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THE RESPONSE OF SELECTED STOCK MARKETS TO THE NEW YORK STOCK EXCHANGE (NYSE): A FINANCIAL MARKETS ANALYSIS

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Abstract: The study empirically examines the response of two major stock indexes-Germany DAX30 and the UK FTSE 100 to the S &P500 of the NYSE, for the period 2007-2023. Several econometric tools were employed to make the study robust, which include trend analysis, summary statistics, correlation matrix and regression analysis. The results show a high degree of co-movement (interconnectedness) between the three global stock markets). Specifically, US stock market, index, indicated by the S&P500 of the NYSE has a positive and significant impact on the German and the UK Stock indexes, with a more pronounced impact on the latter. Invariably there exist contagion or domino effect among the three stock markets, with developments, shocks and fluctuations in the US stock market being directly transmitted to the German and the UK exchanges. Based on the findings, strong economic policy measures to reduce the impact of the US financial markets through greater economic and portfolio diversification, as well as country-specific driving factors in order to minimize the inherent risk and uncertainty associated with such high dependence are important.

Keywords: Financial market, Dependence of stocks, UKFTSE, German DAX30, S& P500

JEL Classification*:* G10, G14, G15, E4, F36

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1. INTRODUCTION

Financial markets across the globe, have become increasingly more interrelated and dependent, due to the ease and speed at which foreign capital flows from one market to another. Financial globalization, has undoubtedly accelerated the pace of correlations between/among financial markets. This has resulted to increase in contagion or domino effect among markets across several regions of the world (Sun, et al, 2020). According to Mckinsey Global Institute (2019), between 2007 and 2017, manufacturing value chains declined from 28% to 22%, while there was a 60% increase in activities of financial services industry and other service- oriented industries. The connection of stock markets across the world in terms of response to movements and trend to major exchanges like the New York Stock Exchange (NYSE), is particularly prominent, given the economic and financial standing of the US economy. In the same vein, is well known that the US and European Union (EU) play very significant roles in global economic and financial affairs (Ruzhao, 2018). This interconnectedness underscores the importance of understanding the response of different or major stock markets, such as the UKAND German stock markets to changes in the NYSE. The focus of this study is to analyze the response of these major stock markets to movements in the NYSE, with a view to shedding light on the dynamics of global financial interconnectedness (Smith, 2020). By examining the relationships between these markets, valuable insights into the mechanisms that drive driving global financial capital flows and market volatility can be gained. The time frame of this study ranges from January 2, 2020 to November 29, 2022, using aggregate market index data from the U.S., Germany and UK. The significance of the study cannot be overemphasized because it will provide useful financial investment insights to investors, fund managers, and financial market regulators. It will also serve as a stepping stone for other researchers.

The remainder of this paper is organized as follows. Section 2 presents a brief review of the literature. Section 3 contains the methodology, and the the empirical results and discussion are contained in section 4. The paper is concluded in section 5, with some evidence-based policy recommendations.

Objectives of the Study

Based on the foregoing, the overriding objective of this study is to empirically investigate the response of stock indexes of two selected major exchanges to the S&P500 of the NYSE.

The specific research objectives include to;

(i) ascertain the degree of correlation between pairs of the S&P500 and indexes of selected major exchanges (UK and Germany).

(ii) investigate the extent to which stock returns in NYSE affect stock prices in selected major exchanges (UK and Germany).

2. BRIEF SURVEY OF LITERAURE

The Efficient Market Hypothesis (EMH) suggests that financial markets reflect all available information, making it impossible to consistently to earn abnormal returns (Fama, 1970, 1991). Nevertheless, financial globalization, integration and contagion theories propose the interconnectedness of stock markets, such that events in one market can impact others (Ozekhome & Briamah, 2023). Thus, through the mechanisms of financial transmission, spillovers and interconnectedness brought about by financial integration, stock markets react to activities in other markets (Forbes & Rigobon, 2002). The Arbitrage Pricing Theory (APT) also highlights the role of macroeconomic factors in shaping the dynamics of stock market reruns (Ross, 1976).

Empirical studies have shown evidence that the NYSE has a significant impact on other stock markets, worldwide. The study by Eun and Shim (1989), for instance, found evidence that the US stock market has significant influence on other markets, including those in Europe and Asia. Recent studies (see for instance Bekart et al. 2014), have corroborated the existence of co-movements and spillover effect among stock markets, particularly between the NYSE and the UK and German stock markets. The study by Chatzis et al. (2018) utilized deep learning and machine learning techniques to predict stock market crises arising from international stock movement transmission. The findings show that stock co-movements are significant propagators of potential market downturns.

Vidya and Prabheesh (2020) investigate the COVID-19 pandemic impact on global trade networks and stock markets. The study finds that global uncertainties resulting to international transmission of shocks impact stock markets globally. In a more recent study, Yu (2025) explores the use of backpropagation neural networks in predicting the movement of stock prices on the NYSE. The results indicate that neural networks that have 8-32 nodes are robust in predicting stock price co-movements over a period of 6-3 years.

Fraser and Oyefeso (2005) investigates the long-run convergence between US, UK and seven European stock markets. They find evidence that only short-term real diversification gains occur, and that the US and the UK markets are interconnected to a relatively less degree. The study by are Li and Zou (2008) found significant correlations between different stock markets across the globe. In the same vein, Dimpfl (2009) examine the impact of the opening of US stock markets on the German and European stock markets. The evidence indicates that the German market reacts to the US Markets. Shahzad et al (2018) modeled systematic risk and dependence structure between oil and stock markets. The evidence show that significant return and volatility spillovers between Islamic and conventional stock market. ao et al (2020). Find evidence of stock markets convergence and transmission among major economies of the world.

Overall, these findings suggest that investors and policy makers need to consider the trends and interconnectedness of global markets in making optimal investment decisions. Through spillover and transmission effects, shocks generated in one stock market and transmitted to other stock markets in concentric form

3. METHODOLOGY

3.1. Model Specification

The study employed the Ordinary Least Squares (OLS) regression model to estimate and provide empirical evidence on the dynamic nature of the effects the US capital markets on selected major exchanges across the globe. Prior to this, the descriptive statistics showing the characterization of the stock series data, and the correlation matric, showing the degree of correlations and co-movements among the stocks are implemented. The functional form of the OLS model is specified as:

$$\text{PRICE} = f(\text{NYSE MARKET VARIABLES}) \quad (1)$$

Where; PRICE daily closing price in selected major stock markets.
NYSE market variables will include returns and its volume of trade.
Empirically, the above model becomes;

$$RET_{DAXt} = B_0 + \text{B1}RETURNS_{NYSEt} + B_2 VOLUME_{NYSEt} + u_t \quad (2)$$

$$PRICE_{FTSEt} = B_0 + \text{B1}RETURNS_{NYSEt} + B_2 VOLUME_{NYSEt} + u_t \quad (3)$$

Where RET_{DAXt} is returns of the German stock exchange RET_{FTSEt} is the returns of London Stock Exchange.

The independent variables are returns and volumes of NYSE.

3.2. Data Analytics Techniques

In addition to correlation analysis, The OLS multiple regression model is utilized to estimate the influence of the US markets on all the major markets selected for this study. Also, the power B1 and SAS Data visualization techniques are employed. Suffice it to say that prior to empirical investigation, an array of pre-diagnostic tests, such as descriptive statistics, normality and heteroscedasticity tests, were conducted on the data series to ensure their fitness before being entered for the main empirical estimation. Some key post-diagnostic tests were also carried out to ensure the reliability and validity of the results obtained.

4. RESULTS AND DISCUSSION

4.1. Introduction

This study empirically investigates the response of two major stock indexes (DAX and FTSE) of the Frankfurt and London Stock Exchanges, respectively to changes in the S & P500 of the NYSE. The Ordinary Least Squares (OLS) regression technique is employed to provide empirical evidence on the dynamic nature of the effect. Prior to the baseline estimation, the summary of the data set showing the means, minimums, maximums and standard deviations of the variables are presented. Correlation matrix is also employed to ascertain the degree of association between three indexes of the US, Germany and the UK.

4.2. Trend Analysis

The returns trend is presented in Fig. 1

Figure 1 for the stock indexes showed that there had been up and down movements in stock indexes in the major financial markets across the globe during the period. The cyclic nature showed that the various stocks are interconnected. The graph show that the highest fluctuation and downward trend in stocks were recorded during the 2007-2008, characterizing the global financial crisis, which erupted from the US subprime mortgage market, characterizing a financial contagion syndrome.

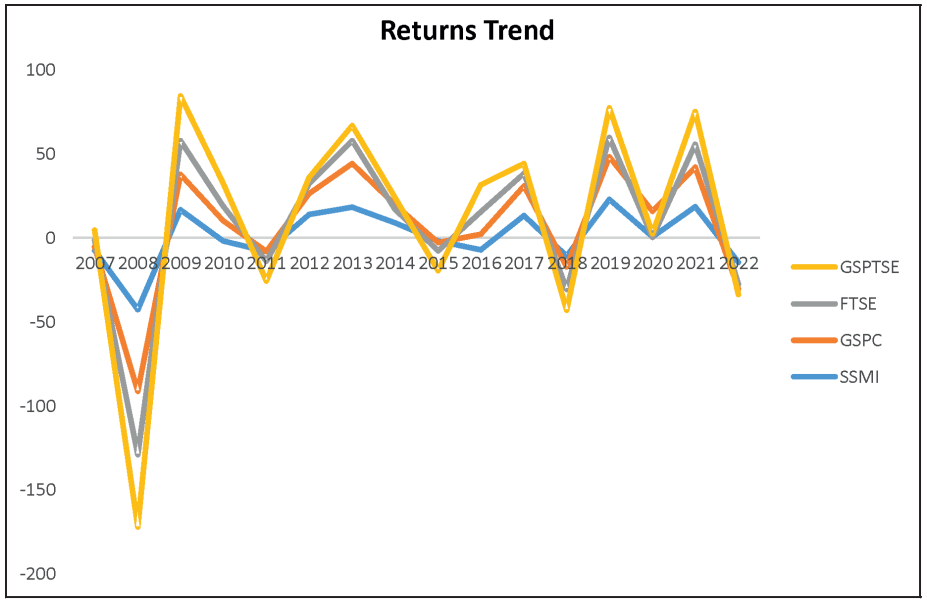

Fig. 1: Stock Returns Trend

Source: Authors

4.3.1. Descriptive Statistics

Table 1 shows the statistics of the datasets on the variables used for the analysis

Table 1: Descriptive Statistics

	Mean	*Median*	*Max.*	*Min.*	*Std. Dev.*
RETDAX	14,122.6	13,850.7	16,115.7	9,145.9	122.8
$PRICE_{FTSE}$	7,195.1	6,984.6	7,650.3	5,616.6	262.7
RETNYSE	15,280.2	14,616.3	17,192.7	12,401.2	177.28
VOLNYSE	6.25E+09	5.90E+09	8.40E+09	1.02E+08	66.4

Source: Authors' computation

The summary statistics in Table 1 show a mean DAX stock index of 14,122.6. The median stock index value is 13,850.7. The maximum and minimum values are respectively, 16115.7 and 9,145.9, respectively. Thus, actively –traded German companies within the Frankfurt Exchange had good stock performance in the period of analysis, respectively. The mean stock price for the Financial Times Stock Exchange (FTSE), the weighed stock index of UK-listed blue chip companies listed on the London Stock Exchange (LSE) is7,951.1, with maximum and minimum values of 7650.3 and 5,616.6,

respectively. The mean NYSE composite index, indicated by the S&P500 is 15,280.2. The maximum and minimum values are 17, 192.7 and 12,401.2. The standard deviation, which indicates the divergence or volatility of the stocks are respectively 122.8 for the German DAX, 262.7 for the UK FTSE and 177. 3 for the US stock (NYSE). Given that these values are relatively lower than their corresponding average stock returns, there exist plausible evidence that significant correlations and interdependence exist among the stocks.

4.3.2. Correlation Analysis

The correlation matrix that examines the co-movement between the S&P500 of the NYSE and market index of Germany and the UK is presented in Table 2.

Table 2: Correlation Matrix

	RET_{DAX}	$PRICE_{FTSE}$	RET_{NYSE}	VOL_{NYSE}
RET_{DAX}	1			
$PRICE_{FTSE}$	0.043 (0.61)	1		
RET_{NYSE}	0.66 (0.00)	0.44 (0.00)	1	
VOL_{NYSE}	0.38 (0.00)	0.29 (0.00)	0.23 (0.02)	1

Source: Author's computation

As shown in the correlation matrix, a positive and high degree of correlation exists between the stock returns in the NYSE and that of the UK and Germany. This is a strong indication of financial linkages between three major stock exchanges, resulting in contagion or domino effect among them,

4.3.3. Serial Correlation Test

The result of the serial correlation test to investigate stock residuals is presented in Table 3

Table 3: Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.75	Prob.	0.47
Obs*R-squared	2.20	Prob. Chi-Square	0.35

Source: Authors' computation

The Breusch- Godfrey serial correlation test shows that the F-statistic and Obs*R-square values of 0.75 and 2.210, and their corresponding p-values of 0.47 and 0.35, respectively, are greater than the critical 0.05 value. This suggests that there is no significant evidence of serial correlation in the model. Thus, we can conclude that there is no autocorrelation in the model.

4.4. Regression Results

The results of the OLS estimation that investigates the extent to which stock returns in NYSE affect stock prices in selected major stock exchange indices (i.e. the German DAX and UK FTSE) is presented in Table 3. In essence, the results show the dynamic impact of the US stock market on selected major exchanges across the globe

Table 3: Estimates of Dependence of Stock Markets

Response of German Stocks (DAX) to the US Stocks Index (S&P500 of the NYSE) Dependent Variable: RET_{DAX}				*Response of the UK Stock Index (FTSE) to the US Stock Index (S&P500 of the NYSE. Dependent Variable: $PRICE_{FTSE}$*			
Variable	*Coefficient*	*t-ratio*	*Prob.*	*Variable*	*Coefficient*	*t-ratio*	*Prob.*
C	0.162	1.095	0.32	C	0.082	0.903	0.38
RET_{NYSE}	0.029***	2.747	0.00	RET_{NYSE}	0.047	4.593	0.00
VOL_{NYSE}	0.344**	2.344	0.03	VOL_{NYSE}			
Diagnostics							
R^2 = 0.873				R^2 = 0.944			
Adjusted R^2 = 0.862				Adjusted R^2 = 0.921			
F-Stat = 33.27***				F-Stat = 28.45***			
DW =1.67				DW = 170			

*, **, *** denotes Statistical significance at the 10%, 5% and 1% significance level, respectively
Source: Authors' computation

The empirical results reported in table show impressive goodness of fit and diagnostic and diagnostic. The adjusted R-squared value indicates that US Stock Exchange explains about 86.2% and 92.2 of the systematic changes in the German stock index and the UK stock index. It thus shows a high predictive model capacity, indicating that the US stock market has strong influence in German and UK stock markets. The F-value of 33.3 and 28.5 are individually significant at the 1% level, validating the hypothesis of the existence of a

significant linear linkage (connection) and dependence between the US, the UK and German stock markets. The diagnostics results show a Durbin Watson statistic of 1.67 and 1.70, respectively for both major stock markets, indicating the absence of autocorrelation in the estimated model results, making both highly relevant for policy formulation and implementation.

In terms of the response of the extent to which the US stock market -NYSE affect stock prices in Germany (i.e. DAX) and the UK (FTSE), focus is on the signs and t-value of the returns and volume of traded stocks in the NYSE. The results show that return and volume of US traded stocks (RET_{NYSE} and Volume $_{NYSE}$) are positively related to the German stock index (the DAX) and are significant at the 5% and 1% level, respectively. By implication, developments in the US stock market significantly affects stock market activities in Germany and the UK, such developments are transmitted to the latter.

As regard the extent to which stock returns in NYSE affect stock prices in UK, both the coefficients of returns and volume of traded stock are significant at the 1% level, an indication of a greater level of influence of the US stocks on the UK stocks than that of the German stock. Thus, while the performance of the US stock market, as reflected in the S&P500 of the NYSE affects the stock performance of the UK and Germany, that of the UK is more pronounced. This indicates a greater level of interconnectedness/linkages (co-movements) and contagion of financial markets. Invariably, shocks and fluctuations in the US stock exchange tend to be directly transmitted to both German and UK stock markets. This finding of stock market correlation across the globe, particularly the big stock markets is buttressed by the findings of Sun et al (2020). Since stock index is considered to be a proxy for the performance of economy and market conditions, the implication is that developments, fluctuations and shocks in the US economy tend to be transmitted to the global economy, and in particular, the German and UK economy. Little wonder, the 2007-2009 global financial crisis, which originated from the US subprime mortgage market spread to the global economy.

5. SUMMARY AND CONCLUSION

The study empirically examined the response of stock indexes of two selected major exchanges (the German DAX 30) and the UK FTSE 100 to changes in the US stock return, given by the S&P500 of the NYS. The empirical findings revealed the interesting findings:

(i) A high degree of co-movement (interconnectedness and linkages exist between the US, German and the UK stock markets, with strong contagion/spillover or transmission effects.

(ii) Developments /performance in the US stock market (NYSE) significantly affect stock prices in selected major exchanges of Germany and the UK, and this tend to follow a predictable and regular configuration.

(iii) Shocks and volatility in the US financial markets are very much likely to be transmitted to the German and UK stock markets.

(iv) Finally, the findings show evidence of stock movement transmission, spill – over and contagion effects, where for instance, volatility in the US stock market could impact stock markets in the UK and Germany. This finding is consistent with Hurata's (2017) finding of significant stock and volatility transmission among major stock markets.

(v) There is a greater degree of impact of the US stock market on the UK stock market than the German stock market. In terms of policy perspective, is suggested that in order to mitigate the risk and uncertainty of financial interconnectedness, and the resulting contagion, the German and the UK should decouple their economy and financial markets from being overly tied to the US. Focusing on country-specific stock market driving factors, as well as exploiting the potentials inherent in a regional economic and financial union, like the EU is also imperative.

References

Bekaert, G., Harvey, C.R. & Ng., A. (2014). Market integration and contagion. *Journal of Finance,* 69(4), 1515-1554.

Concetto, C.L., and Ravazzolo, F. (2019) Optimism in financial markets: Stock returns and investor sentiments. *Journal of Risk and Financial Management*, *12*(85), 1 – 14.

Chatzis, S.P, Diakoulis, V., Petropoulous, A., Stavroulakis, E., & Vlachogiannakis, N. (2018). Forecasting stock market crisis events using deep and statistical machine learning techniques. *Expert Systems with Applications*, 112, 353-371.

Dimpfl, T. (2009). The impact of US news on German stock market- An event study analysis. *The Quarterly Review of Economics and Finance*, 51(4).

Eun, C.S. & Shim, S. (1989). International transmission of stock market movements. *Journal of Financial and Quantitative Analysis*, 24(2), 241-256.

Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 25(2), 383-417. DOI: 10. 1016j.qref.2011.07.005

Forbes, K.J., & Rigobon, R. (2002). No contagion, only interdependence: Measuring stock co-movements. *Journal of Finance*, 57(5), 2223-2261.

Fraser, P., & Oyefeso, O. (2005). US, UK and European market integration. *Journal of Business Finance and Accounting*, 32(1-2), 161-181. DOI :101111/j.0306-686X.2005. 00591.x

Gao, R., Zhang, B., & Liu, H. (2020). Stock market correlations and the business sentiments: Evidence from the US and Germany. *Economicky casopis,* 66, 4(1), 396-415.

Li, X.M, & Zhou, L. (2008). How do policy and information shocks impact co-movements of China's T-bond and stock markets? *Journal of Banking and Finance*, 32(3), 347-359.

Mckinsay Global Institute (2019). Globalization in transition: The future of Trade and value chains. Mckinsay & Company.

Ozekhome, H.O, & Braiamah A.G. (2023). Influence of information asymmetry, illiquidity and transaction costs on asset prices in the Nigerian Exchange Limited. *African Development Finance Journa*l (ADFJ),6(2), .167-187,

Rabener, N. (2021). Are stock markets becoming more correlated? Working Paper, Chartered Alternative Investment Analyst Association.

Ross, S.A. (1976). The arbitrage theory of capital asset pricing. *Journal of Economic Theory*, 13(3), 341-350.

Shahzad, S.J.H., Hernadez, J.A., Bekiros, S. & Rehman, M.U. (2018). A global network topology of stock markets: Transmitters and receivers of spillover effects. *Physica A: Statistical Mechanics and its Applications*, 492, 2136-2153.

Sun, G., Li, W., Liu, Q., Zhang, C. and Song, J. (2020). International financial crises: Expectation Transmission and policy synchronization. *MPC Discussion Papers* No. 2020/0/, People's Bank of China.

Smith, J. (2020). The interdependence of financial markets. *Journal of Finance*, 50(2), 123-145.

Vidya, C.T., & Prabheesh, K.P. (2020). Implications of COVID-19 Pandemic on global trade networks. *Emerging Markets Finance and Trade*, 56(10), 2408-2421.

Yu, H. (2025). The application of a backpropagation neural network for the prediction of the New York Stock Exchange. *Theoretical and Natural Sciences*, 87, 300-305.