Dynamic Co-movements of Stock Indices: The Emerging Middle Eastern and the United States Markets

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Abstract

The Middle East Stock exchanges are becoming attractive due to the unprecedented decrease of information costs. Employing Vector Auto Regression (VAR) and Bayesian VAR models to trace the dynamic co movements among the stock indices for the emerging Middle East and the major index of the United States market. The Middle East countries included are: Egypt, Israel, Jordan, Lebanon, Morocco, Oman, and Turkey. Monte Carlo simulations trace the effects of transmission of innovations from one market to other. The dynamic linkages among these stock markets are relatively small, suggesting benefits to investors who would like to improve on their portfolio.

JEL Classification: C32, F0, G0, N2, O5.

Key words: Middle East; Stock Market Indices; Vector Auto-Regressions; Beysian Vector Auto-Regression; Dynamic Linkages; Egypt; Israel; Jordan; Lebanon; Morocco; Oman; Turkey.

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Acknowledgement

I would like to thank my colleagues Albert Ando, Peter Chow, Francis Diebold, Bill Ethier, Stanley Friedlander, Malcolm Galatin, Bill Greenwald, Alan Heston, Mitchell Kellman, Lawrence Klein, Ahmet Kocagil, Robert Mariano, Suleyman Ozmucur, Emanual Shachmurove, and seminar participants at Penn International Economics Brown Bag Lunch for useful discussions and numerous advices. I would like to thank the excellent research assistance by Luca Mangini, Timothy Kojo Minta, Zhi Li, Paul Staples and Yana Stunis. A partial financial support from the Schweger Fund of The City College of The City University of New York and the hospitality of the Center for Analytic Research in Economics and the Social Sciences of the University of Pennsylvania are gratefully appreciated.

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Introduction

The process of globalization is creating a new world. The benefits and costs of international portfolio diversification need to be considered by anyone holding a financial portfolio. Similarly, the firm that is considering raising new resource needs to address the requirements of the global marketplace. The globalization process is driven by technical changes and falling barriers to international transactions; it is further characterized by exchange of knowledge and information among countries. These exchanges are encouraged by the unprecedented decrease of information costs.

In the recent decade, markets, businesses, regions, and continents have become more interdependent upon one another. This phenomenon encourages wide range of financial services and raising funds throughout the world. The globalization of economic activity, the increased world wealth, and the reduction in transaction costs associated with the information revolution all direct investors to consider the newly emerging financial markets. This process has led to the introduction of public share offerings to nearly two dozen countries and spawned a global market culture among millions of new investors.

At the end of the second millennium, the global stock market capitalization has surpassed the world gross domestic product. Morgan Stanley Capital International estimates the market value of stock traded on the world's 48 largest markets at $31.7 trillion at the end of November 1999. Global GDP, the value of world's total output of goods and services, is estimated by the International Monetary Fund at $30.1 trillion. At the end of the century more countries than ever

participate in capital markets. Moreover, companies all around the globe increasingly relay on the stock market to raise funds. This process is aided by the progression of countries to privatize their holdings and to transfer ownership from the state to private investors.

This phenomenon is not restricted to the United States, where the number of listed companies has increased by more than five times since 1990 to more than 10,000, or Western Europe, where governments auctioned off large portions of state-owned enterprises to the public. Estimates by Morgan Stanley Capital International reveal that the combined market capitalization for the United Kingdom, Germany and France increased by 250% in the last decade. Moreover, whereas ten years ago, China, the Soviet Union and its former Eastern Block of satellite countries have just abandoned command economies, and were lacking any stock market, at the end of 1998 exchanges in these countries enlisted more than 1,300 publicly traded companies.

This paper uses Vector Auto Regression (VAR) and Bayesian VAR models to trace the dynamic linkages across daily returns of the national stock market indexes in the Middle East and the major world stock market indexes in the United States.

The fate of the economy of a country is intertwined with the performance of its stock markets. This is especially true for the emerging economies and stock markets. The development process undergone by these emerging economies have clearly demonstrated that today's investor is unlikely to invest in what appears to be a profitable company if the economic fundamentals of the country are in question. Furthermore, an emerging economy that wishes to attain high and sustainable rates of economic growth needs an active stock market to help fuel and finance this growth. The relationships between financial markets and growth have received

renewed interest in recent years (Greenwood and Jovanovic, 1990**;** Atje and Jovanovic, 1993; Pagano, 1993; Rajan and Zingales, 1998; Levine and Zervos, 1998)

Table 1 summarizes some of the characteristics of the Middle East equity markets. These indicators are: market capitalization at the end of 1998 in US$ billion; market liquidity ratio by the end of 1998 defined as total market turnover divided by total market capitalization; the growth in value of the stock market between 1994 and 1998; the stock market value as a percentage of nominal Gross Domestic Product (GDP); the number of domestic and foreign companies listed on the exchange; and the market price to earnings ratio by the end of 1998.

In addition, Tables 1 presents some indicators of monetary and fiscal policies perused by the Middle Eastern countries in the sample. The monetary and fiscal policy indicators are short-term and long-term interest rates, government budget deficit as a percentage of nominal GDP, annual increase in broad money supply, the inflation rate in 1998, and the United States dollar exchange rate. Table 2 presents the same characteristics for the United States economy and for three main equity markets in the United States. Table 1 serves to show the differences among the stock markets of Middle Eastern countries. As far as market capitalization at the end of 1998, the most recent year for which complete data are available in United States dollars, the order is Israel, Turkey, Egypt, Morocco, Bahrain, Oman, Jordan, Lebanon and Tunisia. Observing Table 1, the striking characteristic is the large difference among these equity markets. Looking at some of the similarities, except for Egypt, the values of the fiscal-policy indicator of budget deficit as a percent of nominal GDP are high compared with the United States. For all Middle East countries, the inflation rates and both short-term and long-term interest rates far

exceed the ones in the United States, whereas the stock market value as a percentage of GDP is much smaller.

Net private capital inflow to these countries has increased in the last three years. Lebanon, with no exchange restrictions, has enjoyed dramatic net inflows of about 42 percent of its GDP in the years 1996-1997 (Nsouli and Rached, 1998). In addition, Israel, Jordan, Lebanon, and Oman have more liberal codes for capital and money market transactions compared to other countries in the sample. Issuance of securities by nonresidents in domestic markets is unregulated in Egypt, Israel, Jordan, Lebanon, Oman, and Turkey. However, Lebanon has restrictions on lending abroad. Although nonresidents are allowed to hold bank accounts denominated in foreign currencies, these accounts are subject to more regulations. These accounts are fully convertible only in Egypt, Israel, Jordan, Lebanon and Oman but not in Turkey and Morocco.

Dynamic linkages among developed and developing world's stock market have been studied since the late 1960s (Grubel, 1968; Granger and Morgenstern, 1970; Levy and Sarnat, 1970; Grubel and Fadner, 1971; Agmon, 1972; Bertoneche, 1979; Hilliard, 1979; Schollhammer and Sands, 1985, 1987; Grauer and Hackansson, 1987; Eun and Shim, 1989; Meric and Meric, 1989; Von Furstenberg and Jeon, 1989; Engle, Ito and Lin, 1990; Jeon and Von Furstenberg, 1990; Hamao, Masulis, and Ng, 1990; Koch and Koch, 1991; French and Poterba, 1991; Birati and Shachmurove, 1992; Chan, Gup and Pan, 1992; Ito, Engle and Lin, 1992; Malliaris and Urrutia, 1992; Roll, 1992; Friedman and Shachmurove, 1996, 1997, Shachmurove, 1996, 1998A, 1998B, 2000). A few authors (Askari and Iqbal, 1995; El-Ashkar and Fattah, 1995; and Yousri, 1995) have examined the relation between the Islamic codes of conduct and the possibility for

emerging financial markets in the Middle East. However, this study is the first to investigate the dynamic linkages across national indexes of the newly emerging markets of the Middle East.

The paper proceeds as follows: Section II describes the Vector Auto-Regression econometric model; section III details the Bayesian Vector Auto-regression Model; section IV describes the data used in this study and their statistical characteristics; section V presents the empirical results; and finally, Section VI offers the concluding remarks.

II. The VAR Model

Vector auto-regression (VAR) models were introduced through the work of Sims (1972, 1980). A VAR model makes minimal theoretical demands on the structure of a model. With a VAR, two things need to be specified by the researcher. One, the endogenous and exogenous variables that are assumed to interact with each other and hence should be included as part of the economic system the researcher is trying to model. Second, the largest number of lags needed to capture most of the dynamic effects that the variables of the system being modeled have on one another. In VARs as formulated by Sims (1980), all the variables are assumed to be endogenous. Specifying some of the variables to be exogenous introduces restrictions on the model. This is because such exogenous variables will be able to affect the endogenous variables only directly through feedback from the endogenous variables themselves. Restrictions of this kind may be viewed as imposing theoretical biases that prevent the data from speaking freely.

The model can be expressed as

L

$$Y_t = X_t \bullet \beta + \sum_{s=1} A_s \bullet Y_{t-s} + U_t \quad (1)$$

$$E[U_t \bullet U'_t] = \Psi \quad (2)$$

where Y_t is an n x 1 vector of daily returns, X_t x β is the deterministic component of Y_t, U_t is an n x 1 vector of serially uncorrelated errors, A_s is an n x n matrix of coefficients, and L is the number of lags.

The Moving Average Representation (MAR) of the VAR model is

$$Y_t = X_t \bullet \beta + \sum_{s=0}^{\infty} B_s \bullet Et_{-s} \quad (3)$$

where E_{t-s} for s = 0,…, ∞ is an n-variate white-noise process, and E_t and E_s are uncorrelated for t not equal to s (Sims, 1980).

There are many equivalent representations for this model. For any non-singular matrix G, the matrix of coefficients B_s can be replaced by $B_s \bullet G$ and the matrix E by $G^{-1} \bullet E$. By choosing some normalization, a specific version is generated. In particular, if B_0 is normalized to be the identity matrix, each component of E_t is the error that results from the one step ahead forecast of the corresponding components of Y_t. These are the non-orthogonal innovations in the components of Y because, in general, the covariance matrix $\Pi = E(E_t \bullet E'_t)$ is not diagonal.

It is more useful to look at the moving average representation of the system with orthogonalized innovations. If any matrix G is constructed to satisfy

$$G^{-1} \bullet \Pi \bullet G^{-1} = I \quad (4)$$

Then the new innovations $v_t = E_t \bullet G^{-1}$ satisfy

$$E[v(t) \bullet v'(t)] = I \quad (5)$$

These ortogonalized innovations have the desired characteristic that they are uncorrelated both across time and across equations. Such a matrix G can be any solution that satisfies the condition that $GG' = \Pi$. The problem is that there are many such factorizations of a positive definite matrix Π.

The literature on time-series econometrics suggests a number of ways to accomplish the factorization of Π. Some techniques are based on the Choleski factorization, where G is restricted to a lower triangular matrix. Other techniques are used based on orthogonalization using eigenvalues. Sims (1980) suggested imposing restrictions on the Π matrix by constraining it to be a lower triangular matrix.

In general, the Moving Average Representation model (3) is diagonalized as follows:

$$B \bullet U(t) = V(t) \quad (6)$$

and

$$E[V(t) \bullet V'(t)] = D \quad (7)$$

where D is a diagonal matrix. The model is then estimated by minimizing the log likelihood function with respect to the free parameters in the matrices A and D in Equation 8:

$$-2 \log A + \log D + \text{trace}\,(D^{-1} \bullet A \bullet S \bullet A') \quad (8)$$

where S is the sample covariance matrix of residuals and A is the coefficient matrix of Equation (1).

III. The Bayesian Vector Auto-Regression Model

Since many parameters are estimated in a vector auto regression model, the standard errors for inferences can be large. The forecast thus made using unrestricted vector auto-

regressions may suffer from over-parameterization of the modes. It is possible that the number of available observations is inadequate for obtaining more precise estimates of the large number of free parameters in the VAR. This over-parameterization may cause large out-of-sample forecast errors (Fair, 1979).

Bayesian econometrics provides a suitable framework in which the limitations of the classical methods of model construction and model testing can be seen (Zellner, 1971; Leamer, 1979, Litterman, 1981, 1984, 1986). The estimates can be improved if one has any information about the parameters beyond those contained in the sample. Bayesian estimation provides a convenient framework for incorporating prior information with as much weight as the researcher feels it merits. The Bayesian approach is to specify prior information about the likely values of the coefficients. However, since vector auto regressions are projection equations and not structural relations, the economic meaning of different values for coefficients is not obvious. Thus, the type of prior information that may be available is not likely to be that of a particular economic theory, but rather of a more general nature.

Litterman (1981, 1986) suggests the following considerations. A researcher typically needs to specify a number of lags, L, to include in an auto-regression model. Implicit in this choice is that the coefficients on lags greater than L are zero. It may then be reasonable to specify in a prior distribution that, while the coefficients on longer lags may be non-zero, they are more likely to be close to zero. This can be formalized by specifying for these coefficients prior Normal Distributions with means of zero and small standard errors. In this way, we can estimate the coefficient using Theil's (1971) mixed estimation technique.

Similarly, there is always an implicit assumption that all excluded variables have zero coefficients in the choice of variables to include in the VAR system. Again, it may be reasonable to specify a priori that the coefficients on variables included in the system, particularly on those other than the own lags of the dependent variables, may be close to zero.

In effect, one may allow more variables and additional lags to enter an equation at the margin, rather then being forced to exercise the extreme choice of either inclusion or exclusion, by choosing a sensible prior distribution. Shrinkage estimators such as the one we are discussing have long been suggested for dealing with multicollinearity and related problems (Almon, 1965; Shiller, 1973, Hamilton, 1994). In this way, if the evidence about a coefficient is strong, we permit the data to override our prior suggestions for lag length and number of variables.

Specification of a complete prior Normal Distribution on a VAR would be intractable since the covariance matrix of the prior would have dimensions (squared number of variables times number of lags * squared number of variables times number of lags).

The priors applied in this paper have three characteristics. First, the prior distributions put on the deterministic variables in each equation are flat, i.e., non-informative. Second, the prior distributions on the lags of the endogenous variables are independent Normal. Finally, the means of the prior distributions for all coefficients are zero, except for the first lag of the dependent variable in each equation, which has a prior mean of one.

This approximation is appropriate for our case because the stock market daily rate of return is the rate of return from buying the financial asset at time (t-1) and selling it at time t. In an extension of Fama's (1965) efficient market argument, speculators would have bought more of the asset at time (t-1) if they had expected unusually high returns. Thus, the time path that

results from such speculation would exhibit price changes that are unforecastable. A similar argument is applied for changes in exchange rates that are also argued by many to be unpredictable (Diebold and Nason, 1990).

IV. Description of the Data

The data comprise of daily observations of stock market price indexes for the following seven middle-eastern countries: Egypt, Israel, Jordan, Lebanon, Morocco, Oman, and Turkey. The major world stock market external to the region in this study is the United States. The time periods of the data are from 10/22/96 to 09/30/99 for a total of 768 daily observations per each stock market. Since this paper is focusing on the United States dollar, the results are based on all indexes in United States dollars. For each country, daily returns, r_t, are computed as the first differences of the natural logarithm of P_t, which is the daily close values of the indexes (after they are converted to the US dollar) multiplied by 100, i.e., $r_t = (\ln P_t - \ln P_{t-1})*100$.

Table 3 shows the correlations between the daily returns for the middle-eastern stock markets, the United States stock market, and the lagged United States stock market for the period. One may note a few interesting phenomena. First, all correlations (except Israel and the lagged United States) are low (less than 15 percent). Second, the correlations of daily returns for Egypt are all less than seven percent, except for its correlation with Israel. Third, Israel has a correlation of about 14 percent with Egypt, 13 percent with Turkey and the United States, and 32 percent with the lagged United States. Fourth, not only are some of the correlations low, many are also negative, further indicating the ability to benefit from portfolio diversification. A portfolio, which will include stocks from these markets, will have a lower covariance; thus, it will reduce a given return the risk faced by the international investor.

Because of the differences in time zones, both the correlations with the United States (USA) and the lagged United States (LUSA) are presented in Table 3. However, it is hard to determine which of the variables for the United States to use. Observing the last two columns of Table 3, the correlation of daily returns for Israel increases (from 0.131 to 0.321) once LUSA is used. This phenomenon is true also for Lebanon (from practically zero to 7.8 percent), Oman (from 0.013 to 0.056), and Turkey (from 10.8 to 14 percent). However, the opposite occurs for Jordan (from 6.5 to mere 1.1 percent for USA and LUSA, respectively). For Morocco, the correlation decreases in absolute value from negative 13.5 to negative 11.8 for USA and LUSA. Moreover, a low negative correlation of 1.6 percent with the USA becomes positive 4.6 percent with LUSA for Egypt. Thus, trying to let the data determine which appropriate lag (either zero or one) to use is not resolved by the test. Hence, we introduce the results for systems of VAR and BVAR where either USA or lagged USA is presented in the following discussion.

The daily return series are tested for the presence of a unit root using three alternative tests suggested by Dickey and Fuller (1979), Phillips and Perron (1988) and Sims (1988). All three tests presented in Table 4 reject the assumption of a unit root for all time series considered in this study. This finding implies that the dynamic relationships among the various variables analyzed below are not spurious.

V. Empirical Results

Two general models of the daily returns are estimated, a VAR and a BVAR. For both models, the lag length chosen is 15 daily lags for each variable in each equation (Akaike, 1973, Schwarz, 1978, Sims, 1980). Thus, each equation has eight stock market daily returns times 15 lags plus a constant and a trend. The number of lags chosen is similar to the number of lags in

other studies (Friedman and Shachmurove, 1996, and Shachmurove 1996). It seems that a lag length of 15 trading days captures most of the dynamics in the data.

Table 5 presents the block-F test, otherwise known as the Granger causality tests. An important advantage of this test is that it does not rely on the order of the equations in the VAR or BVAR system. The tests point toward whether a variable, say the return in the Oman stock exchange, assists to forecast the stock market return of the Moroccan stock exchange one-step ahead. However, one should note that the Oman return could nevertheless affect, for example, the Moroccan return through another equation(s) in the vector auto-regression system of equations.

The rows in Table 5 are the affecting or influencing markets, and the columns are the affected markets. In other words, each column represents an equation where the dependent variable is written at the heading of the column, and the rows are the independent variables. Looking first at the top part of the table for the VAR with USA, it seems that the Egyptian stock market returns are quite independent and is affected only by its own lags. On the other hand, the Egyptian market affects the Turkish and to a less extent the Jordanian markets. The USA affects the Moroccan market, but the Moroccan returns are not affected by its own lags. The USA, the Egyptian, and, to a lesser extent, the Oman markets affect the Turkish market. It seems that the Israeli and Lebanese markets are affecting each other with the Israeli market more dominating. Moreover, there are causality effects among the relatively liberal stock market of Lebanon and Oman. In addition, except for the isolated Egyptian market and the Jordanian, the USA variable affects all other markets.

Part B of Table 5 presents the VAR system where USA is lagged one trading day in order to take into account the possibility of the effect of the change in time zones between the USA and the Middle East financial markets. The inclusion of lagged USA rather than the USA does not affect the Egyptian, the Lebanese, Oman, and the Jordanian markets. However, it eliminates the affect of the USA on the Israeli market. Furthermore, the Moroccan market is affecting the LUSA in addition to the Israeli and Jordanian markets with lagged USA. It is also worth noting that the Lebanese market is still affected by the Israeli, Oman and USA (or LUSA) returns.

Table 6A and B present the correlation matrix of residual returns with USA and lagged USA, respectively. The highest residual correlations are between Egypt and Israel (about 16 percent) and Turkey and Israel (12.3 with lagged USA and 8.6 percent with USA in the VAR system). Another interesting correlation value is between Oman and Lebanon (7.7 percent and 8.2 percent with USA and LUSA included in the VARs, respectively). As with the daily returns, some correlations of residual returns are negative, and many are very small. Although it is still impossible to determine whether the USA variable should be lagged or not, except for Morocco (from negative 16.4 decreases in absolute value to negative 9.6 percent) all correlations increase in absolute value once LUSA is used rather than USA.

Tables 7-10 present the results of the decomposition of the variance of the forecast error. The forecasting horizons are given for 5-day, 10-day, 15-day, 20-day, and 24-day steps ahead. Each row displays the percentage of forecast error variance explained by the market in the column heading. The last column of each Table, AOM, shows the percentage of forecast error variance of the market of the first column explained by all other markets except the market's own

innovations. Tables 7 and 8 are for the cases where the VARs include the USA variables, whereas Tables 9 and 10 include in the VARs the lagged USA variable.

Table 7 simulates a system that responds to a standard deviation shock originating in Egypt and then moving to Israel, Lebanon, Morocco, Oman, Turkey, Jordan, and finally to the USA. In other words, what we are trying to simulate in this case by using this ordering is a shock originating in one of the highest market capitalization market of the Middle East and trace it influence through the ME markets and the USA. Table 8 reverses the order of the shocks, starting from an external shock originating in the USA then moving to Jordan, Turkey, Oman, Morocco, Lebanon, Israel, and finally Egypt. Table 9 presents the decomposition in the order of Table 7 but with the lagged USA variable, and Table 8 follows the same order of the equations in the VAR system as in Table 6.

Since no variance in any of the tables is completely accounted for by its own innovations, it is clear that none of the Middle East markets is completely isolated from the rest. Still, it is interesting to note that the Egyptian stock market is not affected to a large extent by other markets, including the USA or lagged USA. The Egyptian stock market does, however, affect the Israeli, Turkish, and to a lesser extent the Jordanian markets.

Table 7 shows that Israel, Lebanon, and Turkey are more open to absorb shocks from each other and from other countries in the sample. For Israel, other countries, at the 24-day horizon, explain about 27 percent of its own innovations. The corresponding numbers for Lebanon and Turkey are about 21 and 18 percent, respectively. Innovations in Morocco, Oman and Jordan are explained by about 12-13 percent of the variance forecast errors by all other markets. If we look at this measure as an indication to openness to outside shocks, including

international shock as represented by the USA variable, the order of countries in descending rank is: Israel, Lebanon, Turkey, Jordan Morocco, Oman, and finally Egypt. This order remains the same in Table 8 and in Table 10.

In Table 9, with lagged USA and with the order of innovations arranged in such a way that it is first through the Middle Eastern countries, the order is Lebanon, Israel, Turkey, Jordan, Morocco, Oman and Egypt. In other words, only Israel and Lebanon exchange their positions in the ranking. The conclusion is that the Egyptian market is more isolated than one would expect and indicates that the Egyptian authorities should consider aligning their fiscal, monetary, exchange rate, and stock market policies to benefit from a greater participation in world markets. To the international investor it seems that this market offers an opportunity to invest in a market that is less synchronized with the footsteps of others.

In general, we find that markets that are more liberalized are more affected and affect other markets. In this respect, it is clear that countries like Morocco, Oman and Jordan, in addition to Egypt, are better off further opening their capital markets.

We turn next to the Bayesian Vector Auto-Regression (BVAR) results. Table 11 presents the results of the F-tests for Granger causality with USA and lagged USA in the BVAR systems. As expected from the discussion of the BVAR model above, one should expect an increase in the effects of past own lags and a reduction in the effects of lags of other variables. For example, the effects of the lagged Oman stock market on the Israeli market observed in the VAR (Table 5) disappear in the BVAR formulation. Similarly, the effects of the Egyptian, Oman and USA stock market in the VAR (Table 5) vanish in the BVAR (Table 11). However, it is worth noting

that USA continues to affect the Israeli market and that both Israel and Oman returns continue to affect the Lebanese stock market. The F-test with lagged USA shows that each market is influenced only by its own lags, except Lebanon returns that are affected by the Oman returns.

Table 12 presents the correlation matrices of residuals for the BVAR models with USA and lagged USA. The results do not show remarkable differences between the VAR and BVAR models.

Tables 13 – 16 present the results of the decomposition of forecast error variance for the BVAR models: Tables 13 and 14 with USA and Tables 15 and 16 with lagged USA. Tables 13 and 15 present the case of a shock originating in the Middle East, starting with Egypt, and then moving to Israel, Lebanon, Morocco, Oman, Turkey, Jordan, and the United States.

Comparing the BVAR models (Tables 13 – 16) respectively with the VAR models (Tables 7 – 10), as expected from our discussion of the BVAR model above, now each market accounts more in explaining the variance of its forecast errors. As expected, the variances in the forecast errors are also lowered in the BVAR models. However, the reductions in the standard errors are very small for all the horizons of the step-ahead forecast errors. The standard errors are practically the same for Egypt, Morocco, Oman, and Jordan. Moreover, the ordering of the countries as for their being affected by other markets remains the same: Israel, Lebanon, Turkey, Jordan, Morocco, Oman, and finally Egypt. However, as far as the order of magnitudes, the BVAR models, as summarized by Tables 13-16, show that the Middle Eastern stock markets are far less integrated than the VAR models suggest.

VI. Conclusion

This paper formulates, estimates, and simulates a series of VAR and BVAR models of the daily stock market returns for the seven major Middle Eastern countries and the United States. The seven countries studied are Egypt, Israel, Jordan, Lebanon, Morocco, Oman, and Turkey. The models are used to study the dynamic interrelationships among these markets. These inter-linkages are nonlinear functions involving 15 lags and over 100 coefficients. No stock market is found to be completely isolated and independent. However, the dynamic linkages in both the VAR and BVAR models indicate that these linkages are relatively small.

These relatively low inter-linkages lead to two important conclusions. One, the international investor, who can benefit from further diversifying his portfolio, should include stocks in these emerging stock markets. The second conclusion one may infer from this paper is that the stock markets and indeed the economies of these countries may tremendously benefit from further liberalizing their capital markets and making their markets, including financial markets, more accessible to international investors. Since most of these countries lack democracy, the ability to integrate the new emerging markets of the Middle East requires the adaptation of legal and regulatory framework that will enable the governance of financial markets in order to protect the international investor. Higher standards of transparency, internal control rules, banning inside trading and other conflicts of interests between the company and its shareholders.

In order to make the stock markets of the Middle East more attractive to foreign investors, the countries of Egypt, Israel, Jordan, Lebanon, Morocco, Oman, and Turkey could benefit from establishing full currency convertibility. A full convertibility of domestic currency means that both residents and nonresidents can convert the currency into foreign currencies at the

prevailing exchange rates and use the foreign currencies freely for international transactions. Full currency convertibility leads to a more efficient allocation of saving and increases the attractiveness of the stock markets to foreign investors. Elimination of controls on foreign capital transactions allows firms and individuals access to foreign financial markets and increase the pool of resources available to investment. Abolition of foreign-exchange controls increases competitions; thus, it leads to lower risk-adjusted rates of returns, higher investment, and an increase in the standard of living of individuals in the emerging markets.

In addition, the governments of the Middle East should privatize their holdings and transfer ownership from the state to private investors. In this way, financial markets, in particular stock markets, will become more attractive to domestic and international investors.

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Appendix A

Examples of Impediments to financial markets in the Middle East

Israel

Most companies quoted on the Tel Aviv Stock Exchange (TASE) are closely held. As a result, the acquisition of control of companies through stock exchange purchases is a rare phenomenon. Many of these closely held companies have a special class of share, sometimes known as "founder" shares, and, although the holders are the minority, they maintain effective voting control.

Furthermore, most shares traded in the TASE are held by "interested parties", defined as institutional bodies or individuals holding over 5 percent of a firm's equity. In 1998, they owned an estimated 71.2 percent of total equity capitalization.

Jordan

The promotion of Non-Jordanian No. 39 of 1997 abolished the non-Jordanian equity ownership ceiling of 50 percent in respect of the transportation, banking, telecommunications and agricultural sectors. However, the limit still applies in the construction, trade services and mining sectors.

Lebanon

By international standards, the Lebanese equity market is still considered a pre-emerging market in terms of size, number of listed firms and the economic sectors reflected on the Beirut Stock Exchange (BSE). Unlike the Egyptian and Moroccan stock markets, which have greatly benefited from large-scale privatization programs, the growth of the Lebanese market remains in the hands of private-sector issuers.

Morocco

The most important sectors of the Moroccan economy are represented on the exchange, although total market value represents only 42 percent of GDP. However, most small and medium-sized Moroccan companies are still family-owned and generally are not willing to publish their financial accounts, thus banks tend to be the preferred source of financing for expansion and new projects. The Casablanca Stock Exchange remains a local market where institutional investors and mutual funds are the major players. Foreign institutional investors hold less than 5 percent of total market capitalization.

As part of the drive against bureaucracy by the Moroccan government, regulations have been introduced penalizing state employees who knowingly delay the implementation of projects.

Oman

Foreigners are allowed to own a maximum of 49 percent of the paid-up capital on Oman companies. This limit includes investments from Gulf Cooperation Council (GCC) countries. A few government-owned listed companies now permit foreign investment in their equity of up to 25 percent of paid-up capital. As at 31 December 1998, out of a total of 139 listed companies, 35 allow only GCC investment and 83 are open to foreign investment. Foreign individuals or organizations wishing to set up a business in Oman require a license. Tax is charged on the profits of businesses that have no "permanent establishment" in Oman and the rate varies according to the level of foreign ownership.

Turkey

Turkey has pursued a policy of gradual financial deregulation since the early 1980s. This process has stemmed partly from the need to privatize the large and very inefficient state economic enterprises (SEE). Since the inception of the program in 1985 until the end of 1998, the government has privatized, in whole or in part, 131 SEEs. However, shortcomings in the legal infrastructure have been a major impediment to the successful implementation of the program and privatization of the bigger SEEs, such as telecommunications, iron and steel factories and refineries, has been postponed until now.

Table 1					
Middle East Equity Markets - Summary					
Country	**Bahrain**	**Egypt**	**Israel**	**Jordan**	
Market capitalization (end of 1998) US$ billion	6.8	24.5	40.9	5.86	
Market liquidity ratio* (end 1998)	8.40%	21.78%	36.20%	12.93%	
Growth in market value (local currency terms, 1994-98)	38.78%	474.20%	US$ terms 25.0%	22.00%	
Market value as a % of nominal GDP (end 1998)	106.90%	30%	46%	79.30%	
Number of domestic companies listed (end 1998)	38	860	660	150	
Number of foreign companies listed (end 1998)	4	1	3	0	
Market P/E (end of 1998)	9.82	NA	15.4 (GSC Index); 12.9 (TA-100)	16.3	
MSCI Index (change in US$ terms, 1998)	Not Indexed	-9.60%	-16.90%	-8.90%	
Short-term (3-month) interest rate (end 1998)	5.40%	8.80%	13%	9.45%	
Long-term (10-year) bond yield (end 1998)	(maturity 2003) 6.25%	NA	(5-year) real yield (average 1998) 5.2%	9-year 8.63%	
Budget deficit as a % of nominal GDP (1998)	9.20%	0.90%	2.40%	5.50%	
Annual increase in broad money (M3) supply (fiscal 1998)	7.4% (forecast)	9.00%	M2 end 1998 19.5%	7.00%	
Inflation rate (1998)	1.0% (forecast)	4.40%	8.60%	4.00%	
US$ exchange rate (end 1998)	BD0.377	E3.40	SHK 4.16	JD 0.709	
1999 Performance of the Dow Jones Global Stock Indexes	1.06%	42.50%	62.47%	-5.10%	
Exchange Rate Regime		Fixed to US$	Flexible		
Country	**Lebanon**	**Morocco**	**Oman**	**Tunisia**	**Turkey**
Market capitalization (end of 1998) US$ billion	2.4	15.8	5.88	2.23	33.98
Market liquidity ratio* (end 1998)	13.60%	40.10%	40.40%	37.80%	169.90%
Growth in market value (local currency terms, 1994-98)	(1996-98) 10.45%	199.50%	168.70%	-2.89%	1169.20%
Market value as a % of nominal GDP (end 1998)	15.86%	42.00%	42.20%	11.00%	/GNP 24.8%
Number of domestic companies listed (end 1998)	12	53	139	39	277

Number of foreign companies listed (end 1998)	0	0	1	0	0
Market P/E (end of 1998)	(banking sector) 11.18 (est.)	19.2	11.9	10	7.47
MSCI Index (change in US$ terms, 1998)	Not Indexed	27.00%	Not Indexed	Not Indexed	-56.20%
Short-term (3-month) interest rate (end 1998)	11.73%	6.25%	(up to 1-year) 4.3%	call money 5.88%	(30-day) 86.2%
Long-term (10-year) bond yield (end 1998)	(2-year) 16.02%	(5 year) 8.0%	(5-year) 7.75%	NA	(1-year) 119.6%
Budget deficit as a % of nominal GDP (1998)	14.75%	3.4% (Est.)	6.90%	3.00%	/GNP 7%
Annual increase in broad money (M3) supply (fiscal 1998)	13.90%	8.00%	M2 4.8%	7.20%	95.70%
Inflation rate (1998)	5%	2.60%	-0.50%	3.70%	69.70%
Table 1 (Continued)					
US$ exchange rate (end 1998)	L 1,508	DH9.2	OR 0.385	TD 1.0981	TL312,340
1999 Performance of the Dow Jones Global Stock Indexes	-20.88%	-4.57%	9.10%	74.21%	385.03%
Exchange Rate Regime	Fixed to US$	Managed float		Managed float	Flexible
* Total market turnover / total market capitalization					

Table 2				
The United States Main Equity Markets - Summary				
	USA	**NYSE**	**NASDAQ**	**AMEX**
Market capitalization (end of 1998) US$ billion		10,864.50	2,588.80	152.27
Market liquidity ratio* (end 1998)				
Growth in market value (local currency terms, 1994-98)		144.24%	229.20%	34.06%
Market value as a % of nominal GDP (end 1998)		128.40%	30.60%	1.80%
Number of domestic companies listed (end 1998)		2,722	5,068	708
Number of foreign companies listed (end 1998)		392	540	62
Market P/E (S&P 500 index companies, end of 1998)		27.2	93.2	32.3
MSCI Index (change in US$ terms, 1998)	34.20%			
Short-term (3-month) interest rate (end 1998)	4.35%			
Long-term (30-year) government bond yield (end 1998)	5.08%			
Budget surplus as a % of nominal GDP (1998)	1.00%			
Annual increase in broad money (M3) supply (fiscal 1998)	11.20%			
Inflation rate (1998)	1.60%			
US$ exchange rate (end 1998)				
1999 Performance of the Dow Jones Global Stock Indexes	25.22%			
* Total market turnover / total market capitalization				

Table 3:	**Correlation Matrix of Daily Return for Middle East and USA Stock Market Indices**								
	10/22/96 – 9/30/99.								
	EGYPT	**LEBANON**	**MOROCCO**	**OMAN**	**TURKEY**	**JORDAN**	**USA**	**LUSA**	
ISRAEL	0.141	0.057	-0.067	-0.011	0.127	0.008	0.131	0.321	
EGYPT		-0.007	0.071	0.015	0.078	0.015	-0.016	0.046	
LEBANON			0.003	0.091	0.022	0.022	0.000	0.078	
MOROCCO				0.012	-0.011	-0.010	-0.135	-0.118	
OMAN					0.019	0.026	0.013	0.056	
TURKEY						0.064	0.108	0.140	
JORDAN							0.065	0.011	
USA								0.010	
Table 4:	**Unit Root Test**								
	DF	**PP**	**SMA**						
ISRAEL	-683.77	-682.2459	0.00						
EGYPT	-572.7	-582.4061	0.00						
LEBANON	-796.34	-775.7144	0.00						
MOROCCO	-689.28	-750.7626	0.00						
OMAN	-652.68	-653.7781	0.00						
TURKEY	-752.4	-780.8947	0.00						
JORDAN	-606.91	-597.9036	0.00						
USA	-759.18	-741.3343	0.00						
LUSA	-757.53	-739.766	0.00						
DF	Dickey-Fuller Test with 0 Lags								
PP	Phillips-Perron Test with 4 Lags								
SMA	Sims' Marginal Alpha, Bayesian Unit Root Test								

Table 5A-B:	**F-Tests for Granger Causality With USA and Lagged USA**							
Affecting	**Affected Markets**							
Markets	**EGYPT**	**ISRAEL**	**LEBANON**	**MOROCCO**	**OMAN**	**TURKEY**	**JORDAN**	**USA**
EGYPT	3.92**	1.11	0.74	0.46	0.38	2.00*	1.57#	0.93
ISRAEL	0.99	1.75*	3.37**	0.77	0.27	0.70	0.81	1.68*
LEBANON	0.52	1.79*	0.70	0.84	0.83	1.02	0.62	1.13
MOROCCO	1.00	0.60	0.87	1.29	1.56	1.32	0.60	1.25
OMAN	0.59	1.88*	2.07**	0.80	4.20**	1.55#	0.76	0.90
TURKEY	0.49	1.03	0.84	0.37	0.38	1.43	1.13	0.64
JORDAN	0.51	0.67	0.85	0.86	0.41	0.80	2.76**	1.58#
USA	0.55	6.79**	1.96*	1.50#	1.91*	1.58*	1.19	1.01
Affecting	**Affected Markets**							
Markets	**EGYPT**	**ISRAEL**	**LEBANON**	**MOROCCO**	**OMAN**	**TURKEY**	**JORDAN**	**USA**
EGYPT	3.91**	1.07	0.74	0.43	0.41	1.94*	1.56#	0.80
ISRAEL	0.98	2.09**	3.76**	0.70	0.27	0.80	0.77	2.20**
LEBANON	0.51	1.41	0.80	0.88	0.83	1.00	0.60	0.77
MOROCCO	0.96	0.77	0.81	1.25	1.62	1.46	0.59	2.11**
OMAN	0.60	1.44	2.05**	0.87	4.21**	1.48	0.76	0.81
TURKEY	0.48	1.08	0.93	0.33	0.37	1.45	1.13	1.10
JORDAN	0.55	0.97	0.92	1.05	0.40	0.83	2.76**	2.09**
LUSA	0.47	1.32	1.85*	1.19	1.87*	0.95	1.15	1.22
#	Statistically Significant at a 0.10 critical value.							
*	Statistically Significant at a 0.05 critical value.							
**	Statistically Significant at a 0.01 critical value.							

Table 6A-B:	**Correlation Matrix of Residual Returns With USA and Lagged USA**						
	ISRAEL	**LEBANON**	**MOROCCO**	**OMAN**	**TURKEY**	**JORDAN**	**USA**
EGYPT	0.159	-0.003	0.067	-0.002	0.051	0.023	-0.006
ISRAEL		0.023	-0.045	-0.024	0.086	0.017	0.137
LEBANON			0.022	0.077	0.027	0.022	-0.013
MOROCCO				0.026	0.020	-0.002	-0.164
OMAN					0.038	0.005	-0.011
TURKEY						0.032	0.094
JORDAN							0.032
	ISRAEL	**LEBANON**	**MOROCCO**	**OMAN**	**TURKEY**	**JORDAN**	**LUSA**
EGYPT	0.165	0.002	0.062	-0.001	0.056	0.021	0.048
ISRAEL		0.059	-0.076	-0.011	0.123	0.005	0.341
LEBANON			0.003	0.082	0.031	0.012	0.087
MOROCCO				0.021	0.004	0.000	-0.096
OMAN					0.042	0.004	0.039
TURKEY						0.026	0.131
JORDAN							-0.033

Table 7:	**Decomposition of Forecast Error Variance With USA**									
	STD.									
Step	**Error**	**EGYPT**	**ISRAEL**	**LEBANON**	**MOROCCO**	**OMAN**	**TURKEY**	**JORDAN**	**USA**	**AOM**
EGYPT 5	1.01	97.10	0.25	0.42	0.98	0.18	0.34	0.38	0.35	2.90
10	1.02	94.64	0.89	0.78	1.08	0.46	0.57	0.97	0.61	5.36
15	1.04	92.33	1.18	0.84	1.60	0.93	1.00	1.20	0.91	7.67
20	1.05	91.59	1.47	0.87	1.68	1.12	1.11	1.23	0.92	8.41
24	1.06	91.44	1.50	0.89	1.71	1.15	1.11	1.28	0.93	8.56
ISRAEL 5	1.30	3.14	81.99	1.03	1.03	0.36	1.13	0.18	11.14	18.01
10	1.33	3.53	79.16	1.75	1.32	0.47	1.62	0.95	11.19	20.84
15	1.38	3.73	75.28	2.24	1.53	2.33	2.07	1.32	11.49	24.72
20	1.39	4.13	73.74	2.32	1.57	3.00	2.20	1.48	11.58	26.26
24	1.40	4.16	73.22	2.31	1.60	3.17	2.22	1.55	11.78	26.78
LEBANON 5	0.48	0.45	2.56	93.75	0.50	0.40	0.83	0.67	0.83	6.25
10	0.50	1.13	5.18	87.91	0.83	0.73	1.40	1.03	1.80	12.09
15	0.52	1.45	6.35	82.24	1.83	0.89	1.67	1.17	4.40	17.76
20	0.53	1.60	6.27	78.99	1.82	3.83	1.78	1.36	4.35	21.01
24	0.53	1.65	6.34	78.57	1.99	3.85	1.82	1.45	4.33	21.43
MOROCCO 5	0.64	0.82	0.51	0.39	96.68	0.33	0.07	0.16	1.03	3.32
10	0.66	0.91	1.00	1.16	91.98	1.52	0.49	1.18	1.76	8.02
15	0.68	1.41	1.36	1.79	87.98	1.63	0.62	1.98	3.24	12.02
20	0.68	1.49	1.57	1.83	87.34	1.68	0.69	2.00	3.42	12.66
24	0.68	1.50	1.65	1.83	87.13	1.69	0.74	2.01	3.44	12.87
OMAN 5	1.43	0.06	0.10	1.13	0.45	96.91	0.26	0.18	0.92	3.09
10	1.46	0.50	0.21	1.64	0.87	93.08	0.46	0.78	2.45	6.92
15	1.51	1.02	0.39	1.69	2.33	89.17	0.50	1.03	3.87	10.83
20	1.52	1.07	0.43	1.77	2.64	88.40	0.58	1.11	4.01	11.60
24	1.52	1.12	0.45	1.77	2.70	88.01	0.63	1.24	4.07	11.99
TURKEY 5	3.21	1.80	1.03	0.79	1.28	0.92	92.38	0.13	1.67	7.62
10	3.35	2.42	1.34	1.80	1.77	2.00	87.07	1.13	2.47	12.93
15	3.44	3.46	1.75	1.91	2.36	2.37	83.34	1.59	3.23	16.66
20	3.46	3.73	1.82	1.91	2.65	2.49	82.50	1.61	3.29	17.50
24	3.47	3.78	1.84	1.98	2.71	2.51	82.15	1.68	3.34	17.85
JORDAN 5	0.56	1.23	1.16	0.46	0.48	0.63	0.98	94.81	0.24	5.19
10	0.58	2.23	1.42	1.33	0.71	0.94	1.47	90.40	1.50	9.60
15	0.59	2.53	1.47	1.40	1.15	1.37	2.15	88.19	1.74	11.81
20	0.59	2.67	1.68	1.44	1.18	1.77	2.17	87.00	2.08	13.00
24	0.59	2.69	1.69	1.47	1.23	1.81	2.18	86.82	2.10	13.18
USA 5	1.05	0.31	3.83	1.30	2.60	0.29	0.95	0.49	90.24	9.76
10	1.08	0.79	4.27	1.85	2.83	1.45	1.65	1.97	85.20	14.80
15	1.11	1.28	4.42	2.11	3.87	1.94	1.87	3.05	81.47	18.53
20	1.13	1.28	4.58	2.38	3.99	2.48	2.07	3.09	80.13	19.87
24	1.13	1.37	4.59	2.44	4.01	2.55	2.14	3.10	79.79	20.21

Table 8: Decomposition of Forecast Error Variance with USA

Country	Step	Std. Error	USA	JORDAN	TURKEY	OMAN	MOROCCO	LEBANON	ISRAEL	EGYPT	AOM
USA	**5**	1.05	95.08	0.40	0.28	0.23	0.34	1.35	1.99	0.33	4.92
	10	1.08	89.91	1.90	1.05	1.26	0.70	1.96	2.27	0.96	10.09
	15	1.11	85.89	2.96	1.32	1.72	1.86	2.20	2.48	1.58	14.11
	20	1.13	84.32	3.01	1.57	2.18	2.13	2.49	2.71	1.59	15.68
	24	1.13	83.96	3.02	1.64	2.23	2.17	2.57	2.73	1.69	16.04
JORDAN	**5**	0.56	0.31	94.93	0.99	0.65	0.52	0.41	0.99	1.19	5.07
	10	0.58	1.36	90.53	1.57	0.96	0.76	1.27	1.21	2.34	9.47
	15	0.59	1.61	88.27	2.37	1.40	1.07	1.35	1.32	2.62	11.73
	20	0.59	1.86	87.07	2.39	1.79	1.12	1.39	1.54	2.84	12.93
	24	0.59	1.88	86.89	2.40	1.83	1.18	1.41	1.55	2.85	13.11
TURKEY	**5**	3.21	2.55	0.18	92.66	0.84	1.08	0.66	0.62	1.41	7.34
	10	3.35	3.26	1.26	87.48	1.91	1.49	1.66	1.10	1.85	12.52
	15	3.44	4.01	1.74	83.74	2.30	2.04	1.77	1.39	3.01	16.26
	20	3.46	4.02	1.76	82.87	2.43	2.38	1.77	1.51	3.25	17.13
	24	3.47	4.08	1.84	82.52	2.45	2.43	1.84	1.55	3.29	17.48
OMAN	**5**	1.43	0.98	0.17	0.43	97.35	0.40	0.58	0.02	0.07	2.65
	10	1.46	2.47	0.78	0.60	93.51	0.85	1.11	0.06	0.60	6.49
	15	1.51	3.44	1.01	0.68	89.55	2.83	1.17	0.21	1.11	10.45
	20	1.52	3.64	1.08	0.75	88.76	3.13	1.25	0.22	1.16	11.24
	24	1.52	3.69	1.22	0.80	88.37	3.18	1.26	0.25	1.22	11.63
MOROCCO	**5**	0.64	3.86	0.20	0.22	0.42	94.39	0.32	0.24	0.35	5.61
	10	0.66	4.57	1.15	0.58	1.57	89.77	1.14	0.73	0.50	10.23
	15	0.68	6.10	1.94	0.66	1.67	85.73	1.79	1.14	0.96	14.27
	20	0.68	6.36	1.96	0.74	1.72	85.08	1.81	1.26	1.06	14.92
	24	0.68	6.37	1.98	0.80	1.73	84.88	1.81	1.34	1.09	15.12
LEBANON	**5**	0.48	1.15	0.73	0.77	0.87	0.56	93.16	2.44	0.32	6.84
	10	0.50	1.92	1.18	1.43	1.16	0.81	87.34	5.21	0.96	12.66
	15	0.52	3.87	1.35	1.71	1.25	2.09	81.72	6.80	1.20	18.28
	20	0.53	3.87	1.54	1.85	4.20	2.07	78.47	6.61	1.39	21.53
	24	0.53	3.86	1.63	1.90	4.22	2.24	78.05	6.66	1.45	21.95
ISRAEL	**5**	1.30	14.28	0.14	1.26	0.35	1.00	1.05	80.79	1.13	19.21
	10	1.33	14.10	0.90	1.80	0.43	1.24	1.81	78.22	1.49	21.78
	15	1.38	14.39	1.32	2.28	2.28	1.37	2.28	74.37	1.71	25.63
	20	1.39	14.35	1.46	2.44	2.94	1.46	2.36	72.79	2.21	27.21
	24	1.40	14.45	1.54	2.47	3.12	1.53	2.35	72.30	2.24	27.70
EGYPT	**5**	1.01	0.26	0.39	0.52	0.22	1.64	0.43	2.52	94.01	5.99
	10	1.02	0.51	0.99	0.77	0.49	1.76	0.80	3.20	91.48	8.52
	15	1.04	0.79	1.21	1.19	0.91	2.28	0.85	3.40	89.37	10.63
	20	1.05	0.83	1.24	1.25	1.09	2.33	0.88	3.85	88.54	11.46
	24	1.06	0.83	1.28	1.25	1.11	2.36	0.91	3.86	88.39	11.61

Table 9:	Decomposition of Forecast Error Variance with Lag USA									
	STD.									
STEP	ERROR	EGYPT	ISRAEL	LEBANON	MOROCCO	OMAN	TURKEY	JORDAN	LUSA	AOM
EGYPT 5	1.01	97.35	0.26	0.39	0.89	0.20	0.31	0.38	0.21	2.65
10	1.02	94.93	0.89	0.73	1.00	0.47	0.55	1.01	0.44	5.07
15	1.04	92.65	1.27	0.78	1.51	0.94	0.97	1.24	0.64	7.35
20	1.05	91.81	1.48	0.81	1.58	1.14	1.09	1.27	0.82	8.19
24	1.06	91.66	1.52	0.83	1.60	1.16	1.09	1.31	0.82	8.34
ISRAEL 5	1.30	3.57	91.34	1.06	1.01	0.39	1.01	0.25	1.36	8.66
10	1.34	3.96	87.84	1.73	1.27	0.50	1.54	1.13	2.04	12.16
15	1.38	4.12	84.07	2.22	1.54	2.25	1.98	1.51	2.32	15.93
20	1.39	4.48	82.39	2.30	1.58	2.91	2.11	1.65	2.59	17.61
24	1.40	4.52	81.91	2.30	1.60	3.04	2.14	1.73	2.76	18.09
LEBANON 5	0.46	0.52	2.97	94.00	0.34	0.34	0.76	0.83	0.23	6.00
10	0.48	1.41	5.07	86.33	0.66	0.66	1.69	1.25	2.94	13.67
15	0.50	1.74	7.63	81.14	1.95	0.89	1.97	1.38	3.31	18.86
20	0.51	1.89	7.50	77.60	1.92	4.10	2.07	1.62	3.32	22.40
24	0.52	1.94	7.54	77.15	2.09	4.13	2.11	1.70	3.33	22.85
MOROCCO 5	0.64	0.76	0.89	0.34	97.24	0.34	0.08	0.15	0.20	2.76
10	0.66	0.88	1.55	1.03	92.34	1.47	0.44	1.14	1.15	7.66
15	0.68	1.32	2.42	1.50	88.45	1.57	0.61	1.89	2.24	11.55
20	0.68	1.40	2.77	1.54	87.69	1.61	0.65	1.91	2.44	12.31
24	0.68	1.42	2.82	1.54	87.46	1.62	0.71	1.94	2.50	12.54
OMAN 5	1.43	0.05	0.14	1.16	0.41	97.03	0.30	0.15	0.76	2.97
10	1.47	0.49	0.33	1.59	0.87	92.60	0.54	0.73	2.85	7.40
15	1.51	0.97	0.43	1.64	2.33	89.16	0.55	0.99	3.93	10.84
20	1.52	1.02	0.48	1.74	2.61	88.49	0.63	1.06	3.98	11.51
24	1.52	1.07	0.52	1.76	2.67	88.11	0.70	1.17	4.01	11.89
TURKEY 5	3.21	1.93	1.79	0.76	1.29	1.00	93.04	0.13	0.06	6.96
10	3.35	2.58	2.39	1.54	1.85	2.09	87.69	1.17	0.68	12.31
15	3.44	3.62	2.83	1.62	2.45	2.45	84.01	1.67	1.35	15.99
20	3.46	3.88	2.86	1.61	2.76	2.59	83.10	1.71	1.48	16.90
24	3.47	3.94	2.90	1.68	2.81	2.62	82.72	1.78	1.54	17.28
JORDAN 5	0.56	1.23	0.99	0.34	0.46	0.65	0.84	95.00	0.51	5.00
10	0.58	2.30	1.17	1.02	0.74	0.94	1.45	90.62	1.76	9.38
15	0.59	2.60	1.27	1.08	1.21	1.39	2.09	88.20	2.16	11.80
20	0.59	2.74	1.47	1.13	1.24	1.77	2.12	87.32	2.22	12.68
24	0.59	2.76	1.47	1.14	1.28	1.82	2.13	87.13	2.27	12.87
LUSA 5	1.05	0.63	13.16	1.06	2.72	0.22	1.50	0.45	80.26	19.74
10	1.09	1.05	13.06	1.57	3.06	1.21	2.12	1.98	75.95	24.05
15	1.12	1.57	12.74	2.13	3.75	1.95	2.34	3.20	72.32	27.68
20	1.13	1.60	12.64	2.18	3.76	2.17	2.49	3.32	71.83	28.17
24	1.13	1.72	12.59	2.19	3.78	2.29	2.55	3.38	71.50	28.50

Table 10:	**Decomposition of Forecast Error Variance with Lag USA**									
	STD.									
Step	**ERROR**	**LUSA**	**JORDAN**	**TURKEY**	**OMAN**	**MOROCCO**	**LEBANON**	**ISRAEL**	**EGYPT**	**AOM**
LUSA 5	1.05	91.51	0.33	1.11	0.09	2.69	0.58	3.21	0.48	8.49
10	1.09	86.35	1.89	1.90	0.96	3.07	1.23	3.53	1.07	13.65
15	1.12	82.08	3.09	2.18	1.68	3.85	1.77	3.68	1.68	17.92
20	1.13	81.45	3.22	2.32	1.91	3.88	1.83	3.67	1.71	18.55
24	1.13	81.06	3.29	2.38	2.01	3.89	1.85	3.69	1.83	18.94
JORDAN 5	0.56	0.26	94.97	1.02	0.67	0.49	0.38	1.03	1.19	5.03
10	0.58	1.56	90.55	1.50	1.00	0.70	1.17	1.20	2.32	9.45
15	0.59	2.06	88.10	2.20	1.45	1.08	1.24	1.30	2.58	11.90
20	0.59	2.10	87.21	2.24	1.81	1.11	1.28	1.46	2.79	12.79
24	0.59	2.16	87.02	2.24	1.86	1.15	1.29	1.47	2.81	12.98
TURKEY 5	3.21	1.71	0.21	93.23	0.89	1.18	0.64	0.67	1.46	6.77
10	3.35	2.58	1.29	87.99	1.97	1.66	1.51	1.09	1.91	12.01
15	3.44	3.26	1.75	84.32	2.33	2.28	1.62	1.33	3.10	15.68
20	3.46	3.37	1.79	83.38	2.48	2.58	1.61	1.46	3.33	16.62
24	3.47	3.45	1.86	83.00	2.51	2.65	1.67	1.49	3.36	17.00
OMAN 5	1.43	0.98	0.16	0.40	97.33	0.45	0.53	0.06	0.08	2.67
10	1.47	3.18	0.76	0.61	92.88	0.81	1.02	0.14	0.62	7.12
15	1.51	4.06	1.01	0.65	89.46	2.36	1.06	0.27	1.11	10.54
20	1.52	4.13	1.08	0.73	88.78	2.68	1.16	0.28	1.17	11.22
24	1.52	4.20	1.19	0.79	88.39	2.73	1.18	0.31	1.21	11.61
MOROCCO 5	0.64	1.05	0.16	0.11	0.44	97.35	0.29	0.24	0.36	2.65
10	0.66	2.00	1.12	0.57	1.55	92.52	1.06	0.67	0.51	7.48
15	0.68	3.52	1.91	0.67	1.64	88.59	1.62	1.08	0.96	11.41
20	0.68	3.91	1.94	0.71	1.69	87.83	1.65	1.21	1.06	12.17
24	0.68	3.96	1.97	0.78	1.70	87.59	1.65	1.27	1.09	12.41
LEBANON 5	0.46	0.88	0.89	0.67	0.83	0.45	93.05	2.83	0.39	6.95
10	0.48	3.15	1.35	1.40	1.06	0.77	85.49	5.65	1.13	14.51
15	0.50	4.91	1.49	1.69	1.21	2.03	80.33	6.96	1.37	19.67
20	0.51	4.88	1.73	1.81	4.41	2.01	76.79	6.81	1.57	23.21
24	0.52	4.86	1.80	1.86	4.43	2.19	76.36	6.85	1.65	23.64
ISRAEL 5	1.30	11.48	0.27	1.83	0.41	1.29	1.04	82.45	1.23	17.55
10	1.34	12.05	1.07	2.35	0.51	1.56	1.72	79.16	1.58	20.84
15	1.38	11.72	1.46	2.82	2.30	1.73	2.21	76.02	1.75	23.98
20	1.39	11.79	1.59	2.90	2.99	1.81	2.28	74.41	2.23	25.59
24	1.40	11.89	1.69	2.93	3.14	1.84	2.27	73.99	2.27	26.01
EGYPT 5	1.01	0.38	0.40	0.52	0.23	1.51	0.41	2.47	94.08	5.92
10	1.02	0.60	1.02	0.73	0.51	1.61	0.74	3.18	91.60	8.40
15	1.04	0.89	1.22	1.19	0.93	2.11	0.79	3.38	89.51	10.49
20	1.05	0.93	1.25	1.23	1.12	2.18	0.82	3.89	88.59	11.41
24	1.06	0.94	1.29	1.23	1.14	2.21	0.84	3.91	88.45	11.55

Table 11A-B:	**F-Tests for Granger Causality With USA and Lagged USA BVAR Model**							
Affecting	**Affected Markets**							
Markets	**EGYPT**	**ISRAEL**	**LEBANON**	**MOROCCO**	**OMAN**	**TURKEY**	**JORDAN**	**USA**
EGYPT	8.01**	0.86	0.49	0.32	0.28	1.33	1.10	0.54
ISRAEL	0.70	4.56**	2.52**	0.54	0.08	0.46	0.53	0.91
LEBANON	0.29	1.32	1.23	0.57	0.49	0.74	0.42	0.90
MOROCCO	0.66	0.56	0.66	3.29**	0.95	0.97	0.35	0.77
OMAN	0.39	1.22	1.50#	0.56	7.39**	1.02	0.51	0.74
TURKEY	0.36	0.83	0.69	0.22	0.23	2.47**	0.74	0.41
JORDAN	0.39	0.55	0.53	0.69	0.34	0.57	6.22**	1.12
USA	0.33	4.96**	1.38	1.10	1.42	0.92	0.74	1.66*
Affecting	**Affected Markets**							
Markets	**EGYPT**	**ISRAEL**	**LEBANON**	**MOROCCO**	**OMAN**	**TURKEY**	**JORDAN**	**LUSA**
EGYPT	7.98**	0.81	0.51	0.31	0.30	1.30	1.09	0.48
ISRAEL	0.70	4.83**	2.77**	0.51	0.08	0.49	0.51	1.01
LEBANON	0.30	1.13	1.27	0.60	0.50	0.75	0.42	0.70
MOROCCO	0.65	0.60	0.65	3.36**	0.97	1.03	0.35	1.24
OMAN	0.39	1.02	1.56#	0.58	7.38**	0.99	0.52	0.63
TURKEY	0.35	0.82	0.78	0.21	0.23	2.57**	0.75	0.63
JORDAN	0.41	0.69	0.58	0.75	0.33	0.59	6.22**	1.38
LUSA	0.28	1.26	1.32	0.90	1.36	0.51	0.73	1.25
#	Statistically Significant at a 0.10 critical value.							
*****	Statistically Significant at a 0.05 critical value.							
******	Statistically Significant at a 0.01 critical value.							

	Table 12: Correlation Matrix of Residuals BVAR Model						
	ISRAEL	**LEBANON**	**MOROCCO**	**OMAN**	**TURKEY**	**JORDAN**	**USA**
EGYPT	0.159	-0.005	0.059	-0.002	0.052	0.025	-0.008
ISRAEL		0.028	-0.048	-0.021	0.090	0.008	0.108
LEBANON			0.018	0.067	0.027	0.019	-0.018
MOROCCO				0.029	0.013	-0.003	-0.151
OMAN					0.031	0.003	-0.010
TURKEY						0.033	0.089
JORDAN							0.039
	ISRAEL	**LEBANON**	**MOROCCO**	**OMAN**	**TURKEY**	**JORDAN**	**LUSA**
EGYPT	0.164	-0.001	0.055	-0.001	0.056	0.023	0.045
ISRAEL		0.057	-0.072	-0.009	0.119	0.000	0.334
LEBANON			0.002	0.072	0.029	0.010	0.082
MOROCCO				0.025	0.001	-0.002	-0.092
OMAN					0.035	0.002	0.041
TURKEY						0.028	0.123
JORDAN							-0.029

Table 13: Decomposition of Forecast Error Variance with USA BVAR Model

Country	Step	Std. Error	EGYPT	ISRAEL	LEBANON	MOROCCO	OMAN	TURKEY	JORDAN	USA	AOM
EGYPT	5	1.04	98.89	0.10	0.09	0.39	0.09	0.09	0.22	0.12	1.11
	10	1.04	97.93	0.32	0.23	0.42	0.19	0.18	0.50	0.24	2.07
	15	1.06	96.91	0.44	0.26	0.66	0.40	0.32	0.62	0.39	3.09
	20	1.06	96.56	0.57	0.27	0.71	0.53	0.35	0.62	0.39	3.44
	24	1.06	96.52	0.57	0.27	0.72	0.53	0.36	0.63	0.39	3.48
ISRAEL	5	1.30	2.75	91.63	0.51	0.40	0.17	0.41	0.14	3.99	8.37
	10	1.31	3.00	90.25	0.79	0.53	0.26	0.64	0.46	4.05	9.75
	15	1.34	3.18	87.80	1.00	0.73	1.42	0.91	0.66	4.30	12.20
	20	1.34	3.34	87.09	1.05	0.76	1.73	0.94	0.70	4.39	12.91
	24	1.34	3.35	86.97	1.05	0.77	1.78	0.95	0.71	4.43	13.03
LEBANON	5	0.49	0.11	0.95	97.73	0.18	0.12	0.33	0.30	0.28	2.27
	10	0.49	0.49	1.89	95.26	0.31	0.25	0.57	0.48	0.75	4.74
	15	0.50	0.66	2.51	92.76	0.72	0.33	0.77	0.59	1.66	7.24
	20	0.51	0.76	2.54	90.86	0.73	2.05	0.80	0.61	1.65	9.14
	24	0.51	0.78	2.57	90.74	0.77	2.06	0.81	0.63	1.65	9.26
MOROCCO	5	0.66	0.49	0.40	0.13	98.52	0.10	0.01	0.04	0.32	1.48
	10	0.67	0.54	0.60	0.37	96.64	0.75	0.13	0.36	0.61	3.36
	15	0.68	0.76	0.79	0.62	94.84	0.80	0.24	0.61	1.34	5.16
	20	0.68	0.77	0.92	0.63	94.58	0.82	0.25	0.61	1.43	5.42
	24	0.68	0.77	0.93	0.64	94.52	0.83	0.26	0.61	1.45	5.48
OMAN	5	1.46	0.02	0.05	0.63	0.18	98.67	0.10	0.05	0.31	1.33
	10	1.48	0.21	0.08	0.84	0.36	97.20	0.18	0.28	0.86	2.80
	15	1.50	0.50	0.11	0.89	1.05	95.34	0.18	0.44	1.49	4.66
	20	1.50	0.53	0.13	0.91	1.23	94.99	0.21	0.45	1.54	5.01
	24	1.51	0.54	0.14	0.91	1.24	94.91	0.22	0.47	1.56	5.09
TURKEY	5	3.26	1.15	0.86	0.30	0.57	0.36	96.15	0.04	0.55	3.85
	10	3.33	1.43	1.03	0.73	0.93	0.93	93.72	0.36	0.86	6.28
	15	3.37	1.95	1.18	0.83	1.28	1.09	91.73	0.67	1.27	8.27
	20	3.38	2.09	1.20	0.83	1.38	1.13	91.40	0.68	1.28	8.60
	24	3.38	2.11	1.21	0.85	1.40	1.13	91.31	0.70	1.29	8.69
JORDAN	5	0.58	0.44	0.47	0.22	0.16	0.27	0.43	97.96	0.07	2.04
	10	0.58	0.97	0.57	0.56	0.26	0.40	0.61	96.10	0.53	3.90
	15	0.59	1.18	0.60	0.61	0.55	0.55	0.87	94.96	0.68	5.04
	20	0.59	1.26	0.69	0.62	0.56	0.70	0.88	94.46	0.83	5.54
	24	0.59	1.27	0.69	0.63	0.57	0.71	0.88	94.41	0.83	5.59
USA	5	1.07	0.16	2.05	0.46	2.07	0.11	0.76	0.26	94.14	5.86
	10	1.08	0.35	2.29	0.65	2.16	0.78	1.14	0.70	91.93	8.07
	15	1.10	0.52	2.39	0.78	2.66	1.01	1.26	1.23	90.14	9.86
	20	1.10	0.52	2.49	0.91	2.73	1.30	1.32	1.24	89.49	10.51
	24	1.10	0.54	2.50	0.92	2.74	1.32	1.33	1.25	89.40	10.60

Table 14: Decomposition of Forecast Error Variance with USA BVAR Model

Country	Step	Std. Error	USA	JORDAN	TURKEY	OMAN	MOROCCO	LEBANON	ISRAEL	EGYPT	AOM
USA	5	1.07	98.16	0.15	0.13	0.09	0.15	0.45	0.73	0.13	1.84
	10	1.08	95.94	0.60	0.55	0.71	0.29	0.66	0.89	0.38	4.06
	15	1.10	94.06	1.11	0.70	0.93	0.82	0.79	1.00	0.60	5.94
	20	1.10	93.30	1.13	0.78	1.17	0.96	0.93	1.13	0.60	6.70
	24	1.10	93.21	1.13	0.79	1.19	0.97	0.94	1.14	0.63	6.79
JORDAN	5	0.58	0.22	97.99	0.38	0.28	0.17	0.17	0.41	0.40	2.01
	10	0.58	0.64	96.13	0.60	0.41	0.25	0.51	0.49	0.97	3.87
	15	0.59	0.80	94.96	0.92	0.58	0.47	0.56	0.53	1.18	5.04
	20	0.59	0.93	94.46	0.92	0.72	0.48	0.57	0.63	1.29	5.54
	24	0.59	0.93	94.41	0.92	0.73	0.49	0.59	0.63	1.31	5.59
TURKEY	5	3.26	1.58	0.11	96.23	0.29	0.45	0.25	0.27	0.80	3.77
	10	3.33	1.88	0.46	93.87	0.86	0.76	0.67	0.51	1.00	6.13
	15	3.37	2.31	0.78	91.87	1.02	1.07	0.76	0.62	1.57	8.13
	20	3.38	2.31	0.79	91.55	1.06	1.18	0.77	0.66	1.68	8.45
	24	3.38	2.32	0.81	91.45	1.07	1.20	0.78	0.67	1.70	8.55
OMAN	5	1.46	0.33	0.04	0.23	99.08	0.14	0.15	0.01	0.02	0.92
	10	1.48	0.88	0.29	0.29	97.59	0.30	0.37	0.02	0.24	2.41
	15	1.50	1.35	0.42	0.31	95.72	1.20	0.42	0.04	0.54	4.28
	20	1.50	1.43	0.44	0.33	95.35	1.39	0.44	0.04	0.57	4.65
	24	1.51	1.44	0.46	0.35	95.28	1.40	0.45	0.05	0.58	4.72
MOROCC	5	0.66	2.85	0.05	0.09	0.17	96.56	0.10	0.10	0.09	3.44
	10	0.67	3.15	0.35	0.19	0.82	94.70	0.34	0.29	0.16	5.30
	15	0.68	4.00	0.60	0.26	0.87	92.85	0.59	0.46	0.37	7.15
	20	0.68	4.15	0.60	0.27	0.89	92.57	0.60	0.54	0.39	7.43
	24	0.68	4.17	0.60	0.28	0.89	92.51	0.60	0.55	0.39	7.49
LEBANON	5	0.49	0.39	0.35	0.36	0.58	0.20	97.25	0.81	0.06	2.75
	10	0.49	0.77	0.57	0.68	0.70	0.30	94.76	1.90	0.32	5.24
	15	0.50	1.53	0.69	0.90	0.75	0.79	92.30	2.57	0.48	7.70
	20	0.51	1.53	0.72	0.94	2.47	0.80	90.40	2.56	0.59	9.60
	24	0.51	1.53	0.73	0.95	2.47	0.83	90.27	2.59	0.61	9.73
ISRAEL	5	1.30	6.26	0.10	0.96	0.19	0.45	0.50	91.00	0.54	9.00
	10	1.31	6.24	0.42	1.22	0.27	0.57	0.81	89.75	0.73	10.25
	15	1.34	6.51	0.63	1.50	1.44	0.70	0.99	87.34	0.89	12.66
	20	1.34	6.59	0.67	1.54	1.77	0.74	1.02	86.58	1.09	13.42
	24	1.34	6.61	0.68	1.55	1.82	0.75	1.03	86.46	1.10	13.54
EGYPT	5	1.04	0.09	0.24	0.37	0.10	0.85	0.10	2.35	95.90	4.10
	10	1.04	0.20	0.52	0.46	0.20	0.89	0.25	2.59	94.90	5.10
	15	1.06	0.37	0.64	0.61	0.39	1.09	0.27	2.68	93.96	6.04
	20	1.06	0.38	0.64	0.62	0.50	1.12	0.28	2.91	93.55	6.45
	24	1.06	0.38	0.65	0.62	0.51	1.13	0.29	2.92	93.51	6.49

Table 15: Decomposition of Forecast Error Variance with Lagged USA BVAR Model

Country	Step	Std. Error	EGYPT	ISRAEL	LEBANON	MOROCCO	OMAN	TURKEY	JORDAN	LUSA	AOM
EGYPT	5	1.04	98.97	0.13	0.08	0.37	0.09	0.08	0.21	0.05	1.03
	10	1.04	98.01	0.36	0.22	0.41	0.20	0.17	0.51	0.12	1.99
	15	1.06	96.99	0.55	0.25	0.65	0.41	0.32	0.64	0.21	3.01
	20	1.07	96.61	0.64	0.26	0.69	0.53	0.35	0.64	0.27	3.39
	24	1.07	96.58	0.65	0.27	0.70	0.54	0.35	0.64	0.28	3.42
ISRAEL	5	1.33	2.96	94.79	0.52	0.35	0.17	0.29	0.16	0.76	5.21
	10	1.35	3.20	93.28	0.79	0.46	0.25	0.54	0.49	0.99	6.72
	15	1.37	3.36	91.06	0.98	0.67	1.30	0.78	0.69	1.16	8.94
	20	1.37	3.50	90.39	1.04	0.71	1.59	0.81	0.73	1.23	9.61
	24	1.37	3.51	90.27	1.05	0.71	1.62	0.82	0.74	1.28	9.73
LEBANON	5	0.47	0.12	1.28	97.68	0.13	0.10	0.29	0.35	0.06	2.32
	10	0.48	0.61	2.19	94.56	0.24	0.23	0.70	0.57	0.90	5.44
	15	0.49	0.78	3.49	91.82	0.80	0.34	0.92	0.66	1.20	8.18
	20	0.49	0.88	3.48	89.77	0.80	2.21	0.94	0.70	1.23	10.23
	24	0.49	0.90	3.51	89.64	0.84	2.22	0.95	0.71	1.23	10.36
MOROCCO	5	0.66	0.44	0.71	0.11	98.53	0.10	0.01	0.04	0.07	1.47
	10	0.67	0.50	1.00	0.32	96.60	0.72	0.10	0.35	0.39	3.40
	15	0.68	0.70	1.44	0.53	94.80	0.77	0.24	0.59	0.94	5.20
	20	0.68	0.71	1.65	0.53	94.45	0.79	0.25	0.59	1.03	5.55
	24	0.68	0.71	1.67	0.54	94.39	0.79	0.26	0.59	1.05	5.61
OMAN	5	1.46	0.02	0.06	0.68	0.16	98.72	0.11	0.04	0.20	1.28
	10	1.48	0.20	0.20	0.89	0.35	96.98	0.20	0.27	0.91	3.02
	15	1.50	0.47	0.26	0.94	1.10	95.26	0.20	0.43	1.34	4.74
	20	1.51	0.50	0.28	0.96	1.28	94.95	0.23	0.44	1.36	5.05
	24	1.51	0.52	0.29	0.97	1.29	94.87	0.24	0.46	1.37	5.13
TURKEY	5	3.27	1.21	1.44	0.29	0.55	0.39	96.06	0.04	0.02	3.94
	10	3.34	1.50	1.76	0.65	0.92	0.96	93.59	0.37	0.24	6.41
	15	3.39	2.01	1.95	0.73	1.27	1.12	91.69	0.70	0.53	8.31
	20	3.39	2.15	1.97	0.73	1.37	1.17	91.33	0.71	0.57	8.67
	24	3.39	2.17	1.98	0.74	1.39	1.18	91.23	0.73	0.58	8.77
JORDAN	5	0.58	0.44	0.48	0.16	0.16	0.27	0.39	98.02	0.08	1.98
	10	0.59	1.00	0.60	0.44	0.27	0.39	0.62	96.14	0.54	3.86
	15	0.59	1.21	0.65	0.48	0.57	0.55	0.88	94.92	0.73	5.08
	20	0.59	1.29	0.75	0.50	0.58	0.70	0.89	94.55	0.74	5.45
	24	0.59	1.30	0.76	0.51	0.59	0.71	0.89	94.49	0.74	5.51
LUSA	5	1.06	0.36	12.01	0.59	1.28	0.21	1.05	0.24	84.27	15.73
	10	1.08	0.52	12.06	0.82	1.43	0.80	1.41	0.66	82.30	17.70
	15	1.09	0.74	11.88	1.07	1.82	1.14	1.56	1.30	80.49	19.51
	20	1.10	0.75	11.85	1.09	1.82	1.21	1.59	1.33	80.35	19.65
	24	1.10	0.78	11.85	1.09	1.83	1.24	1.60	1.36	80.26	19.74

Table 16: Decomposition of Forecast Error Variance with Lagged USA BVAR Model

Country	Step	Std. Error	LUSA	JORDAN	TURKEY	OMAN	MOROCCO	LEBANON	ISRAEL	EGYPT	AOM
LUSA	5	1.06	97.07	0.17	0.41	0.05	0.82	0.19	1.10	0.21	2.93
	10	1.08	94.77	0.61	0.86	0.59	0.99	0.46	1.31	0.42	5.23
	15	1.09	92.55	1.24	1.06	0.93	1.46	0.70	1.40	0.67	7.45
	20	1.10	92.34	1.27	1.09	1.01	1.47	0.72	1.42	0.68	7.66
	24	1.10	92.23	1.30	1.09	1.03	1.48	0.72	1.44	0.71	7.77
JORDAN	5	0.58	0.14	98.05	0.38	0.28	0.17	0.16	0.42	0.40	1.95
	10	0.59	0.65	96.13	0.59	0.43	0.25	0.48	0.50	0.96	3.87
	15	0.59	0.90	94.89	0.89	0.59	0.50	0.53	0.55	1.16	5.11
	20	0.59	0.91	94.51	0.89	0.73	0.51	0.55	0.62	1.27	5.49
	24	0.59	0.92	94.46	0.89	0.74	0.52	0.55	0.63	1.29	5.54
TURKEY	5	3.27	1.52	0.14	96.21	0.30	0.50	0.24	0.29	0.80	3.79
	10	3.34	1.90	0.48	93.79	0.86	0.83	0.63	0.50	1.00	6.21
	15	3.39	2.23	0.78	91.89	1.02	1.18	0.72	0.61	1.57	8.11
	20	3.39	2.26	0.79	91.53	1.07	1.28	0.72	0.65	1.69	8.47
	24	3.39	2.28	0.81	91.43	1.07	1.30	0.74	0.66	1.70	8.57
OMAN	5	1.46	0.42	0.04	0.22	98.98	0.15	0.14	0.01	0.02	1.02
	10	1.48	1.26	0.28	0.29	97.24	0.31	0.36	0.02	0.24	2.76
	15	1.50	1.64	0.43	0.30	95.55	1.10	0.40	0.04	0.54	4.45
	20	1.51	1.68	0.44	0.33	95.22	1.30	0.43	0.05	0.57	4.78
	24	1.51	1.70	0.46	0.34	95.14	1.31	0.43	0.05	0.58	4.86
MOROCCO	5	0.66	0.84	0.04	0.02	0.18	98.63	0.10	0.10	0.09	1.37
	10	0.67	1.22	0.34	0.14	0.81	96.72	0.33	0.27	0.16	3.28
	15	0.68	2.04	0.60	0.23	0.86	94.88	0.57	0.45	0.37	5.12
	20	0.68	2.26	0.60	0.23	0.87	94.53	0.58	0.53	0.39	5.47
	24	0.68	2.29	0.60	0.24	0.88	94.47	0.58	0.54	0.39	5.53
LEBANON	5	0.47	0.79	0.38	0.29	0.57	0.15	96.86	0.88	0.08	3.14
	10	0.48	1.59	0.63	0.69	0.68	0.27	93.77	1.99	0.39	6.23
	15	0.49	2.54	0.73	0.91	0.74	0.81	91.06	2.68	0.53	8.94
	20	0.49	2.55	0.75	0.94	2.59	0.82	89.01	2.68	0.65	10.99
	24	0.49	2.55	0.77	0.96	2.60	0.86	88.88	2.70	0.68	11.12
ISRAEL	5	1.33	10.45	0.17	1.06	0.21	0.49	0.47	86.63	0.53	13.37
	10	1.35	10.65	0.48	1.30	0.29	0.60	0.76	85.21	0.71	14.79
	15	1.37	10.48	0.67	1.58	1.39	0.75	0.94	83.35	0.84	16.65
	20	1.37	10.46	0.71	1.60	1.69	0.81	0.98	82.70	1.04	17.30
	24	1.37	10.49	0.72	1.61	1.73	0.81	0.98	82.60	1.05	17.40
EGYPT	5	1.04	0.24	0.24	0.35	0.11	0.83	0.09	2.29	95.85	4.15
	10	1.04	0.35	0.53	0.43	0.21	0.86	0.23	2.52	94.86	5.14
	15	1.06	0.53	0.63	0.60	0.39	1.07	0.26	2.62	93.89	6.11
	20	1.07	0.53	0.63	0.60	0.51	1.11	0.27	2.88	93.46	6.54
	24	1.07	0.53	0.64	0.61	0.51	1.12	0.27	2.89	93.43	6.57