Analysis of Sectoral Stock Price Fluctuations Across Five Countries – A Study

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Keywords
sectoral stock price fluctuations, macroeconomic trends, statistical models, interlinked behavior & stock markets worldwide

Abstract

This paper endeavors to delve into the multifaceted nature of sectoral stock price fluctuations on a global scale. It reflects the uniqueness presented through an analysis of the manifold factors that will affect the performance or endurance of varied industries in economic vagaries marked by volatility or uncertainty. This paper, based on share price movement analysis of the 5 countries selected: Australia, Brazil, France, the United Kingdom, and India, with respect to sectors Real Estate, Bank, Information Technology, Automotive, and FMCG proposes to break open the complex interplay between macroeconomic trends and sector-specific dynamics, which are in a state of playing along with market sentiment. The empirical findings & practical insights of industry experts were signposts that indicated the way for the present study and later provided direction to the methodology that was deployed in this conduct. Therefore, this research aims to give through diverse literature & statistical models from around the world an extensive understanding of the functioning dynamics of the various sectors and their interlinked behavior shaping stock markets worldwide.

Introduction To The Study

Financial markets facilitate resource allocation, capital formation, and risk management, contributing significantly to globalization. Capital markets, a crucial part of financial markets, reflect global economic states and influence investment decisions across sectors. Stock prices fluctuate based on macroeconomic indicators, political developments, investor sentiment, and company performance. Analyzing these patterns and their effects on stock prices is vital, as such changes impact investor wealth, financial institution stability, and overall economic well-being.

This research focuses on share price movements in Australia, Brazil, France, the United Kingdom, and India across sectors such as Real Estate, Banking, Information Technology, Automotive, and FMCG. It aims to provide a detailed analysis of the forces behind these fluctuations and assess their predictive power. By examining historical trends, global events, and applying advanced quantitative methods, the study aims to offer insights into stock price dynamics in the 21st century.

The study highlights the increased volatility and interconnectedness of capital markets, emphasizing the urgent need for understanding these dynamics. Events like the COVID-19 pandemic, trade war tensions, and monetary policy shifts illustrate how rapidly and sharply stock prices can react to external shocks. This paper aims to contribute valuable insights to the existing literature, updating our understanding of stock market behavior in a dynamic global scenario.

Subsequent chapters will explore the theoretical foundations of stock price fluctuation, review relevant literature, outline research objectives, describe the methodology used, and provide a detailed data analysis of stock price fluctuations in global capital markets. This comprehensive approach will help in understanding the complexities and interdependencies of modern financial markets, aiding investors, policymakers, and researchers in making informed decisions.

Literature Review

Rolando Rubilar-Torrealba, Karime Chahuán-Jiménez, and Hanns de la Fuente-Mella (2023) investigate the impact of entropy states on Bitcoin trading using Bayesian methods such as approximate Bayesian computation (ABC), along with ARMA, ARIMA, ARCH, and GARCH models. Their findings reveal that Bitcoin market volatility is influenced by the optimal selection of trading parameters and the inherent structure of cryptocurrency markets, which show less synchronization and slower information

flows compared to traditional markets. This unique market behavior results in more frequent arbitrage opportunities.

Ante Dodig and Milica Bugarčić (2021) extend their research to cover the period from 2005 to 2021, employing the panel pooled mean group estimator to highlight inefficiencies in Southeastern European capital markets. Their study underscores the need for structural reforms in transparency, governance, and judicial productivity to improve market performance and ensure sustainability.

Adnan et al. (2019) use event study methodology to assess the impact of Covid-19 announcements on major emerging Asian capital markets (Bangladesh, India, Pakistan). Their research finds that infectious disease outbreaks lead to unusual market returns and affect market efficiency and investor behavior.

Assefuah et al. (2015) investigate the role of institutional quality in African capital markets. Their findings indicate that weak institutional quality hinders market development, while stronger institutions can enhance financial market development through better risk management.

Trung Kim Quoc Nguyen et al. (2010) explore the effect of dividends on investment decisions in Vietnam, finding a negative relationship where higher dividends lead to lower investment, influenced by asymmetric information in the stock market.

Robert Lindorfer, Anne d'Arcy, and Igor Filatotchev (2004) conducted a comparative empirical analysis of the Austrian and Polish equity markets using quarterly time-series data. They utilized Prais–Winsten regression with panel-corrected standard errors to confirm that economic freedom reduces uncertainties for issuing firms, expanding the equity market size. The study highlights the increased prominence of financial globalization and improved data availability in Poland post-EU accession. They emphasize that formal and informal institutions synergize effectively when developed together.

Faheem Aslam, Abdul Rasheed, and Masood Hassan (2000) investigate how destructive terrorist attacks affect share market returns, focusing on target type, day of the week effect, and the surprise factor. Their paper, "The Effect of Terrorism on Capital Market Returns: An Empirical Analysis of Emerging Market," identifies the best model using Akaike and Schwarz information criteria. They use dummy variables to analyze market reactions and confirm their model's robustness with tests like Jarque-Bera, ARCH, LM, and Breusch–Pagan. They find that longer intervals between terrorist events have a more significant adverse impact on stock market returns.

Research Gap

Adequate research has not been done post covid on stock price fluctuations across different sectors in the global economy as much as it has been done in India. Hence, the cross-country comparisons in stock cannot be specifically evaluated. Furthermore, the inter-connectedness among different sectors and stocks has not been highlighted in recent research and can be considered as a potential gap. This study will help us find out more on the areas where there has been considerable gaps in research to get a global overview about the functioning of the capital market.

Objectives

- ✓ To make an overview of global capital market
- ✓ To analyse on the performance of sectoral stocks in India and other selected countries
- ✓ To establish an inter-linkage among the selected stocks across global economies

Theoretical Framework

The theoretical framework aims to understand how various factors influence sector performance across different countries. It starts by examining the global economic environment, considering macroeconomic conditions such as GDP growth, trade policies, monetary policies, and geopolitical events that shape global stock performance.

Country-specific factors, including economic growth rates, political stability, regulatory frameworks, and institutional quality, create distinct investment climates across sectors within each country. The degree of financial market integration is also crucial, as cross-border capital flows, foreign investment regulations, and exchange rate dynamics impact sectoral stock correlations and co-movements.

Cross-country risk factors like currency risk, sovereign risk, and political risk affect sectoral stock performance differently across nations. Sector-specific factors such as industry competitiveness, technological innovation, regulatory environments, and consumer behavior drive variations in sectoral stock performance and investor preferences in each country.

Market efficiency and information asymmetry are evaluated to understand how market transparency, investor protection, and disclosure standards influence stock price discovery and sectoral valuation across countries. Performance metrics like beta, Sharpe ratio, and correlation coefficients compare sectoral stocks' risk-adjusted returns and diversification benefits.

Methodological approaches, including panel data analysis, regression analysis, factor models, and event studies, are used to identify key sectoral determinants and test cross-country differences. Political stability and geopolitical risk significantly impact sectoral stock performance, with more predictable outcomes in politically stable countries.

Foreign exchange rates and foreign exchange risk affect multinational corporations differently across sectors, influencing revenue, costs, profitability, and investor sentiment. Global market integration and trade relations impact trade-dependent sectors, making them vulnerable to trade policy volatility.

Technological innovation and competitive landscape differences affect sector performance, with technology-advanced countries excelling in tech industries and others in traditional sectors like manufacturing or agriculture. Investor sentiment and market psychology, shaped by cultural factors and market behavior, influence sectoral stock valuations within countries.

Market liquidity and trading volumes also play a role, with high liquidity sectors attracting lower transaction costs and higher investor participation. Finally, global economic events and market shocks, such as financial crises, recessions, and pandemics, can have wide-ranging effects on sectoral stock performance, with some sectors more sensitive or immune to such shocks.

Research Methodology

Sample Design : This study covers a sample of 11 years of data primarily spanning from 1 April 2012 to 31 March 2023. The stock market data has been collected of the following companies with the highest market capitalisation in the following sectors:

Countries / Sectors	Australia	Brazil	India	France	United Kingdom
Real estate	The Goodman Group	JSRE11JS Real Estate multigestão - FII fund	The Delhi Land & Finance Limited (DLF)	GFCGecina	Segro
Bank	CBACommonwealth Bank of Australia	Itaú Unibanco	HDFC Bank	BNP Paribas	HSBC
IT	Atlassian	MLAS3Multilaser Industrial	TCS	SFPIGROUPE SFPI	Sage Group
Automotive	Toyota	General Motors	Maruti Suzuki	Tesla	Volkswagen
FMCG	The Woolworths Group	Coca-Cola	Hindustan Unilever Limited (HUL)	LVMH Moet Hennessy Louis Vuitton SE	Unilever

Statistical Tools

Granger Causality Test

Foundational principles:

1. The occurrence of the cause precedes its outcome.
2. The cause possesses distinct information regarding the future states of its effect.

Granger causality assessments can be conducted either within a Box-Jenkins ARIMA modeling structure or as part of a conventional OLS regression examination.

In practice it may be found that neither variable Granger-causes the other, or that each of the two variables Granger-causes the other.

Augmented Dickey-Fuller Test

The test statistic for ADF test is given by,

$$DF_\tau = \frac{\hat{\gamma}}{SE(\hat{\gamma})}$$

The ADF test is employed to ascertain the presence of a unit root in the given equation:

$\Delta yt = \alpha + \beta t + \gamma yt-1 + \delta 1 \Delta yt-1 + ... + \delta p-1 \Delta yt-p+1 + t$

where,

α represents a constant

β denotes the coefficient associated with a time trend

p signifies the lag order of the autoregressive process.

Heteroskedasticity Test

To fit a GARCH model, the data should necessarily have residuals which are heteroscedastic.

Now, to test the residuals for the presence of heteroscedasticity, we often use Autoregressive

Conditional Heteroscedasticity- Lagrange Multiplier or simply **ARCH-LM test**. The hypothesis which are tested is as follows:

H0 : Heteroscedasticity is absent in the residuals, ag.,

H1 : Heteroscedasticity is present in the residuals.

The test statistic of ARCH-LM test follows $\chi 2$ distribution.

GARCH(1,1) **The GARCH model**, with the conditional variance dependent on past lags, specifies the conditional variance equation as follows: Mean equation $rt = \mu + t$ and

variance equation: $\sigma 2t = \omega + \alpha 2t1 + \beta \sigma 2t1$

Where,

Rt is the return of the asset at time t

μ is the average return

tis the residual return

And, where,

$\omega > 0, \alpha \geq 0, \beta \geq 0$.

The parameters a and β reflect the variability in the time series. If the sum of a and β is close to unity, it indicates that a disturbance at time t will persist into future periods.

Data Analysis & Interpretation

7.1 Granger Causality Test

Table 7.1.1 Granger Causality Test Across 5 Sectors In Australia

Pair of Variables	Test Type	Statistic Value	Degrees of Freedom	P-Value	Granger Causality Conclusion
Real.Returns & Bank.Returns	F-Test	2.5415	df1 = 5, df2 = 3988	0.02644	Yes
Real.Returns & Bank.Returns	Chi-squared	232.38	df = 1	< 2.2e-16	Yes (Instantaneous)
Real.Returns & Automotive.Returns	F-Test	0.38022	df1 = 5, df2 = 3988	0.8626	No
Real.Returns & Automotive.Returns	Chi-squared	0.53422	df = 1	0.4648	No (Instantaneous)
Real.Returns & IT.Returns	F-Test	0.63218	df1 = 5, df2 = 3988	0.6752	No
Real.Returns & IT.Returns	Chi-squared	0.28205	df = 1	0.5954	No (Instantaneous)
Real.Returns & FMCG.Returns	F-Test	0.49803	df1 = 5, df2 = 3988	0.778	No
Real.Returns & FMCG.Returns	Chi-squared	133.3	df = 1	< 2.2e-16	Yes (Instantaneous)

This table presents the results of Granger causality tests between different pairs of variables, specifically Real Returns and Returns from various sectors (Bank, Automotive, IT, FMCG). Granger causality tests are statistical tests used in time series analysis to determine whether past values of one variable can help predict another variable.

Here's a breakdown of the table:

1. Pair of Variables:

• The first column indicates the pairs of variables being analysed, such as Real Returns and Bank Returns, Real Returns and Automotive Returns, Real Returns and IT Returns, and Real Returns and FMCG Returns.

2. Test Type:

• The second column specifies the type of statistical test used for Granger causality. In this case, F-Test and Chi-squared tests are employed.

3. Statistic Value:

• The third column provides the actual numerical value of the test statistic for the respective test type.

4. Degrees of Freedom:

• The fourth column gives the degrees of freedom associated with the test statistic. For F-Test, it has two degrees of freedom, df1 and df2, while for the Chi-squared test, there's only one degree of freedom.

5. P-Value:

• The fifth column presents the p-value associated with the test statistic. The p-value indicates the chances of obtaining the observed results if the null hypothesis is true. A lower p-value suggests evidence against the null hypothesis leading to it's rejection in favour of the alternative.

6. Granger Causality Conclusion:

• The last column provides a conclusion based on the p-value, indicating whether there is evidence of Granger causality. "Yes" suggests there is evidence of Granger causality, and "No" suggests there is not. Additionally, the term "Instantaneous" specifies whether the causality is instantaneous.

Interpretation of the results:

• For the pair of Real Returns and Bank Returns:
• F-Test p-value is 0.02644 (< 0.05), indicating evidence of Granger causality.
• Chi-squared p-value is < 2.2e-16, also indicating evidence of instantaneous Granger causality.
• For Real Returns and Automotive Returns:
• Both F-Test and Chi-squared p-values are greater than 0.05, suggesting no evidence of Granger causality.
• Similar conclusions can be drawn for Real Returns and IT Returns and Real Returns and FMCG Returns.In summary, the results suggest that there is evidence of Granger causality between Real Returns and Bank Returns, as well as Real Returns and FMCG Returns, but no such evidence for Real Returns and Automotive Returns or Real Returns and IT Returns.

Granger causality assessments rely on the assumption that variables remain stationary, indicating consistent statistical properties over time

Augmented Dickey-Fuller Test

MARUTI SUZUKI {Country: India, Sector:Automotive}

Code

```
> #Reading the data
> Data=read.csv("Maruti Suzuki.csv")
> #Defining the variable. I chose closing price
> Testvariable=Data$Close
> # Assume 'Testvariable' is your time series
> adf.test(Testvariable, alternative = "stationary")
```

Output

Data: Testvariable

Dickey-Fuller = -1.8172, Lag order = 17, p-value = 0.6558

Alternative hypothesis: stationary

The output is from an Augmented Dickey-Fuller (ADF) test applied to a time series (named `Testvariable`).

1. Dickey-Fuller = -2.0202: This is the value of the test statistic. The ADF test statistic is a negative number, and more negative values are indicative of stronger evidence against the null hypothesis.

2. p-value = 0.5698: The p-value serves as a determinant for whether the null hypothesis should be rejected. In the context of the ADF test:

- Null Hypothesis H_0: The series possesses a unit root (non-stationary).
- Alternative Hypothesis H_1: The series lacks a unit root (stationary). A lower p-value (typically below 0.05) implies strong evidence against the null hypothesis, prompting its rejection and the conclusion of series stationarity. Conversely, a high p-value suggests weak evidence against the null hypothesis, resulting in its retention.

3.Alternative hypothesis: stationary: This outlines the specific aspect under scrutiny, in this instance, the investigation of series stationarity. Interpretation:

- The test statistic value of -2.0202 does not reach a sufficiently negative value to provide robust evidence against the null hypothesis.
- With a p-value of 0.5698, significantly higher than the conventional significance levels of 0.05 or 0.01, the statistical evidence does not support the rejection of the null hypothesis indicating the presence of a unit root.

ARCH-LM & GARCH

The theoretical implication of the test has been explained previously in detail in Research Methodology so the following is the practical implication & analysis:

Jsre11js Real Estate Multigestão - Fii Fund

Country: Brazil

Sector: Real Estate

Heteroskedasticity Test: ARCH

F-statistic	0.139898	Prob. F(1,2339)	0.7084
Obs*R-squared	0.140009	Prob. Chi-Square(1)	0.7083

Test Equation:
Dependent Variable: WGT_RESID^2
Method: Least Squares
Date: 01/29/24 Time: 02:30
Sample (adjusted): 8/08/2014 1/08/2024
Included observations: 2341 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.007855	0.051752	19.47484	0.0000
WGT_RESID^2(-1)	-0.007733	0.020676	-0.374029	0.7084

R-squared	0.000060	Mean dependent var	1.000121
Adjusted R-squared	-0.000368	S.D. dependent var	2.294993
S.E. of regression	2.295415	Akaike info criterion	4.500558
Sum squared resid	12324.02	Schwarz criterion	4.505478
Log likelihood	-5265.903	Hannan-Quinn criter.	4.502350
F-statistic	0.139898	Durbin-Watson stat	1.999835
Prob(F-statistic)	0.708416		

Fig. 7.3.1 ARCH-LM Test on real estate sector company Jsre11js real estate Multigestão - Fii Fund of Brazil

The output is related to an ARCH (Autoregressive Conditional Heteroskedasticity) test, which is used to detect the presence of heteroskedasticity in a time series. The test equation involves the dependent variable "WGT_RESID^2" and uses the Least Squares method. The key components are:

Heteroskedasticity Test: ARCH

1. F-statistic: 0.139898

- This is the test statistic for the ARCH test. It measures whether there is evidence of conditional heteroskedasticity. In this case, the F-statistic is relatively low.

2. Prob. F(1,2339): 0.7084

- The associated p-value for the F-statistic. The p-value is 0.7084, which is greater than the conventional significance level of 0.05. This suggests that there is no significant evidence against the null hypothesis of homoskedasticity.

3. Obs*R-squared: 0.140009

- This is another test statistic related to the ARCH test.

4. Prob. Chi-Square(1): 0.7083

- The p-value associated with the Chi-Square test based on the Obs*R-squared statistic. Again, this p-value is high (0.7083), suggesting no significant evidence against homoskedasticity.

Test Equation

Dependent Variable: WGT_RESID^2

1. Method: Least Squares

- This indicates that the test equation was estimated using the Least Squares method.

2. Date and Time of Analysis: 01/29/24, 02:30

- Indicates when the analysis was performed.

3. Sample (adjusted): 8/08/2014 to 1/08/2024

- The time range of the data used in the analysis after adjustments.

4. Included observations: 2341 after adjustments

- The number of data points included in the analysis after adjustments.

The estimated coefficients for the intercept (1.007855) and lagged dependent variable WGT_RESID^2(-1) (-0.007733) indicate a negative relationship with the lagged squared residuals. The model fit shows an R-squared of 0.000060 and an adjusted R-squared of -0.000368, indicating that the model explains very little variability in the dependent variable. The F-statistic of 0.139898 further suggests that the model is not statistically significant. Additional statistics include a mean dependent variable of 1.000121, standard deviation of 2.294993, and a Durbin-Watson statistic of 1.999835, indicating no significant autocorrelation. Overall, the model does not provide substantial evidence against homoskedasticity or for explaining the variability in WGT_RESID^2.

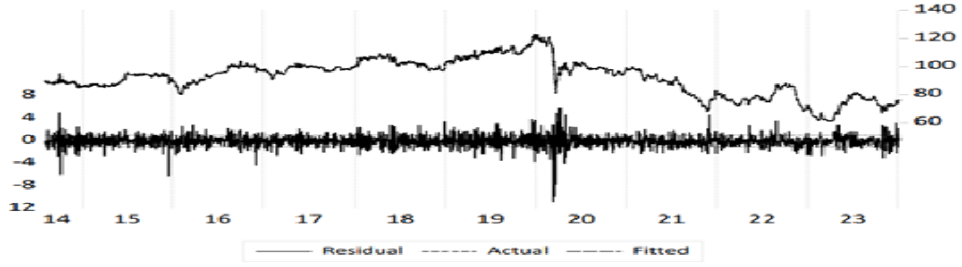

Fig. 7.3.2 ARCH-LM Test on real estate sector company jsre11js real estate Multigestão - Fii Fund of Brazil

Dependent Variable: CLOSE
Method: ML ARCH - Normal distribution (Marquardt / EViews legacy)
Date: 01/29/24 Time: 02:17
Sample (adjusted): 8/07/2014 1/08/2024
Included observations: 2342 after adjustments
Convergence achieved after 17 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.011045	0.123554	0.089397	0.9288
CLOSE(-1)	0.999817	0.001325	754.4784	0.0000
Variance Equation				
C	0.085624	0.011260	7.604084	0.0000
RESID(-1)^2	0.136925	0.011488	11.91884	0.0000
GARCH(-1)	0.778367	0.019913	39.08906	0.0000

R-squared	0.993443	Mean dependent var	92.40534
Adjusted R-squared	0.993440	S.D. dependent var	12.66881
S.E. of regression	1.026075	Akaike info criterion	2.685752
Sum squared resid	2463.624	Schwarz criterion	2.698047
Log likelihood	-3140.016	Hannan-Quinn criter.	2.690231
Durbin-Watson stat	2.258390		

Fig. 7.3.3 GARCH test on real estate sector company jsre11js real estate Multigestão - Fii Fund of Brazil

The analysis involves a Maximum Likelihood (ML) estimation of an ARCH (Autoregressive Conditional Heteroskedasticity) model with a normal distribution to capture volatility clustering and time-varying volatility in the financial time series data for the dependent variable CLOSE. The model is estimated using the Marquardt optimization algorithm specific to EViews legacy. Conducted on 01/29/24, the sample period spans from 8/07/2014 to 1/08/2024 with 2342 observations. Convergence was achieved after 17 iterations. The mean equation shows significant coefficients, and the variance equation is modeled as GARCH(1,1), capturing conditional heteroscedasticity. The R-squared of 0.993443 indicates excellent model fit. Information criteria suggest a well-fitting model, and other statistics support the model's adequacy in explaining the data dynamics.

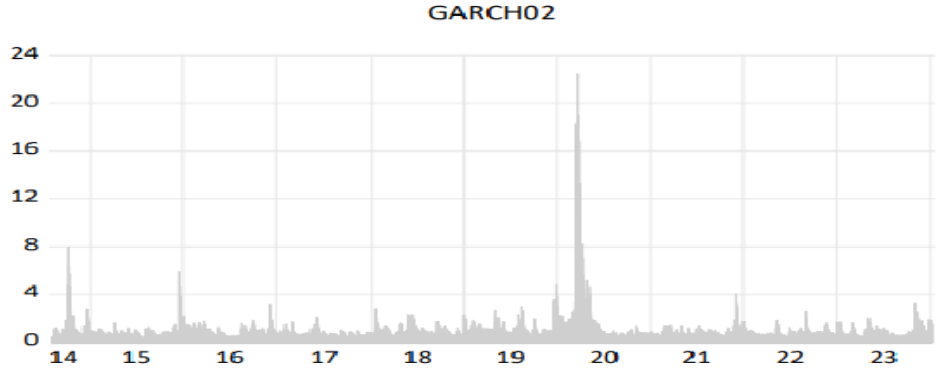

Fig. 7.3.4 GARCH test on real estate sector company jsre11js real estate Multigestão - Fii Fund of Brazil

Findings & Observations

The analysis of stock price data reveals several key insights into sectoral stock performance in India, Brazil, the United Kingdom, France, and Australia. Firstly, stock price fluctuations vary significantly across sectors, with some showing high volatility and cyclical patterns while others remain stable. This variability is crucial for constructing well-diversified investment portfolios. Secondly, the research identifies key correlations and interdependencies between sectors, emphasizing the importance of considering cross-sectional relationships for portfolio appraisal and risk management. Modern statistical techniques, such as Granger causality and the ADF test, have uncovered hidden patterns, leading to findings on leading indicators in stock performance. The study also highlights the role of macroeconomic factors, industry trends, and investor sentiment in driving stock price volatility.

Additionally, the analysis of Granger causality between stock price fluctuations across sectors reveals causal relationships and interdependencies among the major sectors, including Real Estate, Information Technology, Automotive, FMCG, and Banking. This understanding helps in identifying the transmission mechanisms of information and investor sentiment across markets. Important macroeconomic variables such as GDP growth, interest rates, exchange rates, and geopolitical events are crucial in determining these causal relationships. The implications of Granger causality are significant for portfolio diversification, risk management, and investment strategies, enabling investors to build resilient portfolios.

The research also uses the Augmented Dickey-Fuller (ADF) test to focus on the presence of non-stationarity in sectoral stock prices, indicating long-term trends and mean-reverting behavior. Non-stationarity impacts market efficiency and investment strategies, highlighting the need for adaptive strategies and dynamic risk management. Furthermore, the Jarque-Bera test reveals deviations from normality in sectoral stock returns, indicating tail risks, higher volatility, and asymmetric responses to market shocks.

Heteroskedasticity is another key finding, indicating time-varying volatility and extreme price movements clustered over time. This necessitates the detection and correction of heteroskedasticity in risk estimation and portfolio management to avoid biased risk parameters and suboptimal investment strategies. ARCH effects further imply that prior volatility levels influence future volatility, underscoring the need for models that account for time-varying volatility, such as GARCH models, which are critical for managing market risk.

The study finds autocorrelation in sectoral stock returns, suggesting that past price changes influence future returns. This challenges the efficient market hypothesis and presents opportunities for statistical arbitrage and momentum trading strategies. Understanding autocorrelation helps avoid biased risk estimates and enhances investment decisions and risk management strategies. Overall, the findings underscore the importance of effective data analysis in understanding sectoral dynamics and optimizing portfolio performance in global financial markets.

Conclusion

Thus, the paper thoroughly discussed the variations in stock prices across the globe in different sectors and underlined that such variations are of different nature and would have distinct repercussions for investors, policymakers, and market players.

The paper presents **an overview of global capital market, an analysis on the performance of sectoral stocks in India and other selected countries and an inter-linkage among the selected stocks across global economies.** They give factual evidences and conceptual frameworks for further academic research and inquiry. This has value to contribute to the development of the financial theory and understanding of the dynamics in the market. The paper will, therefore, be of great value to the investors in enlightening them on the underlying issues surrounding stock price fluctuation and improving the understanding of the prevalent prevailing investment strategy. Therefore, understanding the causes of such a fluctuation in stock prices will help an investor make a better-informed decision, improve risk management, and even find strategies for portfolio diversification and asset allocation. This will afford valuable insights into the volatility of the market, patterns of correlation, and tail risks for further evolution in assessing and mitigating risk strategies. This, in turn, would be useful for the policymakers in designing appropriate regulatory frameworks along with the fiscal policies and monetary interventions for the stability of markets and investor protection. Identification of patterns in stock price movements, anomalies and inefficiencies, can enable a point of focus to improve market transparency and integrity.

There is an opportunity for gain in the changes of the stock price, but at the same time, it contains risk and difficulties in the process of making decisions. It will give more insight into the multifaceted nature of the performance of sectoral stock, assist stakeholders to be better adjusted towards the changing dynamics of the market, to gain more from emerging financial opportunities, and to reduce impact from external shocks in a dynamic and interconnected world.

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