with Respect to Nonsynchronous Trad-ing Effects. *Finance a Uver: Czech Journal of Economics & Finance*, **61**(1).
5) Canuto, O. (2022). *Emerging economies, global inflation, and growth deceleration* (p. 12). Policy Center for the New South. https://www.policycenter.ma/sites/default/files/2022-04/PB_30-22_Canuto.pdf
6) CFI, (2022). *Market Cap to GDP Ratio (the Buffett Indicator)*. Corporate Finance Institute. https://corporatefinanceinstitute.com/resources/knowledge/valuation/market-cap-to-gdp-buffett-indicator/
7) Chu, X., Wu, C., & Qiu, J. (2016). A nonlinear Granger causality test between stock returns and investor sentiment for Chinese stock market: A wavelet-based approach. *Applied Economics*, **48**(21), 1915–1924. https://doi.org/10.1080/00036846.2015.1109048
8) Ciravegna, L., & Michailova, S. (2022). Why the world economy needs, but will not get, more globalization in the post-COVID-19 decade. *J. of International Business Studies*, **53** (1), 172–186. https://doi.org/10.1057/s41267-021-00467-6
9) Cooray, A., & Wickremasinghe, G. (2007). The Efficiency of Emerging Stock Markets: Empirical Evidence from the South Asian Region. *The Journal of Developing Areas*, **41**(1), 171–183.
10) Dash, M. (2015). A study of granger cau-sality in Asian stock markets. *Journal of Applied Management and Investments*, **4**(3), 145–150.
11) De Gooijer, J. G., & Sivarajasingham, S. (2008). Parametric and nonparametric Granger causality testing: Linkages between international stock markets. *Physica A: Statistical Mechanics and Its Applications*, **387**(11), 2547–2560. https://doi.org/10.1016/j.physa.2008.01.033
12) Dhaka Stock Exchange, (2022). *Recent Market Information*. Dhaka Stock Exchange Limited. https://dsebd.org/recent_market_information.php
13) Dimitropoulou, A. (2022, March 31). Economy Rankings: Largest countries by GDP, 2022. *CEOWORLD Magazine*. https://ceoworld.biz/2022/03/31/economy-rankings-largest-countries-by-gdp-2022/
14) Dulaney, C. (2022). Emerging Markets Burn Through Currency Reserves as Crisis Risks Grow. *The Wall Street Journal*. https://www.wsj.com/articles/emerging-markets-burn-through-currency-reserves-as-crisis-risks-grow-11661296279
15) Finance Division, Ministry of Finance, (2022). Bangladesh Economic Review 2022. https://mof.portal.gov.bd/site/page/28ba57f5-59 ff-4426-970a-bf014242179e/http%3A%2F%2F mof.portal.gov.bd%2Fsite%2Fpage%2F28ba57f5-59ff-4426-970a-bf014242179e%2FBangladesh
16) Gherghina, Ștefan C., Armeanu, D. Ștefan, & Joldeș, C. C. (2020). Stock Market Reactions to COVID-19 Pandemic Outbreak: Quantitative Evidence from ARDL Bounds Tests and Granger Causality Analysis. *International J. of Environmental Research and Public Health*, **17**(18), 6729. https://doi.org/10.3390/ijerph17186729
17) Guagenti, C. (2022). USD To PKR: Convert United States Dollar to Pakistani Rupee. *Forbes Advisor*. https://www.forbes.com/advisor/money-transfer/currency-converter/usd-pkr/

18) Gunay, S., & Can, G. (2022). The source of financial contagion and spillovers: An evaluation of the covid-19 pandemic and the global financial crisis. *PLOS ONE*, **17**(1), e0261835. https://doi.org/10.1371/journal.pone.0261835

19) Ha, J., Kose, M. A., & Ohnsorge, F. (2022). From Low to High Inflation: Implications for Emerging Market and Developing Economies. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4074459

20) Harshita Tyagi. (2022). India may grow at 8.2% over next decade; Goldman Sachs chalks out 4 growth levers, *Financial Express*. https://www.financialexpress.com/economy/india-may-grow-at-8-2-over-next-decade-goldman-sachs-chalks-out-4-growth-levers/2622997/

21) Hiemstra, C., & Jones, J. D. (1994). Testing for Linear and Nonlinear Granger Causality in the Stock Price-Volume Relation. *The Journal of Finance*, **49**(5), 1639–1664. https://doi.org/10.1111/j.1540-6261.1994.tb04776.x

22) International Burch University, Djedović, I., Khallaf, H., & International Burch University. (2022). Islamic Market Index Behavior and Performance: Empirical Evidence from Dow Jones Market Indexes. *Eurasian Journal of Business and Economics*, **15**(29), 51–66. https://doi.org/10.17015/ejbe.2022.029.04

23) Jayaraman, T. K., & Choong, C.-K. (2012). Economic Integration in the Indian Subcontinent: A Study of Macroeconomic Interdependence. *Journal of Economic Integration*, **27**(4), 584–608. https://doi.org/10.11130/jei.2012.27.4.584

24) Karanasos, M., Yfanti, S., & Hunter, J. (2022). Emerging stock market volatility and economic fundamentals: The importance of US uncertainty spillovers, financial and health-crises, *Ann of Oper Res*, **313**(2), 1077–1116. https://doi.org/10.1007/s10479-021-04042-y

25) Khan, M. Z. (2022). Pakistan emerges as 24th largest economy in 75-year journey. *DAWN*. https://www.dawn.com/news/1704774

26) Khrawish, H. A., Siam, W. Z., & Jaradat, M. (Eds.). (2010). The relationships between stock market capitalization rate and interest rate: Evidence from Jordan. *Business and Economic Horizons*, **2**(2), 60–66. https://doi.org/10.22004/ag.econ.95964

27) Ma, Y., Wang, Z., & He, F. (2022). How do economic policy uncertainties affect stock marketvolatility?EvidencefromG7 count-ries. *International Journal of Finance & Economics*, **27**(2), 2303–2325.

28) Majumdar, P. D. (2021). Stock Market Linkage with Macro Economy: Evidence from India. *International Journal of Evolving Research*, **1**(1). https://journal.growthguide.co.in/wp-content/uploads/2022/02/Stock-market-linkage-with-Macro-Economy-Evidence-from-India-.pdf

29) Mohite, V., & Bhandari, V. (2022). An Empirical Study on Co-Integration and Causality Among GCC Stock Markets, *MARKETS*, **51**.

30) Mumbai, PTI. (2022). Equity investors lose Rs 4.90 lakh crore as Sensex falls nearly 2% [News]. *Zee Business*. https://www.zeebiz.com/market-news/news-equity-investors-lose-rs-490-lakh-crore-as-sensex-falls-nearly-2-200340

31) Murali, D., & Maiorano, D. (2022). Economic Outlook for India and Pakistan - NUS Institute of South Asian Studies (ISAS). *ISAS (Institute of South Asian Studies) Briefs, National University of Singapore*. https://www.isas.nus.edu.sg/papers/economic-outlook-for-india-and-pakistan/

32) Natti, S. (2022). USD 5 trillion economy: The curious case of India's rise to the top 5. *The New Indian Express*. https://www.newindianexpress.com/business/2022/may/22/usd-5-trillion-economy-the-curious-case-of-indias-rise-to-the-top-5-2456444.html

33) Ning Y., Wah L. C. & Erdan L. (2019). Stock price prediction based on error correction model and Granger causality test. *Cluster Computing*, **22**(2), 4849-4858.

34) PSX, (2021). Pakistan Stock Exchange Limited (PSX), *Pakistan Stock Exchange Limited,* https://www.psx.com.pk/psx/exchange/profile/about-us

35) PTI, (2022). Rupee price today: Rupee rises 37 paise to 81.30 against US dollar - The Economic Times, *The Economic Times*. https://economictimes.indiatimes.com/markets/forex/rupee-rises-37-paise-to-81-30-against-us-do llar/articleshow/94469939.cms

36) Rahman M. A., Kamran M., & Butt P. (2022). A note on the relationship between COVID-19 and stock market return: Evidence from South

Asia. *International Journal of Islamic and Middle Eastern Finance and Management*, **15**(2), 359-371. https://doi.org/10.1108/IMEFM-03-2021-0124

37) Ramasamy, B., & Yeung, M. C. H. (2005). The causality between stock returns and exchange rates: Revisited. *Australian Economic Papers*, **44**(2), 162–169. https://doi.org/10.1111/j.1467-8454.2005.0025 7.x

38) Rjoub, H., Türsoy, T., & Günsel, N. (2009). The effects of macroeconomic factors on stock returns: Istanbul Stock Market. *Studies in Economics and Finance*, **26**(1), 36–45. https://doi.org/10.1108/10867370910946315

39) Saha, S. (2012). *Stock market crash of Bangladesh in 2010-11: Reasons & roles of regulators*. Arcada-Nylands svenska yrke-shögskola.

40) Samman, H. A., & Al-Jafari, M. K. (2015). Trading Volume and Stock Returns Volatility: Evidence from Industrial Firms of Oman. *Asian Social Science*, **11**(24), p139. https://doi.org/10.5539/ass.v11n24p139

41) Singh, D. (2010). Causal Relationship Between Macro-Economic Variables and Stock Market: A Case Study for India. *Pakistan Journal of Social Sciences (PJSS)*, **30**(2).
Smith K. L., Brocato J., & Rogers J. E. (1993). Regularities in the data between major equity markets: Evidence from Granger causality tests, *Applied Financial Economics*, **3**(1), 55-60. https://doi.org/10.1080/758527817

42) Smyth, R., & Nandha, M. (2003). Bivariate causality between exchange rates and stock prices in South Asia. *Applied Economics Letters*, **10**(11), 699-704. https://doi.org/10.1080/1350485032000133282

43) TBS Report. (2022). ADB cuts Bangladesh's GDP growth forecast to 6.6%. *The Business Standard*.

44) The Editorial Board, WSJ. (2022, May 18). The Next Emerging-Market Crisis? *The Wall Street Journal*. https://www.wsj.com/articles/the-next-emerging-market-crisis-monetary-policy-debt-federal-res e rve-institute-of-international-finance-116529 031 80

45) The World Bank Group. (2022a). Popula-tion, total, *The World Bank Data,* https://data.worldbank.org/indicator/SP.POP.TOTL

46) The World Bank Group. (2022b). Popula-tion, total - Bangladesh,*The World Bank Data,* https://data.worldbank.org/indicator/SP.POP.TOTL?locations=BD

47) The World Bank Group. (2022c). Population, total - India,*The World Bank Data,* https://data.worldbank.org/indicator/SP.POP.TOTL?locations=IN

48) Valadkhani, A., & Chancharat, S. (2008). Dynamic linkages between Thai and international stock markets. *Journal of Economic Studies*, **35**(5), 425-441. https://doi.org/10.1108/01443580810903572

49) Yang Z., Tu A. H., & Zeng Y. (2014). Dynamic linkages between Asian stock prices and exchange rates: New evidence from causality in quantiles. *Appl Eco*, **46**(11), 1184-1201. https://doi.org/10.1080/00036846.2013.868590

50) Zahid, R. M. A., Waheed, M., & Sanni, T. (2022). Impact of Environmental Fluctuations on Stock Markets: Empirical Evidence from South Asia. *Journal of Environmental and Public Health*, **2022**, 1-6. https://doi.org/10.1155/2022/7692086

Citation: Bari MK. (2022). Causality among stock returns of major south Asian markets, *Int. J. Manag. Account.* **4**(5), 89-96. https://doi.org/10.34104/ijma.022.00890096