



## Social Sciences & Humanity Research Review



### Assessing Conditional Volatility of Middle Eastern Stock Markets: Evidence from Israel-Palestine War

Malik Ali Junaid Zahid<sup>1</sup>, Dr. Anum Shafique<sup>2</sup>, Dr. Kaleem Ullah<sup>3</sup>, Dr.  
Muhammad Hanif<sup>4</sup>

<sup>1</sup> MS(Finance) Scholar, Arid Agriculture University Rawalpindi

Email: [alijunaidzahidmalik@gmail.com](mailto:alijunaidzahidmalik@gmail.com)

<sup>2</sup> Lecturer, PMAS Arid Agriculture University Rawalpindi

Email: [Anum.Shafique@uaar.edu.com.pk](mailto:Anum.Shafique@uaar.edu.com.pk)

<sup>3</sup> Lecturer, PMAS Arid Agriculture University Rawalpindi

<sup>4</sup> Professor, Department of Mathematics, PMAS-AAUR

#### ARTICLE INFO

##### Keywords:

Israel-Palestine war, Middle  
East stock markets, DCC  
GARCH, Conditional Volatility

##### Corresponding Author:

**Malik Ali Junaid Zahid,**  
MS(Finance) Scholar, Arid  
Agriculture University  
Rawalpindi

Email:

[alijunaidzahidmalik@gmail.com](mailto:alijunaidzahidmalik@gmail.com)

#### Abstract

The Research study examines the conditional volatility of Middle Eastern stock markets, specially focusing on Syria, Lebanon, Jordan, Egypt, Saudi Arabia, and Palestine, in the context of Israel-Palestine war. The Israel Palestine war that initiate on 07 October 2023 have cause serious repercussions on political and stock market region. DCC GARCH methodology is used to assess the volatility on the selected stock markets like Syria, Lebanon, Iran, Jordan, Egypt, Saudi Arabia and Palestine. The findings indicate, data is stationary for all series as p-value is zero for all stock market indices and rejects null hypothesis. The beta value for all series determines strong volatility factor, if factor of volatility increases it takes time to settle in normal way. The objective of research study is to assess the mean and volatility spillover exists due to Israel Palestine war on these selected stock markets.

## INTRODUCTION

The Israel-Palestine war is also one of the significant issues globally that escalated again in October 2023 that affected the political and economic dynamics of the Globalization and issue persist many years before during ancient times. Gaza is the part of the Palestinian territories that situated in middle east of the Mediterranean coast. Gaza shares border with Egypt with the population of 2million and area of 365 square kilometers. Badwan, (2022) studied the major impacts or repercussions on global financial crises in respect of the Palestinian economy.

As the Outbreak of the Israel-Palestine conflict arose there is significantly drop in the stock market prices of the Israel-Palestine. On 9<sup>th</sup> October by decreasing the Israeli gas production, the Israeli minister of energy identifies production outputs of gas at Tamar platform. According to cui et al, (2024) the higher moment of order spill over on commodity and financial markets: Insight from Israel-Palestine war. They intensified moment of higher order spillover and spillover volatility in financial markets and how the Israel – Palestine conflict affected the outbreak of the dynamics. The focus of the study was the return and the volatility spill over across the financial and the commodities markets(Zach,2023). The study conducted a higher moment order spillover of natural gas, oil and gold by a connectedness approach.

Due to Geopolitical tensions, economic policies, and regional conflicts the Middle Eastern stock markets lead towards the high level of uncertainty and volatility. The ongoing conflict between Israel and Palestine indicates deteriorating effect in stock market volatility in the Middle Eastern countries like Jordan, Syria, Iran, Saudi Arabia, Lebanon, Egypt, and Palestine. Our research study aims to focus on how these geo-political escalations impact the conditional volatility of the Middle East stock markets such as Jordan, Lebanon, Syria, Egypt, Saudi Arabia, Iran, and Palestine. By understanding the factor of the volatility policy makers, investors can better access the economic indicators of the conflict.

According to Khan & Rahman, (2023) International events have tremendous impact on direction of financial market due to escalated tensions in geo-politics of Israel and Palestine. As war frequently brings to provoke the businesses detest the degree of uncertainty. The stock market sells off in start of a conflict or its anticipation significantly. The present crises between Gaza(Palestine) and Israel is complex network for investors in respect of global interdependencies (Khan & Rahman,2023). Many countries have volatile stock markets, and have close relations with countries in conflict and exposed to middle east. The heightening hostilities between Israel and Palestine effects the global equity markets and mostly shareholders concerned about volatility in international markets.

According to Handayani et al, (2023) the Indonesia Macroeconomic affects from the Israeli-Palestinian war. The major focus of the study is to evaluate the direct impact on Indonesia economy sector. The technique of the research study is quantitative in nature, and used secondary data for analysis. The direct response of the Israel- Palestine war on macro-economic factors like supply disruptions, oil prices inflation and exchange rate behavior. The Indonesia government must focus on state revenue and strength of purchasing power like inflation of food prices. The Problem of his research is how the macro-economic factors influence the Israel-Palestine war and what were efforts to overcome it in respect of Indonesia. The purpose of his research is to demonstrate the impact of macroeconomic indicators on Indonesia due to Israeli-Palestinian conflict and what implications are made to avoid it. The objective of the research is to hoped that this research add governments struggles to adopt advance economy during Israel-Palestine war.

The Middle Eastern stock markets are often influenced by Geo-political events with the Israel Palestine war being one of the most prominent and persistent sources of instability in the area. Our study of research aims to assess the conditional volatility of Middle eastern stock markets like Syria, Lebanon, Egypt, Jordan, Saudi Arabia, Iran and Saudi Arabia focusing specially on the impact of

Israel-Palestine war. The primary objective of this research study is to analyze the conditional volatility of stock markets in the Middle east during the period of intensified conflict between Israel and Palestine. By employing econometric models like DCC GARCH (Generalized Autoregressive Conditional Heteroskedasticity) model, this study of research seeks to quantify the impact of conflict on market volatility.

The problem statement in this research study highlights the issue of the volatility of stock market in the Middle Eastern region. It involves understanding the impact of Geo-political events such as Israel Palestine conflict on Conditional volatility of Middle East stock markets like Syria, Lebanon, Jordan, Egypt, Iran, Saudi Arabia and Palestine. The problem focused around understanding how these conflicts like Israel Palestine affects volatility of Middle East stock markets and how it influences on investors, policy makers, and risk managers and economic stability. Our research study selected seven Middle East countries that has strongly affected by Israel-Palestine war (Yaganandham, 2023).

Few studies have been conducted to assess the conditional volatility of Middle Eastern stock markets in context of Israel Palestine war that creates the Gap in the body of knowledge. Due to this military conflict between two countries Israel and Palestine there exist a devastating impact on financial markets of Middle East countries like stock markets. Due to the International military conflict between Israel and Palestine we assess the volatility factor of Middle Eastern stock markets, as the war broke out between two countries; its consequences will firstly impact the Middle Eastern countries and their financial markets like stock market. Firstly, there is theoretical Gap in our research study According to Ergun, (2024) he studied the Palestine-Israel conflict in respect of the Crypto currency market and how this financial market like crypto currency is affected by this International conflict, and used portfolio theory for investment decision. He takes Top Ten Crypto currencies on their high market capitalization and wants to see its potential influence on crypto currencies due to Israel Palestine war, and uses the Sample period of 01-03-2022 to 17-10-2023 and use event study methodology. The findings help investors to diversify their portfolios and inculcate hedging strategies in kinds of unpredictable time of information. Pandey et al, (2024) studied markets of happier countries are less affected by tragic events by focusing on the reaction of market to Hamas-Israel war. They used methodology of event study and sample of 71 global stock market indices and used Arbitrage pricing theory in research study. The findings indicate the negative effect of war and finds that the stock market indices in happier nations resilient to Geo-political event. Cui et al, (2024) studied the moment of higher order risk spillover across the commodity and financial markets evidence from the Israel-Palestine war period, and used portfolio diversification theory for risk management strategies. They used joint connectedness approach like TVP-VAR to analyze moment of higher order risk spill over among Gold, Natural gas, Oil, and stock market in Israel and Palestine. TVP-VAR models time varying relationship between multiple variables, and it does not model volatility directly. The findings indicate that the escalations of war in October 2023 have largely increased higher order moment risk and total spillover of volatility. Hassouneh et al, (2024) studied the effect of war on Israel, Palestine and Jordan stock market. The study used the VECM-MGARCH model for analysis. Their study used the Modern portfolio theory for theoretical support and how the investors diversify their portfolios. According to Jabarin & Atout, (2019) the impact of macro-economic factor of Amman and Palestine stock market in respect of Political indicators. The study used the Event Study Methodology for results. They used Arbitrage pricing theory for theoretical support to research.

Secondly, therefore to fill this Gap this is our first study to Assessing the Conditional Volatility of Middle Eastern stock market in the light of Israel Palestine war. Thirdly, we use GARCH Methodology in our research study. This methodology is not used so far in the literature for

measuring volatility of Middle Eastern stock market in context of Palestine-Israel war. DCC GARCH Model is an econometric model used to estimate time-varying correlations and volatilities in multi-variate time series data. It indicates the Uni-variate model to multi-variate model allows for modeling both conditional volatilities and dynamic correlations between multiple financial time series data. DCC GARCH is used to predict future volatility based on past returns. The significance of the study “Assessing conditional volatility of Middle Eastern stock markets evidence from Israel-Palestine war” provide a huge understanding of how the geopolitical conflict impacts Middle East stock markets. It offers valuable insights for investors, policymakers, guiding risk management and policy formulation and enhancing the understanding of market dynamics marked by geopolitical complexity. The scope determines the selected countries from Middle east region like Syria, Lebanon, Iran, Jordan, Egypt, Saudi Arabia and Palestine that countries are most affected by the Israel- Palestine war (Yoganandham, 2023).

## **LITERATURE REVIEW**

Eugene Fama in 1970 proposed the theory of Efficient Market Hypothesis indicates that the financial markets are efficient informationally, and how the financial asset and the stock prices fully reflect all information available at specific point of time. However, during the times of the geopolitical turmoil, such as Israel Palestine war new information may have emerged rapidly causing uncertainty and fluctuations in stock markets in middle eastern countries like Lebanon, Saudi Arabia, Egypt, Syria, Jordon and Iran. This theory supports the concept that volatility in the stock market of Middle East countries may increase as investors adjust their expectations and portfolios in response to current situation.

Lin et al, (2024) they studied spillover effect on commodity and financial markets in respect of Israel-Hamas war. They used dynamic spill over method like TVP-VAR to check the impact of Israel-Hamas war in commodity markets and global financial markets. The war intensified the over dynamics of the spillover and the impacts of the war lead toward the long term consequences. The result inculcates that dynamic spill over between commodity and global financial markets exhibit dynamic changes after the war period. According to Ergun (2024) he studied the impact of Israel-Palestine war on the Crypto currency market. International conflict has crucial influence on financial markets and leads toward the devastating effects on the countries’ economies and the financial markets such as Crypto currencies and the stock markets indices. The result of his study shows that Palestine-Israel war affected severe crypto currencies include SOL, BTC, ETH and TRX and it had no severely effect on market as a whole.

Hudson and Urquhart (2015) they studied the war and stock markets, effect of world war II on the British stock market. They used event study methodology in his study. The results indicate that they find limited evidence of strong links between market returns and the war events although the study supports for the negatively effect. According to Mnasri et al, (2024), they studied the effect of terrorist attacks on volatility of stock market in emerging markets. The research study indicates how the terrorist attacks directly impact the stock market and affected the volatility level in twelve countries of MENA region, and they check for regional financial integration. The findings of research study refer that financial market volatility lasts about 20 days of trading. They used event study methodology in their research.

Hassouneh et al, (2024) they studied the impact of war on Jordan, Israel, and Palestine stock markets. The research study identifies how the Palestinian and Israeli conflict or war affects the Jordan, Palestine, and Israel stock market. The final outcome of the study indicates that the Israel and Palestine stock markets have long term association than Israeli and Jordanian markets. They used VECM-MGARCH model in their research study. Bley and chen (2006) they investigate the long term dynamic association and interaction of six Gulf Council Cooperation countries stock markets like

(Qatar, Oman, United Arab Emirates, Bahrain, and the Saudi Arabia) using the VECM Vector error correction model. The main objective or significance of the research study is to determine the interaction of the stock markets like Qatar, Kuwait, Saudi Arabia and Bahrain and the market dynamics of the stock markets. The findings refer the evidence of increasing market integration behavior.

Aksoy et al, (2011) studied the co-movements between Israel, Turkey, and Egypt stock markets using GARCH and co-integration model. By using the strong GARCH effect, these markets display no long run equilibrium or relation. Their research study analysis the co-integration between MENA stock markets like Israel, Egypt, and Turkey, and how the co-movements effect these markets. Secondly they use GARCH model to examine the return on volatilities. The data obtained in this study was from S&P IFC, DataStream. The domain of the study is from 2002 to 2010. In this research paper they apply correlation analysis. When we analyze the correlation results we find correlation between Turkey and Egypt is higher than the correlation between Israel and Egypt and correlation between Turkey and Egypt is higher between Egypt and Turkey.

Hadi et al, (2013) studied the relationship between Amman stock exchange and Palestine stock exchange co-integration approach. The results of the study indicate that these markets are positively related in long run and positive co-integrated to each other. The research paper examines the relation between Palestine Stock exchange(PSE) and Amman stock exchange(AEX) and their dynamic relationship. The study examines the Engle-Granger Co-integration procedure as estimation model of monthly time series data from 1997 to 2011. According to Khan & Rahman, (2023) they studied the impact of Palestine-Israel war on leading global stock market indices as GCC indicators. The research study examines the Global Cooperation Council (GCC) and contagion effects on Israel-Palestine war and leading Global stock market indices. They used Time-Varying Parameter Vector Autoregressive or (TVP-VAR) connectedness approach.

Fernandez, (2007) he studied the adverse effects of stock market in respect of middle east conflict. He investigates the negative effects on political events related to stock market in Middle east. He studied how political instability affected stock market volatility using two approaches. The results or findings of the study are mixed and indicates that how political events cause shifts in the volatility and in the Middle east stock markets and Asian emerging countries. Jabarin & Atout, (2019) they studied the impact of macro-economic factors on Amman and Palestine stock market indices in respect of political event. Also their research study handles how the political events or macro-economic events occur in the countries and how it affected like Palestine and Amman stock market indices. Their research study identifies the macro-economic model and Arbitrage pricing theory. The methodology of event study was used to test the important political events. The major results indicate that political events and macroeconomic factors had a significant impact on the Amman and the Palestine stock market factors. Both the stock markets are inefficient and do not reflect noisy events and irregular information.

Zussman et al, (2006) they studied the assassinations of an Israel counter terrorism policies and how it reacts to stock market data. We find results are totally robust in favor of explanatory variables, and the reaction of the market related to assassination is quite persistent, and the Palestine stock market reaction related to terrorism relates event is similar to Israel stock market indices. Goyal &. Soni, (2024) they studied the Impact of Israel Palestine war on equity markets globally in 2023. The study explores the impact of most recent Israel Palestine war on global equity markets with wide range of both developed and emerging markets. The research study used event study methodology like 28-day event window and 200 days' estimation window with 24 developed countries and 23 emerging countries. The research study identifies the long term and short term impact of the 2023 Israel Palestine war on the equity markets using the Methodology like event study and the Cross

Regression Analysis. According to Yoganandham, (2024) he studied the economic global recession and Israel-Hamas conflict that affecting the oil prices, financial markets, GDP growth rate and Palestine economic development.

Eissa et al, (2024) they studied the geopolitical risk factor on stock market in middle east and used quantile regression analysis. The focus of the study is to investigate the heterogeneous impacts on eight major categories with respect to geopolitical risk on performance of stock market or efficiency across four Middle East economies: Egypt, Israel and Turkey and used Quantile regression analysis and data set lies from September 2002 to August 2023. The results of the study highlight the importance of risk factor and their influence under market dynamics.

## METHODOLOGY AND DATA COLLECTION

DCC GARCH model is used for our research study. DCC GARCH model is a tool used to estimate time varying correlation and volatilities in multi variate time series data. The nature of research study is quantitative and secondary. The research study is time series in nature. E-views and Python are used for analysis of data. The research study is explanatory in nature. Time period of data is from 03 Jan, 2016 to 31 Dec, 2023. The data has been downloaded from investing.com. The DCC GARCH model is used for Analysis. The Python tool is used for analysis of data framework. The names of the stock markets in the selected countries are: Tadawal (Saudi Arabia), Amman Stock Exchange (Jordan), Palestine Exchange – Quds (Palestine), Bloom Kuwait (Kuwait), and EGX – Egyptian Exchange (Egypt).

### Mean Equation

$$R_{i,t} = \mu_i + \epsilon_{i,t}$$

$r_{i,t}$  = stock market returns index of country at time t.

$\mu_i$  = mean return for country

$\epsilon_{i,t}$  = error term for country at time t.

### 3.4.2 Variance Equation

$$\sigma_{i,t}^2 = \alpha_{i0} + \alpha_{i1} \epsilon_{i,t-1}^2 + \beta_{i1} \sigma_{i,t-1}^2 + \gamma_i D_t$$

$\sigma_{i,t}^2$  = conditional variance of error term for country i at time t.

$\alpha_{i0}$  = constant term for country i

$\alpha_{i1}$  = coefficient of lagged square error term (ARCH) term.

$\gamma_i$  = measures the impact of war on conditional volatility of country.

$D_t$  = dummy variable representing the war period (1 during the war otherwise 0).

## 3.5 DCC GARCH MODEL

The underlying research study shall refer the following model.

$$R_t = w_t + \varphi_t \text{ where as } \frac{\varphi_t}{\varphi_{t-1}} \sim N(0, H_t)$$

$$\varphi_t = H_t^{1/2} w_t \text{ where } w_t \sim N(0, 1)$$

The next step is to model the time-varying correlation between stock markets. In the DCC GARCH framework, we decompose the covariance matrix into time-varying standard deviations and a dynamic correlation matrix.

$$H_t = D_t R_t D_t$$

Where,

$H_t$  is the conditional covariance matrix

$D_t$  is a diagonal matrix of time varying standard deviation.

$R_t$  is time varying correlation matrix.

The elements of  $D_t$  are the conditional volatilities obtained from the univariate GARCH models. The dynamic correlation matrix  $R_t$  evolves according to:-

$$Q_t = (1 - \alpha - \beta) Q + \alpha(\epsilon_{t-1}\epsilon_{t-1}) + \beta Q_{t-1}$$

$$R_t = Q_t^* Q_t Q_t^*$$

Where,

$Q_t$  is the conditional covariance matrix of standardized residuals.

$Q$  is the unconditional covariance of standardized residuals.

$\alpha$  and  $\beta$  are non- negative scalers, such as  $\alpha + \beta < 1$

$Q_t^*$  is diagonal matrix of square roots of the diagonal elements of  $Q_t$

#### VARIABLE MEASUREMENT

War is taken as Dummy variable (1 during the war, other wise 0), the Stock market returns as independent variable, returns are calculated by formulae  $\text{Ln} [\text{closing prices/ opening stock market prices}]$ .

#### DISCUSSION AND RESULTS

Table 1: Descriptive Statistics.

|                           | Tadawal_returns | Amman_returns | Quds_returns | Bloom_returns | egx_returns. |
|---------------------------|-----------------|---------------|--------------|---------------|--------------|
| <b>Count</b>              | -0.04192        | -0.000024     | -0.000322    | -0.001771     | -0.005001    |
| <b>Mean</b>               | -0.007287       | -0.000603     | -0.000322    | 0             | -0.005026    |
| <b>Standard Deviation</b> | -0.00734        | -0.000603     | -0.000322    | 0.000113      | -0.005051    |
| <b>Minimum</b>            | -0.007394       | -0.000603     | -0.000322    | 0.001805      | -0.005077    |
| <b>Maximum</b>            | -0.014544       | -0.0022925    | -0.002524    | 0.002246      | -0.021328    |

**Table 1** indicates the descriptive statistics of the entire data for the underlying study of research. Mean is the average indices and for Tadawal it shows the average value of -0.007287, and for Amman it indicates -0.000603, and for Quds it shows average value of -0.000322, and for Bloom it indicates 0 average value. All means are negative except for bloom, which has value of 0, which indicates the no average gain or loss. EGX (-0.0050), and Tadawal shows highest average losses, represent underperformance during the sample of period or war dynamics. EGX and Tadawal have relatively higher standard deviation, indicates that they are more volatile compared to Amman and Quds. Bloom stock market has relatively low standard deviation (0.000113), that represent very little fluctuation in returns. Bloom has highest maximum returns by (0.002246), and Amman has lowest minimum returns by (-0.000603).

Table 2: ADF Test.

|                | P-VALUE  |
|----------------|----------|
| <b>Tadawal</b> | 0.00E+00 |
| <b>Amman</b>   | 0        |
| <b>Quds</b>    | 0        |
| <b>Bloom</b>   | 0        |
| <b>Egx</b>     | 0        |
|                |          |

**Table 2** indicates the results of the Augmented Dickey Fuller (ADF) test that is used to check the stationarity in a time series data. In Financial analysis, stationarity is a main assumption for modelling returns, especially when applying the models like GARCH or DCC GARCH. The results

of the ADF indicates that all stock returns are stationary at all level. As p-value of all the stock market return series like Tadawal, Amman, Quds, Bloom, Egx are 0, so we will reject null hypothesis for all series, which also assumes the rejection of the unit root test, as p-value is stationary at all level or dynamics of the series.

Table 3 GARCH (1,1) Model for Tadawal: Mean Equation.

|                          | Coefficient | P-value |
|--------------------------|-------------|---------|
| <b>Garch</b>             | 4.3022      | 0       |
| <b>Variance Equation</b> |             |         |
| <b>Omega</b>             | 398.0176    | 0       |
| <b>Alpha</b>             | 0.1685      | 0       |
| <b>Beta</b>              | 0.735       | 0       |

Table 4.3 indicates that in the mean equation the value of GARCH term or coefficient is 4.3022 with the value of p is 0, which indicates that it is statistically significant. This indicates that past volatility significantly influences current returns on Tadawal stock market. However, in the variance equation the value of omega that is (398.017), refers the long run average volatility component that is also significant with p value equal to 0, indicates the strong base level of variance. The Coefficient of alpha measures the influence of past shocks on current volatility. The value of Alpha (0.1685), indicates that past shocks or news have moderate impact on current volatility factor. The value of p indicates past shocks strongly influence volatility. The beta coefficient indicates the past volatility in current period. The value of beta (0.735), indicates volatility is highly persistence, which refers that past volatility strongly influence current volatility. The importance of beta indicates past volatility in building current volatility. The combine value of Alpha and Beta (0.9035), the model indicates high volatility persistence but remains stable as it is less than 1.

Table 4 GARCH Model for Amman: Mean Equation.

|                           | Coefficient | P-value |
|---------------------------|-------------|---------|
| <b>Garch</b>              | -0.6833     | 0       |
| <b>Variance Equation.</b> |             |         |
| <b>Omega</b>              | 556.3701    | 0       |
| <b>Alpha</b>              | 0.2889      | 0       |
| <b>Beta</b>               | 0           | 1       |

In the above table the value of GARCH coefficient in the mean equation is (-0.6833) with 0 p-value, indicates significant statistically. The negative sign represents the higher past volatility is linked with lower current returns showing market overreaction in Amman. In the variance equation the value of Omega or constant is (556.3), that is significant, indicating strong base level volatility. The value of alpha (0.2889), in the variance equation indicates new information have immediate impact on volatility. The Beta coefficient indicates persistence of past volatility in current period. The value of beta 0 with p-value equal to 1, is insignificant indicates no persistence in volatility, means volatility does not exist. Overall Amman stock market model refers that Amman market reacts strongly to new information but for short period of time.



Table 5 GARCH Model for Quds: Mean Equation.

|                          | Coefficient | P-value |
|--------------------------|-------------|---------|
| <b>Garch</b>             | -0.0252     | 0.453   |
| <b>Variance Equation</b> |             |         |
| <b>Omega</b>             | 0.5684      | 0       |
| <b>Alpha</b>             | 0.1908      | 0       |
| <b>Beta</b>              | 0.6442      | 0       |

The value of Co-efficient in the mean equation is statistically insignificant as p-value is greater than 0.05, as there is no strong evidence of mean returns in the series. The negative value indicates the downward movement. The constant term in the variance equation is significant refers the baseline level of volatility. The alpha co-efficient measures the influence of recent shocks (Lagged residuals) on current volatility. The value of 0.19 means that 19% of current volatility is explained by recent shocks. The significant p-value indicates that recent shocks strongly influence volatility. The High beta value (0.644) indicates strong volatility persistence, meaning that if volatility increases, it takes time to return to normal situation. The importance of beta emphasizes past volatility in building current volatility.

Table 6 GARCH Model for Bloom: Mean Equation

|                          | Coefficient | P-value |
|--------------------------|-------------|---------|
| <b>Garch</b>             | -0.3824     | 0.413   |
| <b>Variance Equation</b> |             |         |
| <b>Omega</b>             | 78.3939     | 0.175   |
| <b>Alpha</b>             | 0.0629      | 0       |
| <b>Beta</b>              | 0.8873      | 0       |

The above Table of bloom stock market indices indicate in the mean model the GARCH coefficient is (-0.3824) having p value 0.413 that is statistically insignificant, representing no significant impact of past volatility on current returns series. In the variance equation the omega or constant term is not significant indicating that constant volatility factor is weak as p-value is 0.175. The Alpha is quite significant that is (0.0629) represents new shocks have small effect on volatility factor. The Beta captures past volatility persistence in current period. The value of beta is (0.887) is significant represents strong volatility persistence factor. The beta captures the importance of past volatility in building current volatility. Overall bloom stock market shows high persistence volatility by past volatility.

Table 7 GARCH Model for Egx: Mean Equation

|              | Coefficient | P-value |
|--------------|-------------|---------|
| <b>Garch</b> | 4.7618      | 0       |
|              |             |         |

| Variance Equation |          |   |
|-------------------|----------|---|
|                   |          |   |
| <b>Omega</b>      | 380.8745 | 0 |
| <b>Alpha</b>      | 0.0842   | 0 |
| <b>Beta</b>       | 0.8906   | 0 |

The Coefficient of Egx returns is statistically significant, indicating that the mean return is different from zero value. The value of 4.7618 suggests a positive average return, which is statistically reliable. The value of omega is statistically significant, refers the long term average variance and indicates baseline volatility is substantial. The Alpha measures the impact of past or news on current volatility. A positive value indicates new information affects volatility. The Beta values are significant and close to 1, shows high persistence in volatility. Volatility shocks takes a long time to decay. The importance of beta declares past volatility in shaping current volatility.

Table 8: Average DCC Correlation stock markets.

|                      | Average_DCC |
|----------------------|-------------|
| <b>Egx-Tadawal</b>   | -0.076601   |
| <b>egx-Amman</b>     | -0.048844   |
| <b>egx-Quds</b>      | 0.055136    |
| <b>egx-bloom</b>     | 0.009805    |
| <b>tadawal-aman</b>  | 0.086227    |
| <b>tadawal-Quds</b>  | -0.017115   |
| <b>tadawal-bloom</b> | 0.028968    |
| <b>amman-quds</b>    | -0.007435   |
| <b>Amman-bloom</b>   | -0.04298    |
| <b>Quds-bloom</b>    | -0.095601   |

The Average DCC Correlation shows cross stock markets of middle east countries. The Egx-Bloom (0.0098), Tadawal-Bloom (0.0289), Tadawal-Amman (0.086), Egx-Quds (0.055), they show weak positive correlations, and indicates limited co-movement between these cross stock markets pairs. However, Egx-Amman (-0.049), Quds-Bloom (-0.096), Amman-Bloom (-0.043), Amman-Quds (-0.007), Egx-Tadawal (-0.077), Tadawal-Quds (-0.017), these indices shows weak to moderate negative correlations, indicating divergent movements during the specific period due to conflict or war.

Table 9 DCC results between Al-Quds and Amman

|                | Coefficient | P-value |
|----------------|-------------|---------|
| <b>Theta 1</b> | 0.111524    | 0.2301  |
| <b>Theta 2</b> | 0.71349     | 0.0032  |
|                |             |         |

**Table 4.9** indicates that DCC model between Amman and Al-Quds theta (2) is statistically significant as value of p is 0.0032, and indicates strong persistence in dynamic correlation, whereas theta (1) is not significant as p value is 0.2301 indicates weak short term effect. Overall correlation between two markets is persistence but not highly reactive.

Table 10 DCC results between Al-Quds and Egx-30

|                | Coefficient | P-value |
|----------------|-------------|---------|
| <b>Theta 1</b> | 0.0101      | 0.565   |
| <b>Theta 2</b> | 0.49        | 0.3437  |
|                |             |         |

**Table 4.10** indicates that DCC model between Egx-30 and Al-Quds, both theta 1(0.565) and theta 2(0.3437) values are statistically insignificant, indicating that dynamic correlation between markets lacks short term responsiveness and long term persistence.

Table 11 DCC results between Amman and Egx-30

|                | Coefficient | P-value |
|----------------|-------------|---------|
| <b>Theta 1</b> | 0.11258     | 0.002   |
| <b>Theta 2</b> | 0.8759      | 0       |
|                |             |         |
|                |             |         |

**Table 4.11** indicates that DCC between EGX-30 and Amman both theta 1(0.002) and theta 2(0) are statistically significant, indicating strong short term responsiveness and highly persistence in dynamic correlation between two markets.

Table 12 DCC results between Bloom stock and Egx-30

|                | Coefficient   | P-value       |
|----------------|---------------|---------------|
| <b>Theta 1</b> | <b>0.164</b>  | <b>0.2718</b> |
| <b>Theta 2</b> | <b>0.7719</b> | <b>0.0025</b> |

**Table 4.12** indicates that DCC between Bloom and Egx-30, theta 2(0.0025) is statistical significant indicating strong persistence in dynamic correlation, theta 1(0.2718) is not significant suggesting short term responsiveness.

Table 13 DCC results between Bloom stock and Tadawal

|                | Coefficient | P-value |
|----------------|-------------|---------|
| <b>Theta 1</b> | -0.0009     | 0.8305  |
| <b>Theta 2</b> | 0.573       | 0.9037  |

**Table 4.13** indicates that DCC between Bloom and Tadawal, both theta 1(0.83) and theta 2(0.90) are statistically insignificant, indicating no short term or persistence correlation between two markets. Its indicate stability condition as theta 1+ theta 2 less than 1.

Table 14 DCC results between Egx-30 and Tadawal

|                | Coefficient | P-Value |
|----------------|-------------|---------|
| <b>Theta 1</b> | 0.0436      | 0.0116  |
| <b>Theta2</b>  | 0.1812      | 0       |

**Table 4.14** indicates that DCC between Egx-30 and Tadawal, both theta 1(0.0116) and theta 2(0.0) are statistically significant, indicating that dynamic correlation between two markets determines short

term responsiveness and strong persistence. The stability condition met as value of  $(\theta_1 + \theta_2)$  less than

Finally, for cross markets like Amman-Tadawal, Amman-Bloom stock, Al-Quds- Tadawal, Al-Quds-Bloom stock, these markets have no DCC stability condition met.

## CONCLUSION

In Conclusion, this study has deeply assessed the conditional volatility of Middle eastern stock markets: Evidence from Israel-Palestine war, by implementing the advanced econometric models like DCC GARCH model. The Augmented Dickey Fuller(ADF) test indicates the data is stationary for all stock return series, as p-value is zero for all stock returns and rejecting the null hypothesis for all the return series like Bloom, Egx, Quds, Tadawal, Amman. The Beta co-efficient for all stock market indices shows or declares strong volatility persistence, meaning that if volatility increases, it takes time to return to normal. The Findings refers that in the mean equation of Tadawal the value of GARCH term or coefficient is 4.3022 with the value of p is 0, which indicates that it is statistically significant. This indicates that past volatility significantly influences current returns on Tadawal stock market. However, in the variance equation the value of omega that is (398.017), refers the long run average volatility component that is also significant with p value equal to 0, indicates the strong base level of variance. The Coefficient of alpha measures the influence of past shocks on current volatility. The value of Alpha (0.1685), indicates that past shocks or news have moderate impact on current volatility factor. The value of p indicates past shocks strongly influence volatility. The beta coefficient indicates the past volatility in current period. The value of beta (0.735), indicates volatility is highly persistence, which refers that past volatility strongly influence current volatility. The importance of beta indicates past volatility in building current volatility. The combine value of Alpha and Beta (0.9035), the model indicates high volatility persistence but remains stable as it is less than 1. The Findings of Amman GARCH coefficient in the mean equation is (-0.6833) with 0 p-value, indicates significant statistically. The negative sign represents the higher past volatility is linked with lower current returns showing market overreaction in Amman. In the variance equation the value of Omega or constant is (556.3), that is significant, indicating strong base level volatility. The Findings of bloom stock market indices indicate GARCH coefficient is (-0.3824) having p value 0.413 that is statistically insignificant, representing no significant impact of past volatility on current returns series. In the variance equation the omega or constant term is not significant indicating that constant volatility factor is weak as p-value is 0.175. The Findings of Egx returns is statistically significant, indicating that the mean return is different from zero value. The value of 4.7618 suggests a positive average return, which is statistically reliable. The value of omega is statistically significant, refers the long term average variance and indicates baseline volatility is substantial. The Findings of Quds indices in the mean equation is statistically insignificant as p-value is greater than 0.05, as there is no strong evidence of mean returns in the series. The negative value indicates the downward movement. According to Hassouneh et al., (2018) they studied Israel-Palestine conflict on Israel, Palestine and Jordan stock markets. Their research findings indicate that three stock markets maintain long term relationship. The violence has short term negative impact on Palestine market but does not influence other markets. The findings indicate that there is equilibrium relationship between three stock markets. The volatility factor doesn't exist in the series. Their research study contradicts our research. In our research study there is persistence volatility in Palestine and Jordan stock markets, and has long term volatility factor due to war. But in their research there is short run impact on stock markets. There lies point of difference as factor of war is not stable, but results lie different on different situation. We cannot control the domain of war. So in our research high volatility persistence exist in stock markets overall.

## Policy Implications.

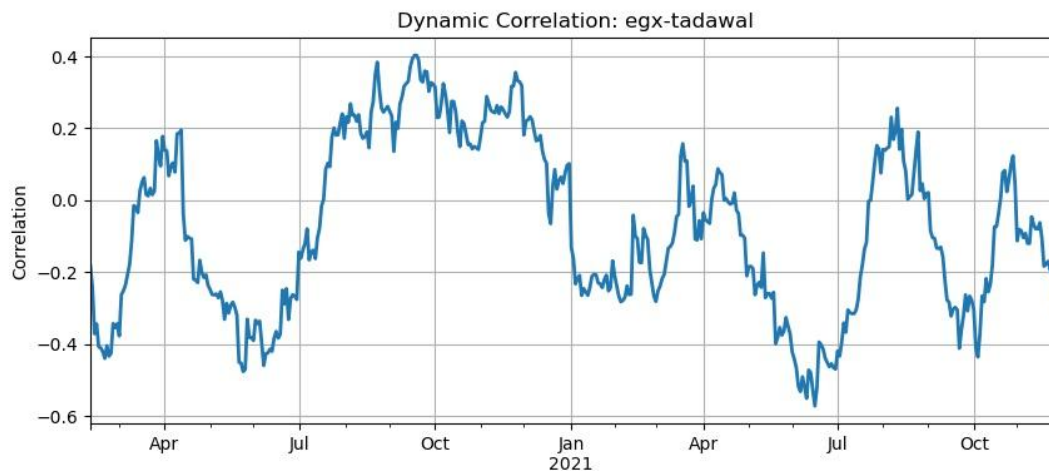
The findings of the research have some implications for regulatory bodies, financial institutions and investors. For investors, it is important to assess or manage their portfolio properly to manage risk affectively. For policy makers and regulators, it is crucial to take the effective policies from which investors should manage their portfolios during the Israel-Palestine war period. Reshaping the existing policies should safeguard investors during the war period, and provide stability to the financial markets.

#### **Limitations of the study.**

For future studies, it is suggested that further research on this title should be done with all middle east stock markets, or we take global dynamics market. Other markets and Economies should also be taken in order to check the conditional volatility due to Israel-Palestine war. Cross market studies and other techniques also be taken like TVP-VAR; Copula may also be taken for this research studies in future perspective.

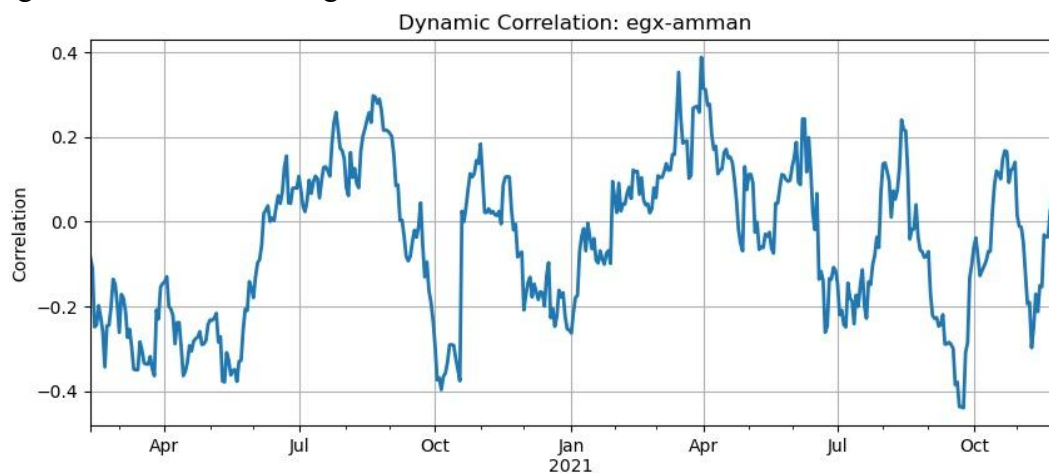
#### **GRAPHS.**

Figure 1.: DCC between Egx-Tadawal.



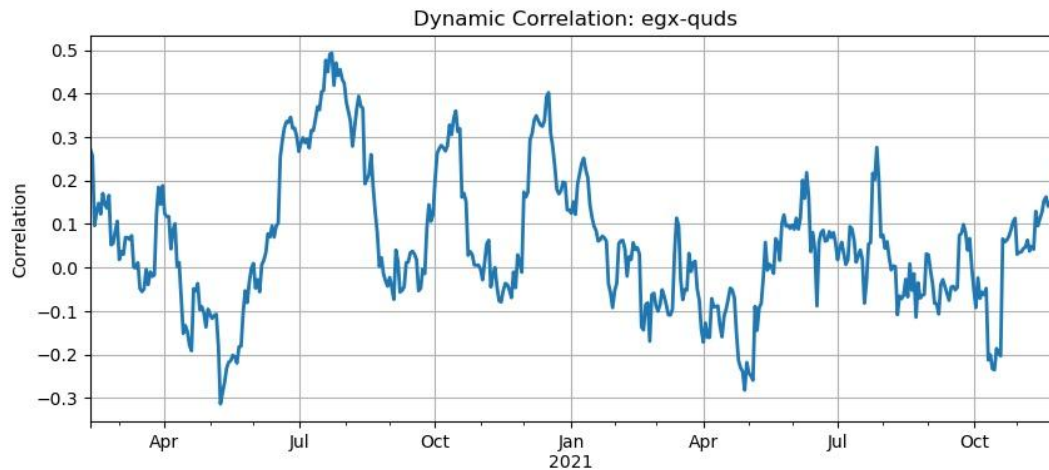
The above figure indicates time-varying correlation between Tadawal (Saudi Arabia) and EGX(Egypt) stock markets in 2021. The positive correlation possesses in market movements in the mid-2021. The negative correlation possesses in early 2021 and mid to late 2021, and overall relationship is weak integration and unstable.

Figure 2: DCC between Egx-Amman



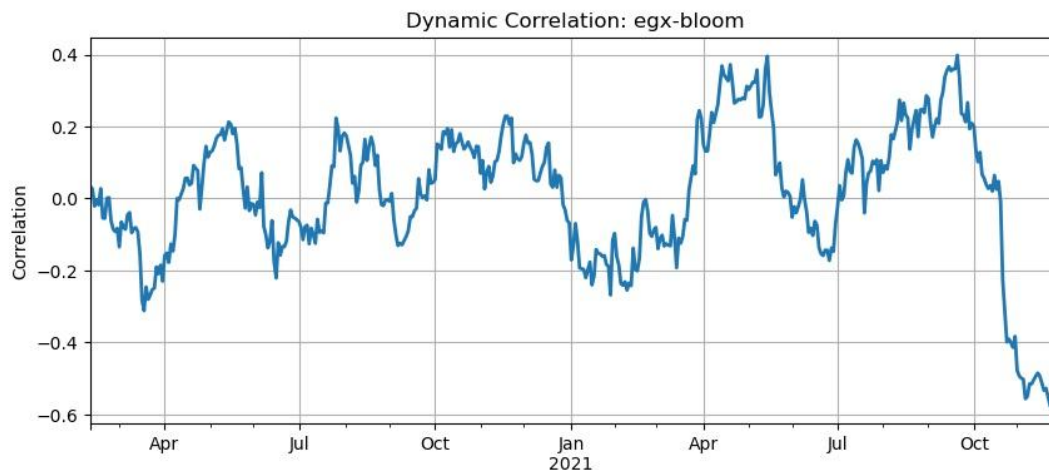
The above figure indicates that correlation between Amman and EGX is totally time varying and fluctuates in 2021. The relationship is weak and unstable. Positive correlation refers in mid-2021. Overall figure shows low and inconsistent integration.

Figure 3: DCC between Egx-Quds



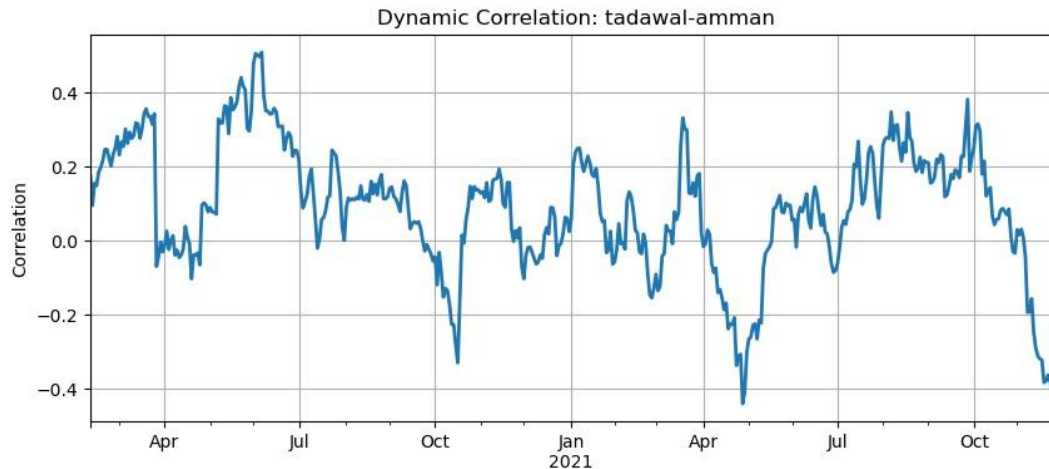
The above figure represents correlation between Egypt(EGX) and Quds(Palestine) in 2021 indicates - 0.3 to +0.5. The relationship in the mid-year is mostly positive, and mostly short term negative spikes occur in minor years. Overall relationship represents weak to moderate positive values.

Figure 4: DCC between EGX-Bloom.



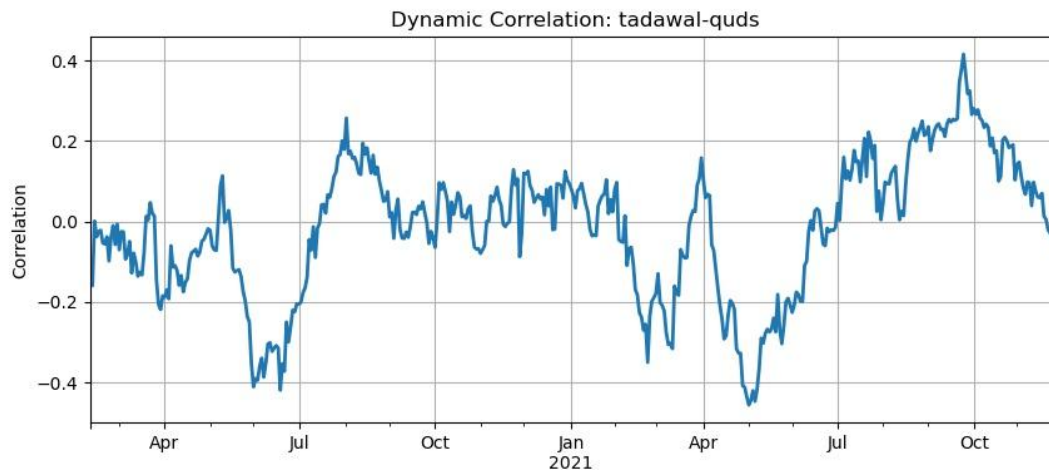
The above figure indicates correlation between Bloom and EGX. The correlation fluctuates throughout period. The correlation is mostly positive but weak. The Linkage between Bloom and EGX changed over time and indicates strong negative correlation over time.

Figure 5: DCC between Tadawal-Amman.



The above figure indicates correlation between Amman and tadawal stock markets. For most years the correlation is slightly negative and positive, indicates unstable and weak relationship. Overall the Amman and Tadawal markets have inconsistent and weak association in 2021.

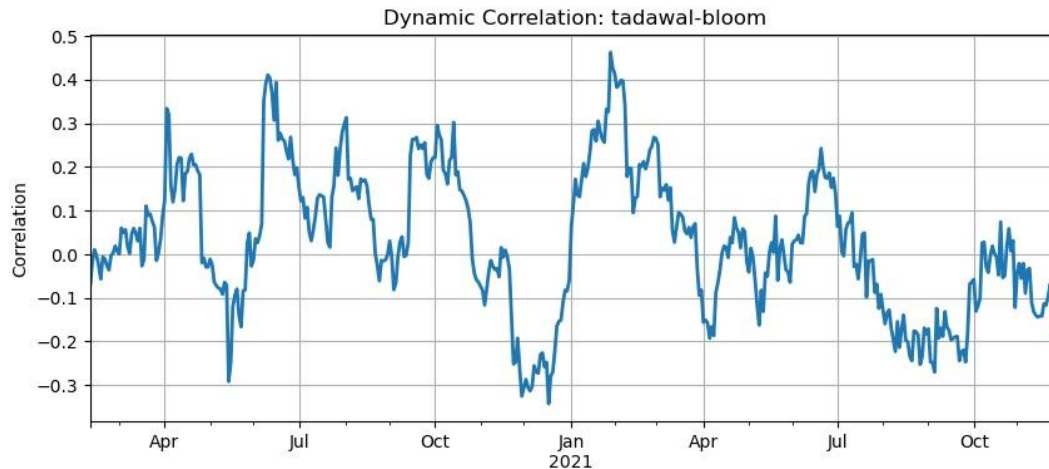
Figure 6: DCC between Tadawal-Quds.



The above figure indicates dynamic correlation between Quds and Tadawal in 2021. Period of negative correlation exist in early 2021 and mid-2021. The positive correlation seems around October and July in 2021. The unstable and weak relationship found in entire year 2021.

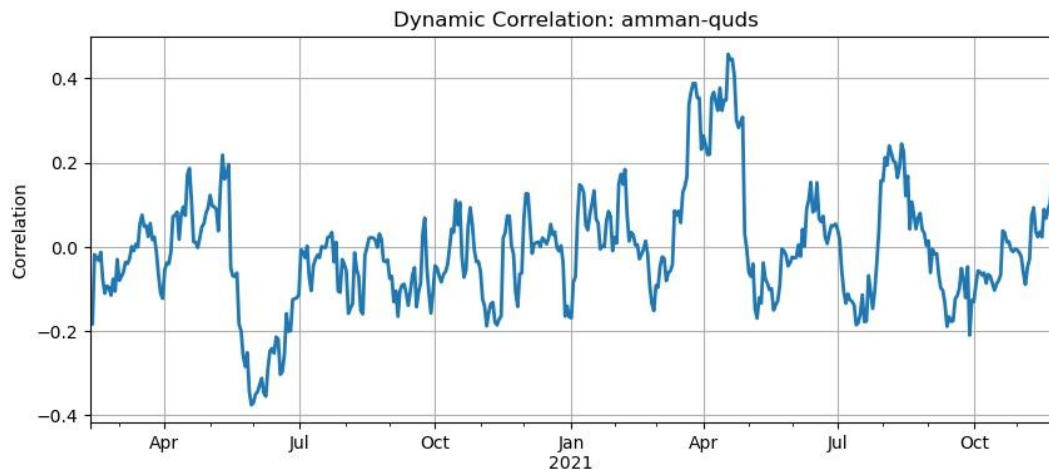
Figure 7: DCC between Tadawal-Bloom.





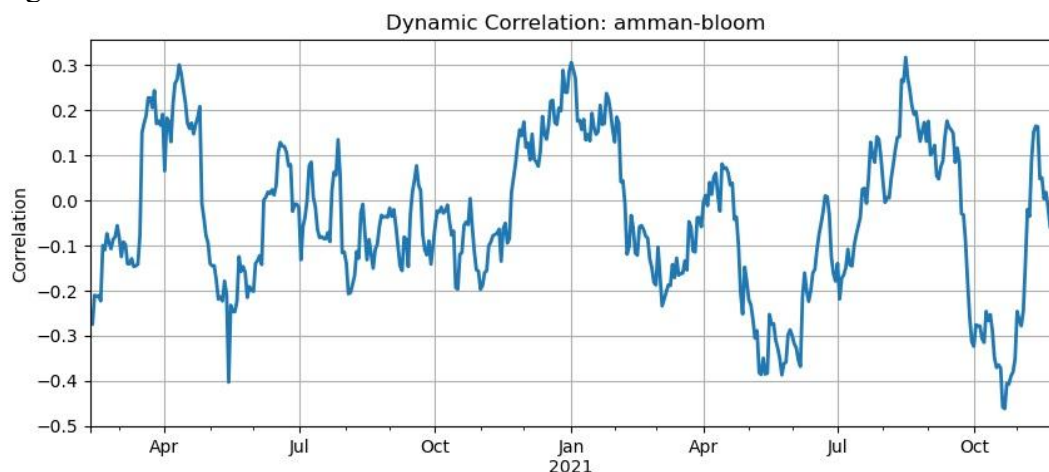
The above figure shows dynamic correlation fluctuates between -0.3 and +0.4 represents unstable and weak relationship. The relationship is negative in the second half of 2021. In the mid-2020 to early 2021, it shows positive correlation. Overall it shows weak and inconsistent correlation in 2021.

Figure 8: DCC between Amman-Quds.



The above figure represents correlation between Quds and Amman over period like 2020 to 2021. The time period around April 2021 there is positive correlation that is +0.4. Over the correlation is quite unstable and changes over time period.

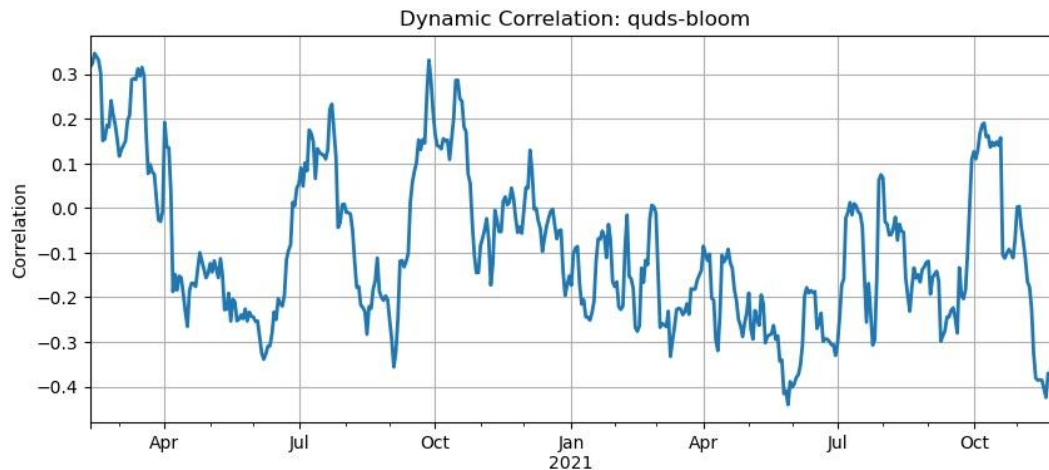
Figure 9: DCC between Amman-Bloom.





The above figure reflects dynamic correlation between Bloom and Amman stock markets. The correlation fluctuates over time period. The correlation is quite positive in October and January 2021 that is 0.3. The correlation is negative in April 2021 that is -0.4. Overall correlation varies over time to time.

Figure 10: DCC between Quds-Bloom.



In the above Figure it determines the dynamic correlation between Bloom and Quds stock market. The figure indicates there is weak positive correlation around October 2021. In reciprocal there is weak negative relationship like -0.4 around April and late 2021. Overall the correlation fluctuates over certain time period range like weak and positive negative associations.

## REFERENCES.

- Aksoy, M., Akin, F., & Zeytunlu, N. (2011). Cointegration of MENA stock  
Badwan, N. (2022). The impact of global financial crisis on the Palestinian economy. *Asian J Econ Bus Acc*, 22(7), 85-106.
- Bley, J., & Chen, K. H. (2006). Gulf Cooperation Council (GCC) stock markets: The dawn of a new era. *Global Finance Journal*, 17(1), 75-91.
- Cui, J., & Maghyereh, A. (2024). Higher-order moment risk spillovers across various financial and commodity markets: Insights from the Israeli–Palestinian conflict. *Finance Research Letters*, 59, 104832.
- Eissa, M. A., Al Refai, H., & Chortareas, G. (2024). Heterogeneous impacts of geopolitical risk factors on stock markets in the Middle East: A quantile regression analysis across four emerging economies. *The Journal of Economic Asymmetries*, 30, e00374.
- Ergün, Z. C. The Impact of International Conflicts on the Cryptocurrency Market: The Case of Israel–Palestine Conflict. *Politik Ekonomik Kuram*, 8(1), 67-76.
- Fernandez, V. (2007). Stock market turmoil: worldwide effects of Middle East conflicts. *Emerging Markets Finance and Trade*, 43(3), 58-102.
- Goyal, P., & Soni, P. (2024). Beyond borders: investigating the impact of the 2023 Israeli–Palestinian conflict on global equity markets. *Journal of Economic Studies*.
- Hadi, A. R. A., Hamad, S. A., Yahya, M. H., & Iqbal, T. (2013). Examining relationship between Palestine stock exchange and amman stock exchange-cointegration approach. *International Journal of Business and Management*, 8(7), 133.
- Handayani, H. (2023). INDONESIA'S MACROECONOMIC AFFECTS FROM THE ISRAELI-PALESTINIAN WAR. *Ar-Ribhu: Jurnal Manajemen dan Keuangan Syariah*, 4(2), 100-110.

- Hassouneh, I., Couleau, A., Serra, T., & Al-Sharif, I. (2018). The effect of conflict on Palestine, Israel, and Jordan stock markets. *International Review of Economics & Finance*, 56, 258-266.
- Hudson, R., & Urquhart, A. (2015). War and stock markets: The effect of World War Two on the British stock market. *International Review of Financial Analysis*, 40, 166-177.
- Jabarin, M., Nour, A., & Atout, S. (2019). Impact of macroeconomic factors and political events on the market index returns at Palestine and Amman Stock Markets (2011–2017). *Investment Management and Financial Innovations*, 16(4).
- Khan, S., & Rehman, M. Z. (2023). The impact of the Israel-Palestine conflict on the GCC-Israel and the leading global stock market indices. *Available at SSRN 4658577*.
- Lin, Z. L., Ouyang, W. P., & Yu, Q. R. (2024). Risk spillover effects of the Israel-Hamas War on global financial and commodity markets: A time-frequency and network analysis. *Finance Research Letters*, 105618.
- markets: Turkey, Egypt and Israel. *International Research Journal of Finance and Economics*, 76, 47-66.
- Mnasri, A., & Nechi, S. (2016). Impact of terrorist attacks on stock market volatility in emerging markets. *Emerging Markets Review*, 28, 184-202.
- Pandey, D. K., Kumari, V., Palma, A., & Goodell, J. W. (2024). Are markets in happier countries less affected by tragic events? Evidence from market reaction to the Israel–Hamas conflict. *Finance Research Letters*, 60,
- Yoganandham, G (2023). Global Economic Recession and Hamas–Israel Conflict Affecting GDP Growth, Oil Prices, Financial Markets, and Palestinian Economic Development–An Assessment.
- Zach, T. (2003). Political events and the stock market: Evidence from Israel. *Available at SSRN 420242*.
- Zussman, A., & Zussman, N. (2006). Assassinations: Evaluating the effectiveness of an Israeli counterterrorism policy using stock market data. *Journal of Economic Perspectives*, 20(2), 193-206.