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FINANCIAL INTEGRATION AMONG MINT NATIONS' STOCK MARKET: AN EMPIRICAL STUDY

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Abstract: Nowadays, emerging nations are being seen as the future of the world and among various economic blocs namely BRICS, SAARC, ASEAN, there is one new bloc which is growing at a faster rate in terms of trade and commerce and that is MINT (Mexico, Indonesia, Nigeria, and Turkey). MINT nations have shown outstanding progress in terms of trade, commerce and economic activities over the past two decades. Though these nations have diverse ideology, political thought, economic process, trade and commerce, yet they share some common features among themselves. They enjoy relatively high growth potential and are endowed with the young workforce which helps their economy to grow faster. The present study tries to find the degree of dependence and scope of existence for financial integration among the MINT nations' stock market and aims to find the opportunity of diversification in MINT nations' stock market. The daily closing price index has been taken from January 2010 to December 2018 for each of MINT's stock exchange for the study. The results of Granger Causality and correlation did not show any causation or significant correlation but Johansen co-integration has shown some degree of co-movement among MINT nations' stock market in the long-run. Hence, we can conclude that the presence of long-run movements shows low opportunity of portfolio diversification for global investors in long-run. However, the presence of no significant short-run causality provides a high opportunity for global investors to diversify their portfolios in MINT nations' stock market.

Keywords: Financial Integration, Diversification, MINT Nations, Stock Market, Granger Causality

JEL Codes: C22, E44, F36, F43, G15, N20

1. INTRODUCTION

The internationalization of capital market and reduction in capital control norms has provided ample opportunity for international investors. They can invest not only in their own country but also in the country of their interest. Nowadays, emerging nations are being seen as the future of the world. Blocs of different emerging nations namely BRICS, SAARC, ASEAN etc have come up and are monitored by the global investors. Among all these blocs of nations, there is one more bloc which is growing at a faster rate in terms of trade and commerce is MINT. MINT stands for the first letter of four emerging nations; Mexico, Indonesia, Nigeria and Turkey. Jim O'Neill, the then Goldman Sachs Asset Management Chairman, popularized this term which was originally coined by Fidelity Investments (Boston based Asset Management Firm) in 2011. O'Neill also coined the term BRICs in 2001 in his paper 'Building Better Global Economic BRICs' which was further extended to BRICS by adding South Africa in 2010. MINT nations are not as large as BRICS in terms of population, GDP and economy. Moreover, there is no formal agreement of economic cooperation among MINT nations unlike in BRICS. Despite all this, MINT nations have shown a remarkable progress in terms of trade, commerce and economic activities over the past two decades. MINT nations house

over 644 million people. On the whole, more than 5% of the world population lives in MINT nations with a combined GDP of more than USD 4000 billion.

Though, these nations have diverse ideology, political thought, economic process, trade and commerce, yet these nations shared some common features among themselves. They enjoy relatively high growth potential and are endowed with young workforce which help their economy to grow faster when other developed nations face slower growth rate due to shrinking and ageing population. MINT as an economic bloc has gained much popularity in the recent times, compared to other economic blocs, especially, due to their military power and the political influences. Francesco and Ardita (2015) opined that keeping the factors such as huge young population, strategic geographical position and raw material exporting in consideration, MINT nations have huge potential to achieve high economic growth in future, even higher than some of the developed nations. Driven by all these facts and figures, the present study tries to find the existence of financial integration among stock markets of MINT nations.

2. ABOUT MINT NATIONS

A few years after Fidelity investments coined MINT, O'Neill started deliberating on the MINT nations' economies too. Soon after, the world also started noticing these nations as an emerging power bloc of the world. When the world's combined average GDP hovered around 5% to 6% during the period 2000 to 2017, MINT nations posted the average growth rate near double digits. These nations have diverse background, political strategy, capital control regulations and economic policies; yet working strategically to achieve more growth in their respective economies.

Geographically, these nations enjoy very special and strategic position in the world map. Mexico is on the edge of USA, Indonesia is close to China, Turkey is Considered to Straddle both Europe and Asia and Nigeria has the potential to become Africa's market hub. Apart from Nigeria, rest of the MINT nations are already the members of G20 Group, which consists of developing and developed nations. MINT nations are largely agrarian based raw material supplying nations, and exports commodities and mostly focus on more foreign exchange earnings. Despite all these advantages and opportunities, they face the challenges too. One of the big challenges is, how to create advanced infrastructure in the economy, task of uplifting the middle class people, and how to utilize their young workforce in the best possible manner in order to alleviate poverty and accelerate their economic growth.

Table 1
MINT Nations' Growth and Trade related Data

Country	*GDP (in USD Billion)*	*GNI Per Capita*	*Population (in Million)*	*Annual GDP Growth (in %)*	*Export Value Index (2000= 100)*	*Import Value Index (2000= 100)*
Mexico	1510	8,610	129.16	2.1	257.721	240.802
Indonesia	1016	3,540	263.99	5.1	246.082	359.996
Nigeria	375.745	2,100	190.86	0.8	223.6	515.978
Turkey	851.549	10,940	80.74	7.4	565.233	428.968

Source: World Bank Report 2017

Table 1 depicts MINT nations' Gross Domestic Product (GDP), Gross National Income per capita (GNI per capita), population, annual GDP growth and export-import value index related data compiled from World Bank Report, 2017. It can be observed that Mexico outperforms rest of the MINT nations in terms of GDP value and Nigeria has the lowest amount of GDP. In terms of GNI per capita, Turkey reported highest per capita GNI of USD 10,940 whereas Nigeria reported lowest USD 2,100. On the basis of annual GDP growth rate, Turkey has achieved 7.4% growth rate (highest among MINT nations), whereas Nigeria reported the lowest, i.e., 0.8%. Same is the case with export value index, Turkey reported highest index value (565.233) and Nigeria reported the lowest (223.6). But in the case of imports, Nigeria imports more goods than other nations of MINT as the import value index of Nigeria is 515.978 (highest among MINT) followed by Turkey (428.968), Indonesia (359.996) and Mexico (240.802). On the basis of export and import index, we find that Nigeria and Indonesia have trade deficit as imports exceeds exports. However, one thing should be noted that MINT nations have done well in terms of GDP, growth rate and GNI per capita.

Table 2
Trade of MINT Nations as % of GDP

Year	*Trade (% of GDP)*			
	Mexico	*Indonesia*	*Nigeria*	*Turkey*
1967	15.877	25.643	28.488	9.078
1972	16.89	35.412	22.764	14.562
1977	20.541	43.57	47.395	14.522
1982	24.134	48.676	13.78	26.881
1987	31.262	46.974	19.495	33.338
1992	35.553	57.427	38.227	31.737
1997	48.777	55.994	51.461	54.97
2002	46.698	59.079	40.035	47.461
2007	56.795	54.829	39.337	47.29
2012	65.767	49.583	44.532	52.245
2017	77.538	39.536	26.348	54.122

Source: World Bank Report 2017

Further, talking about the growth in trade over the years, it can be observed from Table-2 that during the last five decades, MINT nations have reported a significant improvement in trade (mentioned as a percentage of GDP). If we analyze the trade growth rate of MINT nations, it can be observed that Mexico, by achieving a steady growth path, has registered a positive growth rate in trade over the period of five decades. Mexico has added more than 61% in trade growth during this period of five decades. Indonesia has been seen doing well in trade and achieved the highest trade volume in 2002 (59.079 % of GDP) but after 2002 the trade is found to be declining. Considering Nigeria's position in trade growth, it can be said that the road to growth in trade has been very bumpy with sharp turns. For the first decade (from 1967 to 1977) it has been positive, but later on trade started to fall down until 1992. It again picked up the success ladder from 1992 (38.227 % of GDP) but it could last for only five years as from 2002, it again took a dip. If we compare the initial and last year milestone for trade then we can conclude that there is a decline in trade over the period of time (from 28.488% to 26.348%). On the other hand, it can be observed that during the journey of five decades, Nigeria has achieved new heights of trade growth (highest in 1997 with 51.461%). Turkey's trade has not only maintained a positive momentum in growth rate but also achieved high growth rate differential (more than 45%) during the five decades (9.078% in 1967 to 54.122% in 2017). Looking at the comprehensive trade picture, it can be concluded that MINT nations have shown a tremendous growth in trade (measured as a percentage of GDP) over the period of five decades, highest being Mexico followed by Turkey, despite having many economic and political hindrances.

According to the ranking assigned by World Bank (2017) to different economies of the world as per GDP, Mexico is the 15th largest economy of the world; Indonesia being 16th largest economy, Nigeria is at 30th place and Turkey at 17th place. If we accept the World Bank predictions for 2050, then it is found that Mexico is at 8th place, Indonesia is at 9th, Nigeria is at 13th and Turkey is at 14th place, being the largest economy of the world. The projections of World Bank are although surprising but not baseless and the projections indicate that MINT nations have huge growth potential.

3. REVIEW OF LITERATURE

Studies on financial integration among various nations have been conducted over the years. Earlier studies on market integration were conducted on developed markets only. Ripley (1973) supported low correlation among national markets which was also explained by Lessard (1974) and Hillard (1979). They further opined about the possibility of international diversification benefits. Lee and Kim (1994) examined inter-linkages between different national markets after the crisis of 1987 and found increased co-movements among markets under study after the crisis. Chaudhuri (1997) studied co-integration among six countries of Latin America and found existence of long-term relationship among all the six countries. Husain and Saidi (2000) analyzed the possibility of market inter-linkages between Pakistan equity market and seven major equity markets of the world and found little evidence of inter-linkages between Pakistan and other major markets. Mukhopadhyay and Sarkar (2003) examined the relationship between macroeconomic variables and Indian stock market returns and reported strong relationship between them before liberalization period.

Sharma and Bodla (2011) studied the co-movements among stock market of India, Pakistan and Sri Lanka taking daily closing indices levels of these three countries.

They found during the course of study that Indian market impacts the markets of Sri Lanka and Pakistan but neither Pakistan nor Sri Lanka affects the stock market of India. Vieito, Bhanumurthy and Tripathi (2013) examined weak-form of efficiency as well as the impact of global financial crisis on G-20 nations. They found that market indices were inefficient but individual stocks were efficient. They further observed higher volatility in G-20 markets after the crisis. Venkatesh (2013) explored inter-linkages among BRICS markets and found that BRICS markets do not constitute a strong homogeneous alliance. Further, it was found that the Indian market is more integrated towards other BRICS counterparts.

Singh and Shrivastav (2016) tried to explore the inter-relationship and inter-linkages between stock market of India and Sri Lanka. They found that despite showing a very long history and political relations, these two nations did not exhibit any co-movement in their stock market over the period of time. Prakash, Nauriyal and Kaur (2017) studied the co-movement among equity market of BRICS nations. They found weak co-integration among BRICS markets in the long run and no significant short-run causality among them.

Singh, Aggarwal and Anand (2017) tried to explore how Indian stock market is affected by earnings management and corporate governance. They found during the study that corporate governance has significant impact on oil & gas and technology sector stocks in comparison to other sectors of the market and suggested that good corporate governance practices encourage the rapid growth in stock market. Singh and Shrivastav (2017) explored the co-movement between stock market of India and Australia but they found no short term as well as long term co-movements and no strong correlations between them. Francesco and Ardita (2015) analysed the impact of policy changes on the growth of MINT nations. It was found that easy capital flow, positive and supportive policies by government are some of the factors which supported the economic growth of the county and it is further expected from these factors to play more prominent role in not only streamlining MINT nations policies with other major countries of the world but also to achieve better growth and development in economy in general and capital market in particular.

4. OBJECTIVES

To address the research gap based on the literature insights, we tried to analyze the existence of financial integration among these emerging economies through the study of stock market integration. The specific objectives are mentioned below:

The objectives of this study are:

- To analyze the scope of financial integration among MINT nations' stock market.
- To explore the existence of diversification opportunities among them.

5. HYPOTHESES

H_{N1}: There is no financial integration among MINT nations' stock market.

H_{A1}: There is existence of financial integration among MINT nations' stock market.

H_{N2}: There is no scope of diversification of investments in MINT nations' stock market.

H_{A2}: There is a scope of diversification of investments in MINT nations' stock market.

6. RESEARCH DESIGN & METHODOLOGY

6.1. Scope of the study

MINT nations do not have any formal cooperation and agreement among themselves for trade and investment. Nor did they hold any summit like the BRICS nations do. These nations emerged as fastest growing economies and are doing well in trade and commerce. The present study tries to find the degree of dependence and scope of existence for financial integration among the MINT nations' stock market and aims to find the opportunity of diversification of investment in MINT nations' stock market.

6.2. Source of the Data and Period of Study

For the purpose of exploring the objectives and testifying the hypotheses of the study, the daily closing index prices of MINT nations' stock market have been taken in this study in order to explore the possibilities of co-movements and financial integration among the MINT

nations' stock market. The daily closing index prices of MINT nations' stock market has been taken starting from 1st January, 2010 to 31st December, 2018.

Table 3
Stock Exchange of MINT Nations

Country	*Stock Index Chosen*
Mexico	Mexican Stock Exchange (MSE)
Indonesia	Composite Index of Jakarta Stock Exchange
Nigeria	The Nigerian Stock Exchange (NSE 30)
Turkey	Borsa Istanbul 100 Index

One stock market from each of these MINT nations has been taken as a sample stock market as the representative of the country, as shown in Table-3. The data mainly collected from the respective MINT nations' official stock market website and data has been processed and analyzed with the help of EViews 9.

6.3. Methodology

The daily returns of MINT nations' stock market index have been analyzed taking the difference between natural logarithmic closing index prices for two consecutive days of trading. The equation (1) is used for this purpose.

$$R_t = \log (P_t) - \log (P_{t-1}) \quad (1)$$

Where R_t is logarithmic index price returns at time period t. P_t and P_{t-1} are daily closing prices of index on two successive days t and t-1 respectively.

To have better data analysis, Augmented Dickey-Fuller test, Pairwise Granger Causality Test, and Johansen's Co-integration Test is conducted.

Dickey and Fuller (1981) have done the pioneer work on testing the presence of unit root in time series data. Presence of unit root denotes non-stationary data i.e., mean, variance and co-variance is not constant over time. For Rt return series, ADF test consist of regression of the first difference of data series against the series lagged k times. It is shown as under:

$$\Delta r_t = \alpha + \delta r_{t-1} + \Sigma_{i=1}^{p} \beta_i \ \Delta r_{t-i} + \varepsilon_t \quad (2)$$

$$\Delta r_t = r_t - r_{t-1}; \ rt = \ln(R_t)$$

Here the null hypothesis is H_0: $\delta = 0$ and the alternate hypothesis is H_a: $\delta < 1$. If the null hypothesis is accepted then it will imply that time series data is having unit root.

Granger (1967) first proposed test to examine whether one time series is useful in forecasting another time series data or not. Basically, this test measures the short-term causal relationship between two different data series. Johansen (1991) proposed this method to determine that whether a group of time series is co-integrated or not. This test is useful in predicting long-term relationship among different time series. The pre-requisite for this test is that data series should be integrated of order 1, that is, I (1).

7. DATA ANALYSIS AND INTERPRETATION

The data is analyzed and interpreted for MINT nations' indices in this section. The descriptive statistics as shown in Table 4 shows that all MINT nations' indices are negatively skewed implying that distribution is having a long left tail and mass distribution concentration is on right. The mean value of Mexico index is 0.002005, Indonesia 0.002198, Nigeria 0.001733 and Turkey is 0.001873. It means that Indonesia is producing higher return and better in comparison of the remaining three nations.

Table 4
Descriptive Statistics

	Mexico	*Indonesia*	*Nigeria*	*Turkey*
Mean	0.002005	0.002198	0.001733	0.001873
Median	0.002237	0.003243	0.001689	0.003577
Maximum	0.119056	0.086797	0.164753	0.083366
Minimum	-0.162136	-0.112722	-0.145284	-0.143708
Std. Dev.	0.038076	0.022274	0.029636	0.031383
Skewness	-0.174468	-0.627473	-0.127177	-0.671336
Kurtosis	4.625572	6.579264	8.475405	4.506735
Jarque-Bera	48.02869	249.9570	522.0277	70.76869
Probability	0.000000	0.000000	0.000000	0.000000

The time series data has been analysed with the help of EViews 9 to capture the econometric results and its interpretation. The study used log of MINT index prices in order to bring them to a common platform for better

comparison. Figure 1, 2, 3 and 4 are line graphs that show volatility and constant mean over time for MINT nations' return series. Since it is necessary to check and reconfirm the property of data with more sophisticated test, therefore, we applied ADF test on the MINT indices for confirming about the presence of unit root in the data.

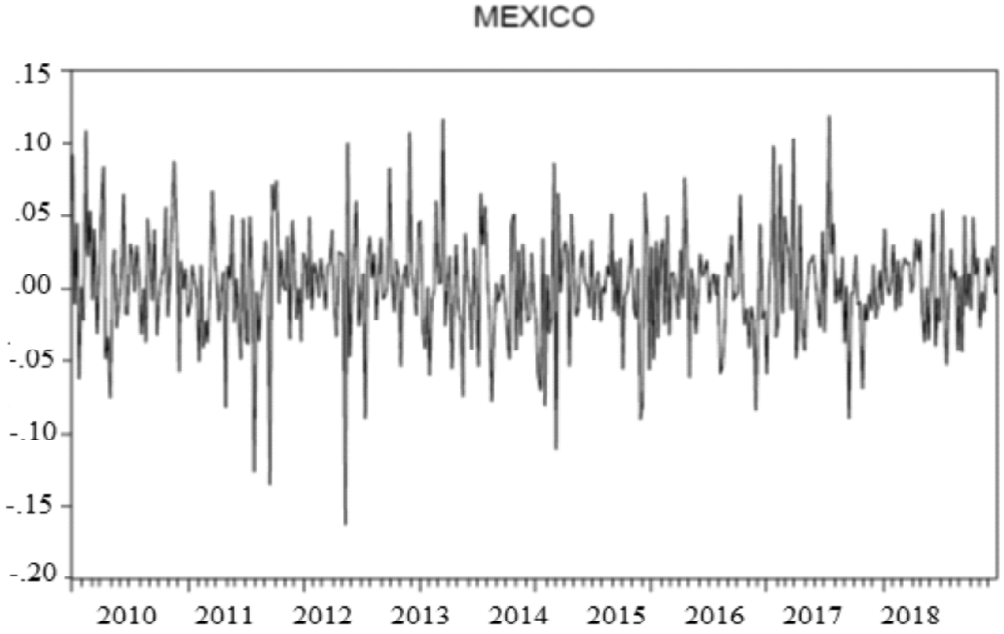

Figure 1: Line Graph of Mexico Return Series

Figure 1, Figure 2, Figure 3 and Figure 4 are the line graph of index return of Mexico, Indonesia, Nigeria and Turkey respectively. These figures depict that the index return of MINT nations' are having constant mean over time as this is a pre-requisite for a time-series data.

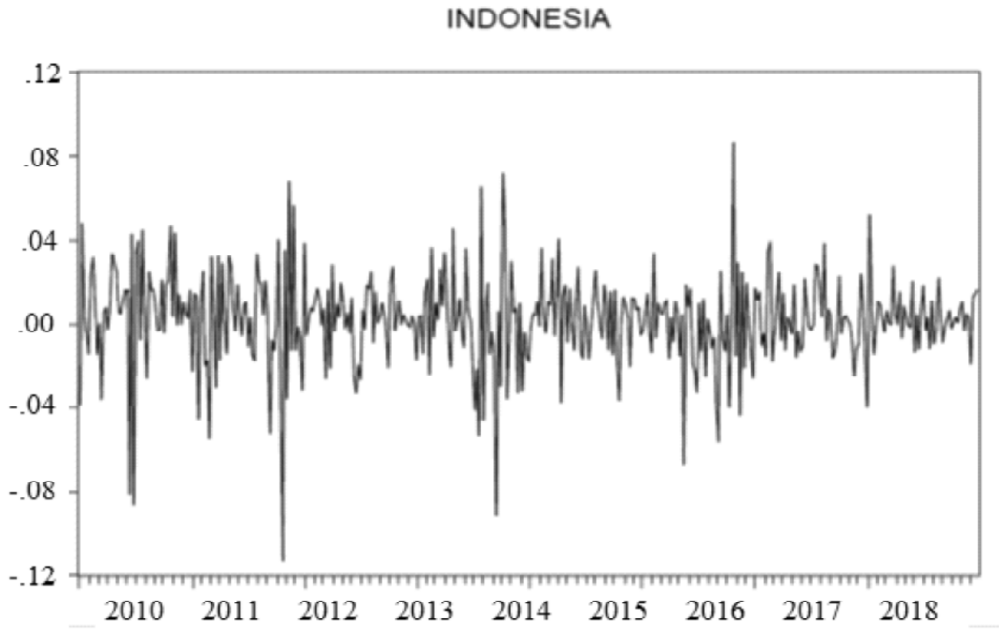

Figure 2: Line Graph of Indonesia Return Series

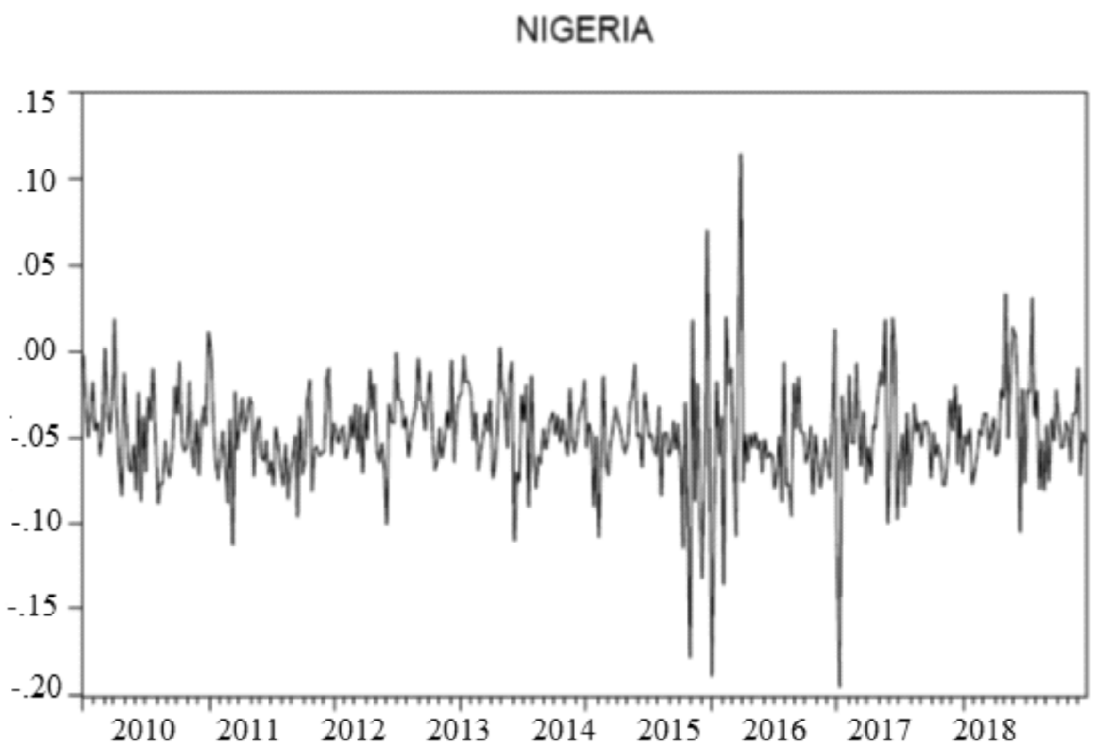

Figure 3: Line Graph of Nigeria Return Series

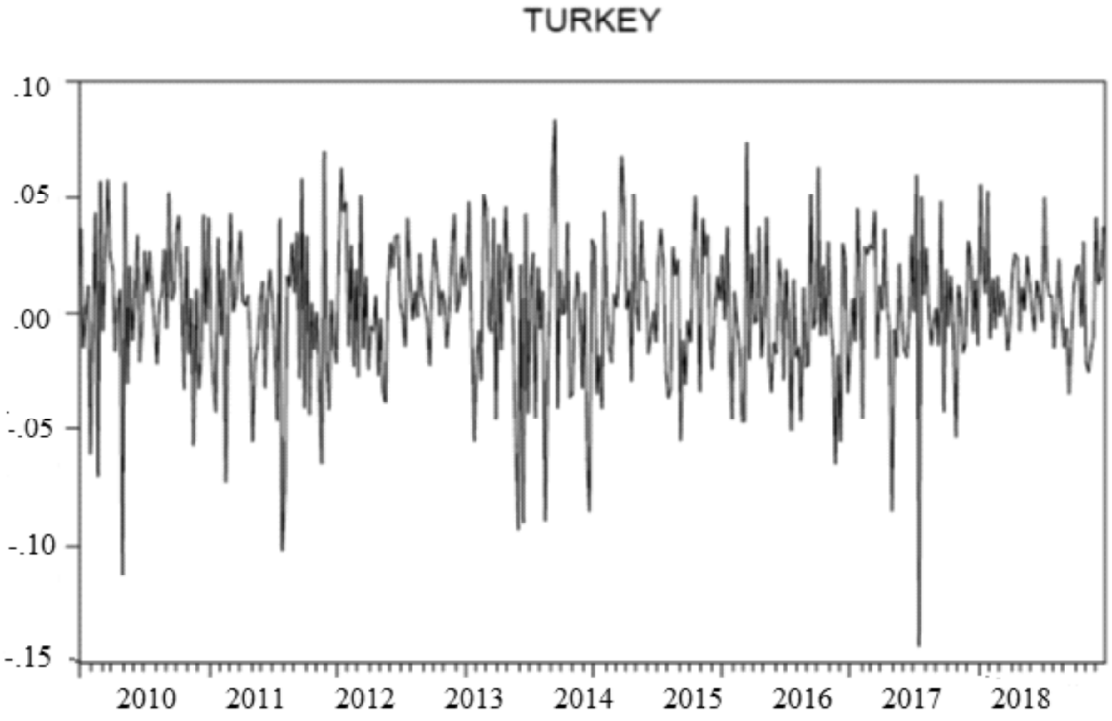

Figure 4: Line Graph of Turkey Return Series

Table 5
ADF Test Results

Variables at Level	*t-Statistic*	*Critical Values at 5%*	*P-Values*	*Remarks*
Mexico	-2.335549	-2.868252	0.0874	Non stationary
Indonesia	-2.416093	-2.868252	0.1379	Non stationary
Nigeria	-1.672490	-2.868252	0.4446	Non stationary
Turkey	-1.311658	-2.868252	0.6254	Non stationary
At "1st" Difference	t-Statistic	Critical Values at 5%	P-Values	Remarks
Δ Mexico	-23.25424	-2.868268	0.0000	Stationary
Δ Indonesia	-23.80821	-2.868268	0.0000	Stationary
Δ Nigeria	-18.82759	-2.868268	0.0000	Stationary
Δ Turkey	-21.98576	-2.868268	0.0000	Stationary

Source: Authors' own calculations
Note: "Δ" denotes first difference results of MINT nations' equity market index price

Table 5 represents result of Augmented Dickey-Fuller test for MINT indices at level as well as at first difference. The test shows that data has unit root or the data is found to be non-stationary at level. But after calculating the first difference of the data series, the data is found to have no unit root; therefore making it stationary as the t-statistics is found to be more than critical values and further it is found significant at 5% level. So, presence of no unit root indicates that data is fit for econometric testing.

Table 6
Correlation Test Results

	Mexico	*Indonesia*	*Nigeria*	*Turkey*
Mexico	1.000000	-0.009668	0.062556	0.199760
Indonesia	-0.009668	1.000000	-0.077617	-0.072175
Nigeria	0.062556	-0.077617	1.000000	0.045241
Turkey	0.199760	-0.072175	0.045241	1.000000

Source: Authors' own calculations

We further checked the correlation statistics which gave an indication (Table 6) that these markets are either little bit positively correlated with other or negatively correlated with other but not highly correlated.

Table 7
Pairwise Granger Causality Test Results

Null Hypotheses	*F-Statistic*	*P-Value*
MEXICO does not Granger Cause INDONESIA	0.19172	0.8256
INDONESIA does not Granger Cause MEXICO	1.15050	0.3175
NIGERIA does not Granger Cause INDONESIA	0.19518	0.8228
INDONESIA does not Granger Cause NIGERIA	1.44745	0.2364
TURKEY does not Granger Cause INDONESIA	1.37757	0.2534
INDONESIA does not Granger Cause TURKEY	0.42027	0.6572
NIGERIA does not Granger Cause MEXICO	0.62041	0.5382
MEXICO does not Granger Cause NIGERIA	1.77230	0.1712
TURKEY does not Granger Cause MEXICO	1.58422	0.2064
MEXICO does not Granger Cause TURKEY	2.55136	0.0792
TURKEY does not Granger Cause NIGERIA	3.66647	0.0264
NIGERIA does not Granger Cause TURKEY	0.69899	0.4977

Source: Authors' own calculations

After checking the stationarity of data, Granger Causality test has been applied in order to know about the short-run causality. Table 7 depicts the result of Granger's causality test which has been performed on pairwise basis on MINT nations' stock market index prices. Here the pairwise results between Mexico and Indonesia are showing that the null hypothesis Mexico does not Granger cause Indonesia and null hypothesis Indonesia does not Granger cause Mexico are accepted as the p-value for both the hypotheses are coming out to be more than 0.05. Null hypothesis, Nigeria does not Granger cause Indonesia and null hypothesis Indonesia does not Granger cause Nigeria are accepted as the p-value for both the hypotheses are coming out to be more than 0.05. The null hypothesis, Turkey does not Granger cause Indonesia and null hypothesis Indonesia does not Granger cause Turkey are accepted as the p-value for both the hypotheses are coming out to be more than 0.05. The null hypothesis, Nigeria does not Granger cause Mexico and null hypothesis Mexico does not Granger cause Nigeria are accepted as the p-value for both the hypotheses are coming out to be more than 0.05. The null hypothesis, Turkey does not Granger cause Mexico and null hypothesis Mexico does not Granger cause Turkey are accepted as the p-value for both the hypotheses are coming out to be more than 0.05. The null hypothesis, Turkey does not Granger cause Nigeria is rejected as the p-value is less than 0.05. Therefore, it implies that Turkey does affect the stock market of Nigeria but the reverse is not true as null hypothesis Nigeria does not Granger cause Turkey is not rejected as p-value is more than 0.05.

After applying Granger's causality, Johansen's Co-integration test has been applied in order to evaluate co-integrating relationship among MINT nations' stock market. The test results of Johansen cointegration (Table-8) reveal that there are at most 3 co-integrating equations and the result is found statistically significant because p-value for this is coming out to be less than 0.05. Therefore, Johansen test result is showing that there is a co-movement in MINT nations' market, i.e., these are moving together over the period of time.

So, with all the results and testing, we came to the conclusion that the first null hypothesis (Ho1), i.e., no financial integration among MINT nation's stock market, has been rejected as the co-integration test shows that

Table 8
Johansen Co-integration Results

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	*Eigenvalue*	*TraceStatistics*	*0.05 Critical Value*	*Prob.***
None*	0.243093	327.6889	47.85613	0.0001
At most 1*	0.196253	212.9406	29.79707	0.0001
At most 2*	0.161541	122.9307	15.49471	0.0001
At most 3*	0.115016	50.34042	3.841466	0.0000

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	*Eigenvalue*	*Max-Eigen Statistics*	*0.05 Critical Value*	*Prob.***
None*	0.243093	114.7483	27.58434	0.0000
At most 1*	0.196253	90.00994	21.13162	0.0000
At most 2*	0.161541	72.59024	14.26460	0.0000
At most 3*	0.115016	50.34042	3.841466	0.0000

Max-eigen value test indicates 4 cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: Authors' own calculations

there are at least three co-integrating equation that means at least three out of four moving together over the period of time. Further, the presence of co-movements in the long-run actually limits the scope of diversification of investments in the long-run for the portfolio investors. Therefore, on the basis of Johansen test results, second hypothesis (Ho2), i.e., no scope of diversification of investments in MINT nations' stock market, is accepted as there is no presence of co-movement in MINT nation's stock market. But it should also be noted that Granger's causality is still indicating about no significant short run causation, except in the case of Turkey affecting Nigeria, and hence, in short run this may be fruitful for diversification opportunity.

8. CONCLUSION

The Internationalization of capital markets not only gives the opportunity to investors to invest their money in their own country but also the country of their choice too. MINT nations do not only show significant attainment in terms of trade and commerce but also grab the attention of global investors. It is very important to mention here that except Turkey, rests of the MINT nations are the leading commodity producers.

Talking about the findings of tests, the descriptive statistics indicated that market returns of Indonesia is higher than other MINT nations and Mexico is having higher risk as the standard deviation is relatively high. Granger causality test and correlation test found no significant causation and correlation except Turkey affecting Nigeria. Talking about Johansen's co-integration test, some degree of co-movement has been observed in spite of the fact that there is no formal agreement among them. The results of the study are very interesting as on one side we see that there is no such formal agreement among them and on the other side we are seeing that these economies show some degree of co-movements. Since, Johansen co-integration talks about long-run co-movements, therefore, we have a reason to believe that these markets are moving together in the long run although they do not have any short-run causality. Due to these facts, we can conclude that the presence of long-run movements shows low opportunity of portfolio diversification for global investors in long-run. But on the other side, presence of no significant short-run causality provides a high opportunity for global investors to diversify their portfolio in MINT nations' stock market.

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