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Financial integration of the MENA emerging stock markets

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Financial Integration of the MENA Emerging Stock Markets

A thesis submitted in fulfillment of the requirements for the award of the degree

Doctor of Philosophy

from

University of Wollongong

by

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2006
Certification

I, Hazem Marashdeh, declare that this dissertation, submitted in fulfillment of the requirement for the award of Doctor of Philosophy in the faculty of commerce, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Hazem Marashdeh

December 2005
Dedication

To the dearest friend

my father

Ali Marashdeh
Acknowledgments

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Abstract

The main objective of this study is to examine the financial integration among four emerging stock markets in the Middle East and North Africa (MENA) region, namely, Egypt, Turkey, Jordan and Morocco. Their interrelationships with three developed markets, the US, UK and Germany, are also examined. The motivation behind this study is that, although a lot of research has been focused on stock market integration, the emphasis has been mostly on developed markets. Stock market integration in the MENA region has not been investigated deeply enough despite the region being of a global economic and political importance.

To attain this objective, the study conducts recent econometric techniques on the monthly time series of stock market price indices. It starts with testing for a unit root in the presence of structural change at an unknown time of the break, using the Innovational Outlier (IO) model. To empirically examine the financial integration, the study utilizes the newly proposed autoregressive distributed lag (ARDL) approach to cointegration. The ARDL approach has been recognized as more preferable in estimating the long-run equilibrium relationship than other cointegration approaches in small samples with mixed order process. Finally, the study explores the short and long-run dynamic relationships among these markets using Granger-causality within a correctly specified vector error correction model (VECM).

The empirical results indicate that all variables show evidence of non-stationarity, even in the presence of structural change. The endogenously determined times of the breaks for all markets coincide with observed real events which affected each market. This result is consistence with the efficient market hypothesis as the non-stationarity random walk is associated with the weak form of the efficient market hypothesis. Consequently, this result emphasises that the stock markets in the MENA region are efficient.

The cointegration test results show that there are long-run equilibrium relationships among all stock markets in the MENA region. This indicates that stock markets in the MENA region move together in the long-run. So, at the regional level all markets are integrated. At the same time no long-run equilibrium relationship is found between MENA markets and developed markets. This means that the MENA stock markets are segmented from developed markets. However, Egypt was the exceptional
case; the study found that the stock market of Egypt has long-run equilibrium relationship with the US and UK markets.

The implications of these findings are analysed at two levels, the regional and international. At the regional level, the existence if cointegration among the MENA markets implies the existence of the law of one price (LOOP). This means that the potential of regional investors for obtaining abnormal profits through portfolio diversification is limited in the long-run. The reason for this is that as the MENA stock markets are cointegrated, abnormal profits will be arbitraged away in the long-run. However, despite no arbitrage opportunities in the long-run, investors can still achieve arbitrage profits through portfolio diversification in the short-run.

At the international level, the results show that stock markets in Turkey, Jordan and Morocco are not integrated with developed markets. This means that there is no long-run impact from developed stock markets towards these markets. However, a long-run relationship is found between Egypt and both US and UK when Egypt is a dependent variable. Based on these results, there are opportunities for international investors to obtain long-run gains through international portfolio diversification in stock markets of Turkey, Jordan and Morocco. Also at the same time, investors from these three countries have the opportunities to obtain long-run gains through investing in developed markets. The existence of long-run relationships between Egypt and both US and UK implies that the potential for investors from the Egyptian stock market to obtain abnormal profit through portfolio diversification in the US and UK is limited in the long-run. However, there are opportunities for achieving abnormal profit by investing in Germany as it is not cointegrated with the MENA markets. In the short-run, arbitrage opportunities and possible profits may also be achieved from diversification as the LOOP may not hold.

In addition to these findings, an important contribution is made by this study. It contradicted Granger’s (1986) theory on the relationship between the existence of cointegration and market efficiency. Granger (1986) asserted that the existence of cointegration between two stock prices implies the ability to predict each price movement, which indicates market inefficiency. Also, this study does not fully agree with another stream of studies, such as Wallace (1992), Baffès (1994), Engle (1996), Ahlgren and Antell (2002) and Masih and Masih (2002) in which they asserted that cointegration does not necessarily imply market inefficiency or efficiency. However, what this study tries to bring out is that if cointegration exists between two stock
markets then these markets are efficient in the long-run because the existence of cointegrated vector implies the (LOOP). Therefore, little or no arbitrage opportunities or possible benefit can be achieved from the diversification of a portfolio across markets. However, with the short-run error correction model (ECM), there could exist arbitrage opportunities and possible benefits from diversification. That is, the LOOP may not hold in the short run.

The results of Granger-causality test based on the vector error correction model (VECM) reveal the existence of short-run causal relationships among the MENA markets. This means that these markets influence each other. Also, the results show that developed markets influenced stock markets in the MENA region. In the short-run, there is unidirectional Granger-causality running from stock prices in Turkey, Morocco, the US and UK to Egypt. Also, there is unidirectional Granger-causality running from Germany and the US towards Turkey. In addition, The UK and Turkey are found to Granger-cause the stock prices in Jordan. Finally, there is a unidirectional Granger-causality from Germany to Morocco.

Finally, despite the empirical results show that there is a possibility of an increase in the portfolio equity flow to the MENA stock markets, the statistics of portfolio equity flow show little portfolio inflow to the region from developed countries over the period of study. Some of the reasons behind this situation are that most of these markets are still from some perspective underdeveloped, vulnerable to macroeconomic shocks and political instability in the region. Based on this, the study suggests that huge efforts should be carried on to improve the institutional reforms in these markets and increase the degree of openness for foreign capital. Also increasing the markets capitalization and adopting new technology are very crucial factors for attracting equity portfolio to the region.
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Abbreviations

ADF  Augmented Dickey Fuller
ADR  American Depositary Receipts
AFM  Amman Financial Market
APT  Arbitrage Pricing Theory
ARDL  Autoregressive Distributed Lag
ARVAR  Augmented Restricted Vector Autoregression
ASE  Amman Stock Exchange
AUVAR  Augmented Unrestricted Vector Autoregression
CAPM  Capital Asset Pricing Model
CASE  Cairo and Alexandria Stock Exchange
CMA  Capital Market Authority
CRDW  Cointegration Regression Durbin Watson
CSE  Casablanca Stock Exchange
ECM  Error Correction Model
ECT  Error Correction Term
EMH  Efficient Market Hypothesis
GARCH  Generalized Autoregressive Conditional Heteroscedasticity
GCC  Gulf Cooperation Council
GDP  Gross Domestic Product
GDR  Global Depositary Receipts
GNP  Gross National Product
HSBC  Hong Kong and Shanghai Banking Corporation
ICAPM  International Asset Pricing Model
IMF  International Monetary Fund
IPO  International Public Offering
IRF  Impulse Response Function
ISE  Istanbul Stock Exchange
JD  Jordanian Dinar
JJ  Johansen-Juselius
JSC  Jordan Securities Commission
LOOP  Law of One Price
MENA  Middle East and North Africa
OECD  Organization for Economic Cooperation and Development
OLS  Ordinary Least Square
PP  Phillips and Perron
SDC  Securities Depository Centre
UVAR  Unrestricted Vector Autoregression
VAR  Vector Autoregressive Model
VDC  Variance Decomposition
VECM  Vector Error Correction Model
WTO  World Trade Organization
Publication from the Research


