Future Business Journal 4 (2018) 189–194

Contents lists available at ScienceDirect

Future Business Journal

journal homepage: www.elsevier.com/locate/fbj

International portfolio diversification in the Nigerian stock market: A global financial crisis perspective☆

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ARTICLE INFO

JEL classification:
G11
G15

Keywords:
International portfolio diversification
Global financial crisis
Nigerian stock market
Developed stock markets

ABSTRACT

This study examines the feasibility of international portfolio diversification in the Nigerian stock market. It investigates the relationship between the Nigerian stock market and 5 developed stock markets (US, UK, Japan, Germany and France) in the context of the global financial crisis. The Vector Autoregressive (VAR) Granger causality test results show that the Nigerian stock market and all the developed stock markets are not linked in all the sub-sample periods except the Japanese stock market in the post-crisis period, thus implying that international portfolio diversification is possible in the Nigerian stock markets except Japanese investors in the post-crisis period. Under the full sample period, only the Japanese and German stock markets are not linked to the Nigerian stock market and this indicates international portfolio diversification is feasible for only Japanese and German investors in Nigeria. The Generalized Method of Moments (GMM) regression results indicate that only German and French stock markets have significant impact on the Nigerian stock market in the pre-crisis period, but none of the developed stock markets exert significant impact in the crisis period. In the post-crisis period, only the German stock market is significantly related to the Nigerian stock market. The regression estimates reveal that only the Japanese, German and French stock markets are significantly related to the Nigerian stock market over the full sample period.

1. Introduction

One of the main features of the evolving global financial system is stock market linkages which have been facilitated by the liberalisation of stock markets in most countries of the world over the years. Stock market liberalisation created opportunity for investors to hold financial assets in domestic and foreign stock markets. This provides investors with the opportunity to exploit international portfolio diversification. International portfolio diversification is an investment strategy which allows an investor to reduce portfolio risk by holding domestic and foreign financial assets simultaneously. Grubel (1968) identifies international portfolio diversification as a source of welfare gains from international economic relations. Most investors prefer international portfolio diversification to domestic portfolio diversification because investment returns in the domestic stock market are influenced by natural and artificial factors, business cycles and government policies whose effects are limited to the domestic stock market (Grubel & Fadnar, 1971). However, the benefits of international portfolio diversification is limited when stock markets are linked or share a common trend.

☆ Peer review under responsibility of Faculty of Commerce and Business Administration, Future University.
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https://doi.org/10.1016/j.fbj.2018.06.001
Received 2 August 2017; Received in revised form 5 December 2017; Accepted 24 June 2018
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International investors prefer to hold a global portfolio containing assets of both developed and emerging stock markets. Harvey (1995) argues that emerging stock markets are weakly correlated with developed stock markets. Therefore, investing in assets traded in emerging and developed stocks markets simultaneously is a portfolio risk-reduction strategy. Studies such as Agyei-Ampomah (2011), Alagidede, Panagiotidis, and Zhang (2011), Kapingura, Mishi, and Khumalo (2014), and Mensah and Alagidede (2017) document that African stock markets are attractive investment grounds for international investors. The weak correlation between African and developed stock markets suggests that international investors would maximise international portfolio diversification benefits by including African stocks in a mean-variance portfolio (Alagidede, Panagiotidis, & Zhang, 2011).

The world has become a global market as a result of increased financial integration among countries. This has allowed financial turmoil in one country to cause crisis in the financial market of another country. Alagidede (2008) argues that African stock markets are segmented from developed stock markets and are likely to respond more to domestic rather than global information. However, the global financial crisis which metamorphosed from the US subprime mortgage crisis crippled the performance of stock markets across the world and was alluded as the reason for the 2008 stock market crash in Nigeria. Allen, Otchere, and Senbet (2011) identify the Nigerian stock market as one of the worst performing markets in sub-Saharan Africa in 2008. The global financial crisis had more adverse impact on the stock markets of South Africa, Egypt and Nigeria than other African stock markets (Senbet & Otchere, 2010).

The liberalisation of the Nigerian stock market was facilitated by the introduction of the Nigerian Investment Promotion Commission Decree No. 16 of 1995 and Foreign Exchange (Monitoring and Miscellaneous Provisions) Decree No. 17 of 1995. The official liberalisation period of the Nigerian stock market was August 1995.[1] The liberalisation facilitated the inflow of foreign portfolio investment in Nigerian stock market. Foreign portfolio equity inflow in Nigeria had a negative growth rate of -165.91% and -151.09% in 2008 and 2009 respectively (World Bank, 2016). This indicates that the global financial crisis made the Nigerian stock market become less attractive to international investors.

Mensah and Alagidede (2017) argue that international portfolio diversification becomes difficult to achieve when markets experience financial crisis. Empirical evidence on international portfolio diversification in the Nigerian stock market in the context of the global financial crisis seems non-existent. Therefore, this study offers evidence on international portfolio diversification in the Nigerian stock market before, during and after the global financial crisis. The rest of this study is segmented as follows. Section 2 presents the data and preliminary analyses, Section 3 reports the model and estimation results and Section 4 provides the conclusion. Fig. 1.

2. Data and preliminary analyses

The main objective of this study is to assess the feasibility of international portfolio diversification in the Nigerian stock market in the milieu of the global financial crisis. In order to achieve this objective, the relationship between the Nigerian and selected developed stock markets in the pre-crisis, crisis and post-crisis periods were examined. The developed stock markets belong to United States (US), Japan, United Kingdom (UK), Germany and France.[2] Monthly data on All-Share Index (ASI) for all the stock markets for the period January 2000-December 2015 were obtained from Bloomberg. The monthly data was preferred to higher frequency data because it overcomes the problem of unsynchronized trading (Alagidede, 2008; Wong, Penm, & Terrell, 2004). The National Bureau of Economic Research (NBER) dates the US economic recession which caused the global financial crisis between December 2007 and June 2009. Therefore, the pre-crisis period covers January 2000 to November 2007, the crisis period spans from December 2007 to June 2009 and the post-crisis period[3] extends from July 2009 to December 2016.The monthly ASI which represents monthly price were transformed to return series by using this formula:

$$R_t = 100 \times \Delta \ln(P_t) \quad (1)$$

Table 1 reports the results of the preliminary analyses on the data for the sub-sample and full sample periods. The preliminary analyses include descriptive statistics and Ng-Perron unit root test.

In the pre-crisis period, the Nigerian stock market has the highest mean return while only the Japanese stock market has the lowest mean return with a negative value. All stock markets record a negative mean return and this implies that on the average, the stock markets were not favourable to investors during the global financial crisis. However, in the post crisis period, all stock markets have a positive mean return, thus indicating that the stock markets became favourable after the global financial crisis. Over the full sample period, the Nigerian stock market has the highest positive mean return and this confirms with Harvey (1995) that emerging stock markets yields more return than developed stock markets.

As indicated by the standard deviation statistic, the Nigerian stock market appears to be the most volatile among the markets in all sub-sample periods except the pre-crisis period where the stock market of Germany has the highest standard deviation. For the full sample period, the Nigerian stock market has the highest standard deviation. This implies that the market experience higher volatility than the developed stock markets and this is consistent with Harvey (1995) that emerging stock markets are more volatile than developed stock markets. It further implies that the Nigerian stock market is the most risky market.

The skewness statistic indicates that returns in all stock markets are negatively skewed in the pre-crisis period except the Nigerian stock market. During the crisis period, only the stock market returns of US, UK and Japan are negatively skewed. In the post-crisis and

[1] See Bekaert and Harvey (1998).

[2] The selected developed stock markets account for more than 70% of world market capitalisation.

[3] The post-crisis period starts from the month after the US economic recession ended.

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