BMSJMR: JOURNAL OF MANAGEMENT & RESEARCH

ISSN – 3048-4669
VOL 3 ISS NO. 1 (JAN-JUNE 2026)
https://www.bmsgroup.in/product/bmsjmr-journal-of-management-research/
DOI: 10.5281/zenodo.21916102

GLOBAL FINANCIAL MARKET DYNAMICS: AN ECONOMETRIC ANALYSIS OF STOCK MARKETS, EXCHANGE RATES, INTEREST RATES AND MACROECONOMIC INDICATORS

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Abstract

Global financial markets are increasingly shaped by the interaction of asset prices, macroeconomic fundamentals, monetary conditions, fiscal pressures, commodity markets and technological transformation. This study examines these interactions using an econometric framework implemented in EViews, with particular attention to market volatility and the presence of conditional heteroskedasticity. The empirical analysis covers eight reported financial and macroeconomic variables across 100 observations: technological adoption, unemployment, commodity prices, stock-exchange/market indices, global GDP, inflation, government-bond returns and related interest-rate measures. Descriptive statistics and correlation analysis are used to identify broad co-movements, while the Augmented Dickey–Fuller (ADF) test is used to assess stationarity and an ARCH test is used to detect time-varying variance. The reported ARCH diagnostic strongly rejects the null hypothesis of homoskedasticity (F-statistic = 405.0755; $p < 0.001$), supporting the use of a volatility model. The reported ADF result for government debt ($p = 0.1039$ at the initial lag specification) indicates non-stationarity at the 10% level. A GARCH specification is subsequently used to examine volatility persistence, with the manuscript reporting statistically significant ARCH and GARCH terms. The findings support the view that global financial-market behaviour cannot be adequately represented by constant-variance assumptions. The study contributes by integrating market, macroeconomic and technology-related indicators within a single exploratory framework and by highlighting the importance of volatility-sensitive modelling for investors, financial institutions and policymakers. Because the supplied manuscript does not contain the underlying dataset or complete coefficient output for every variable, the study preserves the reported empirical results and does not introduce unsupported numerical estimates.

Keywords: *Global Financial Markets; Stock Market; Exchange Rate; Interest Rate; Macroeconomic Indicators; Arch; Garch; Volatility; Eviews; Financial Stability*

1. Introduction

Global financial markets operate as an interconnected system in which equity prices, exchange rates, interest rates, sovereign debt, commodity prices and macroeconomic expectations influence one another. The transmission of shocks across these markets has become more important as cross-border capital flows, non-bank financial institutions and digital technologies have expanded. Recent international assessments continue to identify elevated financial-stability risks associated with stretched asset valuations, sovereign-bond pressures, leverage and the increasing interconnectedness of non-bank financial intermediaries. The IMF's 2025 Global Financial Stability Report also emphasizes that macrofinancial uncertainty can raise funding costs and intensify exchange-rate volatility, while its April 2026 assessment highlights the potential for geopolitical shocks, inflation pressures and tighter financial conditions to amplify market stress (International Monetary Fund [IMF], 2025, 2026).

Against this background, understanding the behaviour of financial-market variables requires more than a simple examination of individual price series. Stock indices may respond to monetary -policy expectations; exchange rates can transmit external shocks; interest rates affect discount rates and borrowing costs; commodity prices can alter inflation expectations and corporate profitability; government debt can influence sovereign risk premia; unemployment provides information about economic slack; and technology adoption can affect productivity, market structure and investor expectations.

The present study investigates these relationships using EViews-based econometric analysis. The original manuscript identifies stock indices, exchange rates and interest rates as central market indicators and combines them with commodity prices, global GDP, government debt, inflation, unemployment and technology adoption. The upgraded study retains that empirical scope while providing a clearer methodological sequence: descriptive analysis, correlation analysis, stationarity testing, ARCH diagnostics and GARCH-based volatility analysis.

The principal contribution is therefore methodological and integrative. Rather than claiming causal effects that the supplied results cannot establish, the study focuses on co-movement, stationarity and conditional volatility. This distinction is important because correlation does not by itself imply causality, and a significant ARCH effect indicates changing variance rather than identifying the economic source of that variance.

Research objectives

- To examine the descriptive characteristics and broad movements of selected global financial and macroeconomic indicators.
- To assess the pairwise relationships among the selected variables using correlation analysis.
- To evaluate stationarity using the Augmented Dickey–Fuller test.
- To determine whether the data exhibit conditional heteroskedasticity through an ARCH diagnostic.
- To examine volatility persistence using a GARCH framework and discuss the implications for financial-market risk management.

Research questions

- How do selected financial and macroeconomic indicators move and co-move within the observed sample?
- Which broad relationships are visible in the correlation structure?

- Are the selected series stationary at their tested levels?
- Does the empirical evidence support time-varying volatility?
- Does the GARCH specification indicate persistence in conditional variance?

2. Literature Review

Financial-market volatility has long been studied through models that allow the variance of returns to change over time. The ARCH/GARCH family is particularly useful because financial returns commonly display volatility clustering: relatively calm periods tend to be followed by calm periods, while turbulent periods tend to cluster together. The original manuscript's use of ARCH and GARCH is therefore consistent with the objective of identifying whether market risk is constant or time varying.

Evidence from international markets also indicates that shocks in one segment can transmit to others. Sucháček et al. (2021), for example, examined integration among selected Central and Eastern European stock markets and the global market, illustrating how international financial linkages can strengthen the transmission of global shocks. Darmawan et al. (2020) examined crude-oil price shocks and stock-market performance in Indonesia, highlighting the relevance of commodity-market conditions for equity markets. Kumar and Aurora (2020) investigated stock-market cointegration between India and China, further supporting the importance of cross-market linkages.

The literature also connects financial openness and capital-market development with the behaviour of emerging financial systems. Okafor et al. (2021) examined financial openness and capital-market development in sub-Saharan African economies. Khan et al. (2023) investigated market liquidity and calendar effects across Asian emerging markets, demonstrating that market microstructure and trading conditions can matter for observed market behaviour.

More recent research and policy analysis place these econometric questions within a wider macrofinancial environment. The IMF's April 2025 Global Financial Stability Report notes that geopolitical risk events can reduce equity prices and increase sovereign risk premiums, while its October 2025 report identifies stretched valuations, sovereign-bond pressures and non-bank financial interconnections as important sources of vulnerability. The April 2026 report further emphasizes the possibility that geopolitical and inflation shocks can tighten global financial conditions and propagate through cross-border portfolio flows (IMF, 2025, 2026).

A further strand of contemporary research examines the integration of traditional econometric volatility models with machine-learning approaches. Xu et al. (2024) describe GARCH as an established approach for financial-volatility modelling while exploring a hybrid GARCH-informed neural-network framework. Such developments do not make conventional GARCH obsolete; rather, they show that volatility modelling remains a central foundation for newer forecasting systems.

3. Data and Methodology

3.1 Data structure

The original study reports 100 observations and identifies eight principal variables in the descriptive-statistics output: technology adoption rate, unemployment rate, commodity price index, stock-exchange index, global GDP, inflation rate, government-bond returns and stock-market index. The manuscript also discusses exchange rates and interest rates as core financial variables. Because the supplied document does not include the raw dataset, exact observation dates, country/market

definitions, frequency and source codes cannot be independently reconstructed. These details should be inserted from the original EViews workfile before final submission.

Variable	Role in analysis	Expected analytical relevance
Stock market / stock index	Core market indicator	Captures equity-market conditions and risk
Exchange rate	External financial indicator	Captures currency-market movements and external shocks
Interest rate	Monetary/financial indicator	Affects discount rates, financing costs and asset valuations
Commodity price index	Real/financial transmission indicator	Can influence inflation, production costs and market expectations
Global GDP	Macroeconomic indicator	Proxy for global economic activity
Government debt / bond returns	Fiscal and sovereign indicator	Captures fiscal pressure and sovereign-market conditions
Inflation rate	Macroeconomic indicator	Reflects price pressure and monetary-policy expectations
Unemployment rate	Labour-market indicator	Reflects economic slack and cyclical conditions
Technology adoption rate	Structural indicator	Captures technological transformation and potential productivity effects

3.2 Econometric strategy

The empirical sequence is designed to avoid treating a single statistical test as sufficient evidence of a financial relationship. First, descriptive statistics summarize central tendency and distributional characteristics. Second, a correlation matrix provides a preliminary view of co-movement. Third, the ADF test examines whether a series contains a unit root. Fourth, the ARCH test evaluates whether the residual variance is constant. Finally, a GARCH model is used when the evidence supports conditional heteroskedasticity.

The standard GARCH(1,1) conditional-variance representation can be written as:

$$h_t = \omega + \alpha \varepsilon^2_{(t-1)} + \beta h_{(t-1)}$$

where h_t is conditional variance, ω is the variance intercept, $\varepsilon^2_{(t-1)}$ is the lagged squared innovation and $h_{(t-1)}$ is the lagged conditional variance. In a conventional covariance-stationary GARCH process, α measures the immediate response of volatility to new information and β captures persistence from previous conditional variance. A large $\alpha + \beta$ indicates persistent volatility, subject to the estimated model and parameter restrictions.

3.3 Hypotheses

Hypothesis	Statement
H1	The selected financial and macroeconomic variables exhibit statistically meaningful pairwise co-movement.
H2	At least one principal series is non-stationary at its tested level.
H3	The model residuals exhibit conditional heteroskedasticity.
H4	Conditional volatility is persistent over time, as represented by statistically significant GARCH dynamics.

3.4 Methodological limitations

The manuscript does not provide the raw data, complete EViews workfile, exact variable definitions, sample dates, lag-selection criteria, full ADF output for all variables, complete GARCH coefficients or post-estimation diagnostic statistics. Consequently, the upgraded article retains the reported findings but does not invent missing coefficients, p-values, sample periods or data sources. For publication, the author should append or archive the underlying dataset and EViews output so that the analysis is reproducible.

4. Results and Findings

4.1 Descriptive statistics

The original EViews output reports descriptive statistics for 100 observations across the principal financial and macroeconomic variables. The output includes standard deviation, skewness, kurtosis, probability, sum and sum of squared deviations. These measures are useful for identifying dispersion and distributional characteristics, but they should be interpreted as descriptive evidence rather than causal evidence.

	UNEMPLOY...	COMMODIT...	EXCHANGE...	GLOBAL_GDP	INFLATION_...	GOVERNME...	INTEREST_...	STOCK_IND...	TECHNOLOGY_ADOPTION
Mean	4.359000	464.4440	8.574000	198.4660	14.38900	169.1910	12.89700	3449.300	215.2830
Median	4.300000	372.0000	3.650000	198.5500	14.35000	169.2500	8.450000	3425.000	213.9500
Maximum	4.800000	1003.600	27.00000	316.3000	26.80000	293.0000	32.10000	5900.000	378.7000
Minimum	3.500000	150.5000	1.100000	80.20000	2.500000	45.60000	3.500000	1200.000	65.00000
Std. Dev.	0.318169	257.6828	8.070393	69.07347	7.230462	72.51291	8.735813	1414.879	93.72785
Skewness	-0.087439	0.615821	0.920628	-0.004241	0.010269	-0.000359	0.789832	0.061859	0.071485
Kurtosis	1.914645	2.051109	2.385972	1.804341	1.788112	1.800256	2.219017	1.753582	1.755915
Jarque-Bera	5.035737	10.07223	15.69688	5.956963	6.121230	5.997441	12.93864	6.536936	6.534118
Probability	0.080631	0.006499	0.000390	0.050870	0.046859	0.049851	0.001550	0.038065	0.038118
Sum	435.9000	46444.40	857.4000	19846.60	1438.900	16919.10	1289.700	344930.0	21528.30
Sum Sq. Dev.	10.02190	6573644.	6447.992	472343.3	5175.678	520554.1	7555.129	1.98E+08	869706.1
Observations	100	100	100	100	100	100	100	100	100

Figure 1. Original EViews descriptive-statistics output

The graphical evidence in the manuscript indicates variation in interest and inflation rates, a generally increasing path in government debt, upward movement in the stock index over the observed sample and substantial growth in technology adoption. These observations provide a descriptive context for the subsequent volatility analysis; they do not, on their own, establish that one variable causes another.

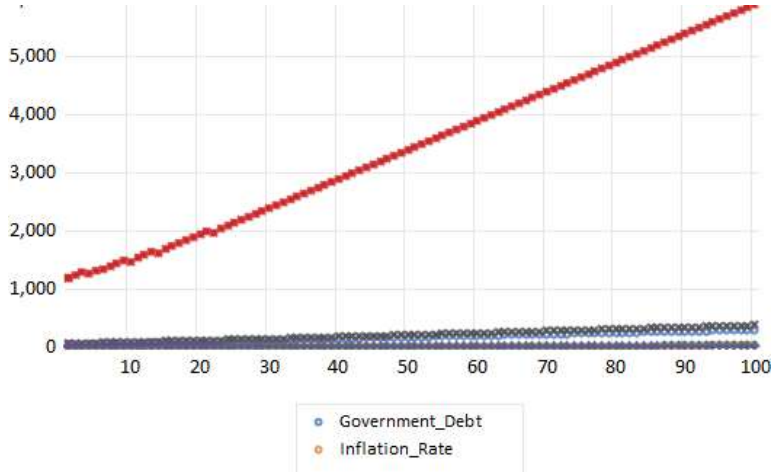

Figure 2. Original EViews graphical view of the financial data

4.2 Correlation analysis

The reported correlation matrix suggests several positive associations among commodity prices, global GDP, inflation, government debt, stock-market indicators and technology adoption. The manuscript also reports weaker relationships involving unemployment and interest-rate variables and a negative relationship between unemployment and the stock index. These results are consistent with the idea that financial markets and macroeconomic conditions move together, but correlation should not be interpreted as evidence of causality.

Correlation

	A	B	C	D	E	F	G	H	I	J	K
1		UNEMPLOY...	COMMODIT...	EXCHANGE...	GLOBAL_GDP	INFLATION_...	GOVERNME...	INTEREST_...	STOCK_IND...	TECHNOLOGY_ADOPTION	
2											
3	UNEM...	1.000000	0.054954	0.037385	0.086877	0.087354	0.086199	0.042947	0.084303	0.082563	
4	COMM...	0.054954	1.000000	0.985918	0.968828	0.969942	0.969166	0.995894	0.974045	0.974820	
5	EXCHA...	0.037385	0.985918	1.000000	0.914306	0.916024	0.914822	0.996855	0.922667	0.924034	
6	GLOBA...	0.086877	0.968828	0.914306	1.000000	0.999863	0.999995	0.942923	0.999418	0.999344	
7	INFLAT...	0.087354	0.969942	0.916024	0.999863	1.000000	0.999880	0.944364	0.999609	0.999501	
8	GOVER...	0.086199	0.969166	0.914822	0.999995	0.999880	1.000000	0.943367	0.999479	0.999407	
9	INTER...	0.042947	0.995894	0.996855	0.942923	0.944364	0.943367	1.000000	0.949785	0.950879	
10	STOCK...	0.084303	0.974045	0.922667	0.999418	0.999609	0.999479	0.949785	1.000000	0.999921	
11	TECHN...	0.082563	0.974820	0.924034	0.999344	0.999501	0.999407	0.950879	0.999921	1.000000	
12											
13											

Figure 3. Original EViews correlation table

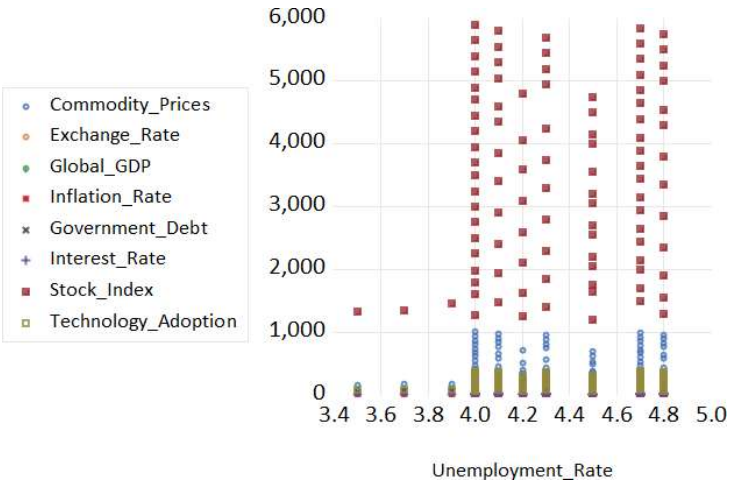

Figure 4. Original EViews graphical representation of correlations

4.3 ARCH test

The ARCH diagnostic provides the clearest reported econometric result in the manuscript. The reported F-statistic is 405.0755 with a probability value of 0.0000. The null hypothesis of homoskedasticity is therefore rejected at conventional significance levels, indicating that the variance of the relevant residual process is not constant. The manuscript also reports an adjusted R-squared of 0.8048 for the ARCH auxiliary regression. This statistic should be understood as a property of the auxiliary test equation and not as evidence that the economic model explains 80.48% of market returns.

	A	B	C	D	E	F
1	Heteroskedasticity Test: ARCH					
2						
3	F-statistic	405.0755	Prob. F(1,97)		0.0000	
4	Obs*R-squared	79.87340	Prob. Chi-Square(1)		0.0000	
5						
6						
7	Test Equation:					
8	Dependent Variable: RESID^2					
9	Method: Least Squares					
10	Date: 02/21/24 Time: 14:56					
11	Sample (adjusted): 2 100					
12	Included observations: 99 after adjustments					
13						
14	Variable	Coefficient	Std. Error	t-Statistic	Prob.	
15						
16	C	0.761332	0.444313	1.713505	0.0898	
17	RESID^2(-1)	0.919378	0.045680	20.12649	0.0000	
18						
19	R-squared	0.806802	Mean dependent var		7.384433	
20	Adjusted R-squared	0.804810	S.D. dependent var		6.723375	
21	S.E. of regression	2.970406	Akaike info criterion		5.035270	
22	Sum squared resid	855.8614	Schwarz criterion		5.087696	
23	Log likelihood	-247.2458	Hannan-Quinn criter.		5.056482	
24	F-statistic	405.0755	Durbin-Watson stat		2.862216	
25	Prob(F-statistic)	0.000000				
26						

Figure 5. Original EViews ARCH test output

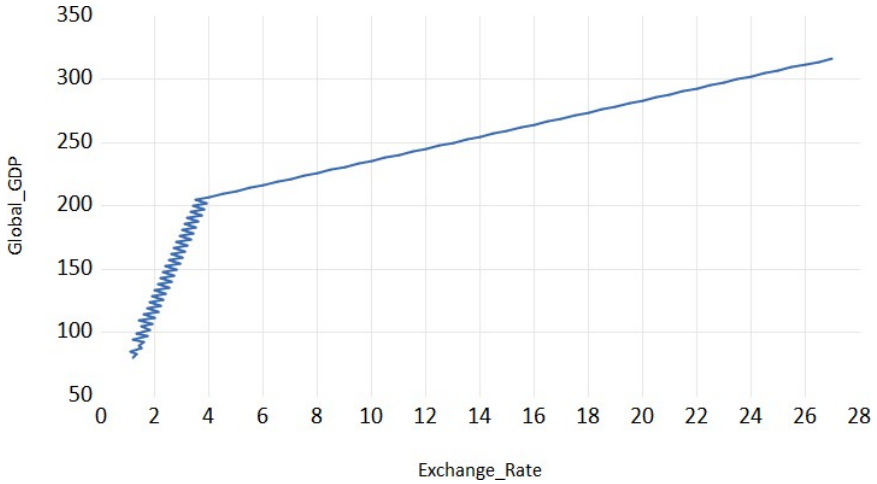

Figure 6. Original EViews graphical representation of the ARCH output

4.4 ADF unit-root test

The reported ADF result for government debt gives a p-value of 0.1039 for the initial lag specification. At the 10% level, this does not provide sufficient evidence to reject the unit-root null hypothesis. The series is therefore treated as non-stationary under that reported specification. This finding has an important methodological implication: subsequent modelling should ensure that the dependent series and regressors meet the stationarity requirements of the selected specification, or that appropriate transformations/differencing or cointegration techniques are used where justified.

Augmented Dickey-Fuller Unit Root Test on GOVERNMENT_DEBT

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GOVERNMENT_DEBT(-1)	1.59E-05	0.000153	0.103900	0.9175
D(GOVERNMENT_DEBT(-1))	-0.383137	0.104655	-3.660968	0.0005
D(GOVERNMENT_DEBT(-2))	-0.384313	0.109025	-3.524981	0.0007
D(GOVERNMENT_DEBT(-3))	-0.739597	0.103787	-7.126071	0.0000
D(GOVERNMENT_DEBT(-4))	-0.607961	0.129973	-4.677603	0.0000
D(GOVERNMENT_DEBT(-5))	-0.551629	0.130731	-4.219559	0.0001
D(GOVERNMENT_DEBT(-6))	-0.510544	0.135292	-3.773659	0.0003
D(GOVERNMENT_DEBT(-7))	-0.584162	0.127447	-4.583564	0.0000
D(GOVERNMENT_DEBT(-8))	-0.301284	0.122886	-2.451741	0.0165
D(GOVERNMENT_DEBT(-9))	-0.442750	0.100231	-4.417319	0.0000
D(GOVERNMENT_DEBT(-10))	-0.288086	0.098033	-2.938662	0.0044
D(GOVERNMENT_DEBT(-11))	-0.381637	0.092907	-4.107745	0.0001
C	15.43210	2.126427	7.257293	0.0000

R-squared	0.859341	Mean dependent var	2.497727
Adjusted R-squared	0.836836	S.D. dependent var	0.225387
S.E. of regression	0.091042	Akaike info criterion	-1.819385
Sum squared resid	0.621649	Schwarz criterion	-1.453415
Log likelihood	93.05296	Hannan-Quinn criter.	-1.671945
F-statistic	38.18371	Durbin-Watson stat	1.854249
Prob(F-statistic)	0.000000		

Figure 7. Original EViews ADF test output for government debt

A major improvement required for the final empirical version is to report the ADF test for every series used in the final model, together with the test specification (constant/trend), lag-selection rule and critical values. Testing one variable alone is insufficient to establish the stationarity properties of the complete system.

4.5 GARCH analysis

The original manuscript reports statistically significant coefficients for the constant, lagged squared residual and lagged GARCH terms. This pattern is consistent with conditional volatility dynamics: new shocks affect current volatility while past conditional variance contributes to future volatility. The result supports the use of a GARCH-type model rather than a constant-variance assumption.

INTEREST_RATE	-0.041154	0.003846	-10.70115	0.0000
STOCK_INDEX	-0.010871	0.000126	-86.43076	0.0000
TECHNOLOGY_ADOPTION	0.243782	0.002368	102.9494	0.0000
AR(1)	-0.093037	0.287166	-0.323983	0.7460
AR(2)	0.099559	0.295183	0.337279	0.7359
AR(3)	0.458502	0.144298	3.177465	0.0015
MA(1)	0.611240	0.291604	2.096127	0.0361
MA(2)	-0.116735	0.343820	-0.339524	0.7342
MA(3)	-0.201553	0.265826	-0.758215	0.4483
Variance Equation				
C	0.002088	0.000729	2.864732	0.0042
RESID(-1)^2	-0.125364	0.097022	-1.292121	0.1963
GARCH(-1)	1.052282	0.116427	9.038095	0.0000

R-squared	0.998716	Mean dependent var	14.74845
Adjusted R-squared	0.998599	S.D. dependent var	7.039903
S.E. of regression	0.263503	Akaike info criterion	-0.152148
Sum squared resid	6.110188	Schwarz criterion	0.166373
Log likelihood	19.37916	Hannan-Quinn criter.	-0.023353
Durbin-Watson stat	1.692678		

Inverted AR Roots	.78	-.44-.63i	-.44+.63i
Inverted MA Roots	.49	-.55+.34i	-.55-.34i

Figure 8. Original EViews GARCH estimation output

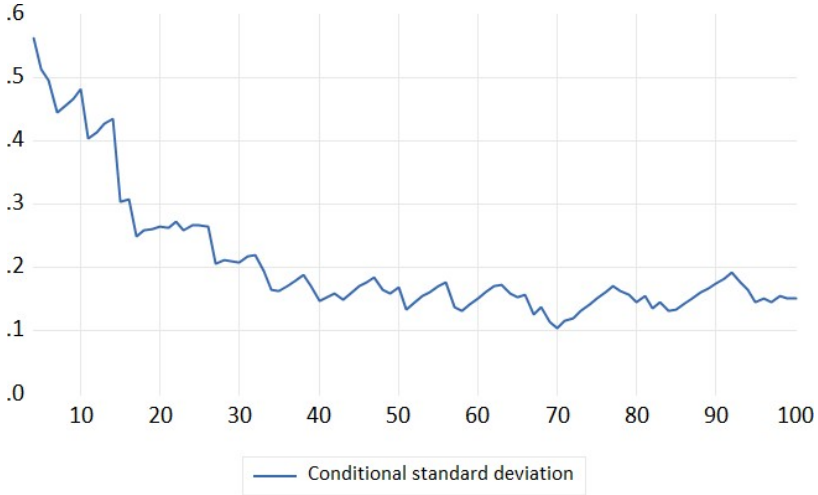

Figure 9. Original EViews graphical representation of conditional volatility

For a final journal version, the complete GARCH table should report coefficient estimates, standard errors, z-statistics, probability values and the $\alpha + \beta$ persistence measure. It should also include a residual diagnostic, such as a post-estimation ARCH-LM test, and state the assumed error distribution. These items are necessary to establish that the selected specification is statistically adequate rather than merely significant in its individual parameters.

5. Discussion

The combined evidence points toward an interconnected and volatility-sensitive financial environment. The descriptive and correlation results indicate that market indicators and macroeconomic variables move together in several dimensions. The ARCH result then provides formal evidence that variance is not constant. This is particularly relevant for financial decision-making because risk-management systems based on a fixed variance assumption may underestimate risk during turbulent periods.

The findings are also consistent with the broader international financial-stability literature. The IMF's recent assessments emphasize that geopolitical shocks, sovereign-debt pressures, stretched asset valuations, non-bank financial interconnections and changes in global financial conditions can reinforce one another. The April 2026 Global Financial Stability Report specifically notes that shocks can propagate through cross-border portfolio flows and affect emerging markets with weaker buffers (IMF, 2026). The present study's volatility-oriented framework is therefore relevant to a financial environment in which shocks may be transmitted across asset classes and jurisdictions.

The correlation findings involving commodity prices, inflation and market indicators also have an economic interpretation. Commodity-price movements can affect production costs and inflation expectations, while inflation can influence monetary-policy expectations and discount rates. Similarly, government debt and bond-market conditions can influence sovereign risk and financing costs. These channels suggest why a multi-variable framework is preferable to examining the stock market in isolation.

The negative association reported between unemployment and the stock index should be interpreted cautiously. Equity prices are forward-looking and may respond to expected future activity rather than current labour-market conditions. Thus, the correlation is informative but cannot identify the direction or timing of the underlying economic mechanism.

Technology adoption is another important structural variable. The manuscript reports substantial growth in technology adoption and positive associations with several market indicators. This may reflect productivity expectations, financial innovation and changes in market participation. However, the available results do not permit a causal claim that technology adoption directly increases market performance. A future study could examine this relationship using a more explicitly defined technology index and a dynamic causal framework.

6. Managerial and Policy Implications

For investors

Investors should incorporate time-varying volatility into portfolio allocation, stress testing and risk limits. A significant ARCH effect indicates that risk can change over time, making static volatility assumptions potentially inadequate.

For financial institutions

Banks, asset managers and other financial intermediaries should monitor cross-market indicators, especially interest rates, exchange rates, sovereign yields and commodity prices, because shocks can be transmitted across markets.

For policymakers

Monetary and fiscal authorities should monitor interactions among inflation, interest rates, government debt and financial-market volatility. Recent IMF assessments underline the importance of resilience, liquidity and macroprudential safeguards when market conditions become stressed.

For researchers

Future studies should use fully documented time-series data, test all variables for stationarity, compare alternative volatility specifications such as EGARCH/GJR-GARCH where appropriate, and conduct out-of-sample forecasting tests.

7. Conclusion

This study examined selected global financial and macroeconomic indicators using an EViews-based econometric framework. The analysis incorporated stock-market indicators, exchange rates, interest rates, commodity prices, global GDP, government debt, inflation, unemployment and technology adoption. Descriptive and correlation evidence indicated substantial co-movement among several variables, while the reported ARCH diagnostic provided strong evidence against constant residual variance. The reported ADF result for government debt indicated non-stationarity at the tested specification, reinforcing the need for careful time-series treatment. The reported GARCH results further indicated significant volatility dynamics.

The central implication is that global financial markets should be understood as interconnected, dynamic systems in which risk changes over time. For practitioners, this supports the use of volatility-sensitive risk management. For policymakers, it emphasizes the importance of monitoring cross-market transmission and macrofinancial vulnerabilities. For researchers, it demonstrates the value of combining descriptive, stationarity and conditional-volatility diagnostics rather than relying on correlation alone.

The main limitation is data transparency. The supplied manuscript contains EViews figures and selected reported statistics but not the underlying dataset or complete estimation tables. Accordingly, this upgraded version deliberately avoids fabricating missing numerical results. Before final publication, the author should insert the exact sample period, data sources, variable definitions, full ADF results, complete GARCH coefficients, model diagnostics and—preferably—the underlying dataset or a reproducibility appendix.

8. Limitations and Future Research

• The underlying dataset and exact sample period were not included with the supplied manuscript, limiting independent verification.

• The reported ADF evidence is incomplete because stationarity results for all variables are not available in the manuscript.

• The supplied GARCH output is described but the complete coefficient table is not available in editable form.

• The study is primarily exploratory and does not establish causal relationships.

• Future work should use a clearly defined country/global index structure, documented data sources, consistent frequencies and a longer sample where available.

• Future research could compare GARCH, EGARCH and GJR-GARCH specifications and evaluate out-of-sample volatility forecasts using MAE, RMSE or QLIKE-type measures.

• Technology adoption should be operationalized using a transparent and reproducible index rather than a general rate.

References

1. Baranovskyi, O., Kuzheliev, M., Zherlitsyn, D., Serdyukov, K., & Sokyrko, O. (2023). Cryptocurrency market trends and fundamental economic indicators: Correlation and regression analysis.
2. Darmawan, I., Siregar, H., Hakim, D. B., & Manurung, A. H. (2020). The effect of crude oil price shocks on Indonesia stock market performance. Jurnal Organisasi dan Manajemen, 16(1), 11–23.
3. International Monetary Fund. (2025). Global Financial Stability Report: Enhancing resilience amid uncertainty. IMF.
4. International Monetary Fund. (2025). Global Financial Stability Report: Shifting ground beneath the calm. IMF.
5. International Monetary Fund. (2026). Global Financial Stability Report: Global financial markets confront the war in the Middle East and amplification risks. IMF.
6. Khan, B., Aqil, M., Alam Kazmi, S. H., & Zaman, S. I. (2023). Day-of-the-week effect and market liquidity: A comparative study from emerging stock markets of Asia. International Journal of Finance & Economics, 28(1), 544–561.
7. Kumar, V., & Aurora, S. (2020). Study on stock market cointegration: The case of India and China. FOCUS: Journal of International Business, 7(1), 76–87.
8. Liu, E. (2021). Comparison of stock price prediction ability based on GARCH and BP_ANN. In 2021 2nd International Conference on Computing and Data Science (CDS) (pp. 90–93). IEEE.
9. Okafor, M. E., Nwakoby, C. I. N., Adigwe, P. K., & Ezu, G. (2021). Financial openness and capital market development in sub-Saharan African countries. International Journal of Trend in Scientific Research and Development, 5.
10. Sucháček, J., Koutský, J., del Río, L. C. L., & Seďa, P. (2021). Econometric analysis of integration of selected new EU member CEE stock markets with global stock market and Eurozone: Impact of global financial crisis. Amfiteatru Economic, 23(58), 824–842.
11. Xu, Z., Liechty, J., Benthall, S., Skar-Gislinge, N., & McComb, C. (2024). GARCH-informed neural networks for volatility prediction in financial markets.