



Investigation the Equilibrium Relationship Between Micro and Macroeconomic Variables and Amman Stock Exchange (ASE) Index Through ARDL Model (The Bound Test Approach)

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Abstract: This paper investigates the equilibrium relationship between micro and macroeconomic variables and Amman stock exchange (ASE) index, through ARDL model (the bound test approach), by using monthly data for the period 2011:1 to 2014:3. Unit root test based on Augment Dickey Fuller (ADF) test procedure shows that the set of the study variables (industrial production index (IPI), money supply (MS), Investors confidence (NJI), market capitalization (MC), and market price/earnings (PE)) are integrated of orders one and zero. Consequently the Autoregressive Distributed Lag (ARDL) approach to Cointegration is used. The empirical results reveal that the Amman Stock Exchange (ASE) performance as measured by ASE price index ,and its determinants namely industrial production index (IPI), money supply (MS), Investors confidence (FII NJI), market capitalization (MC), and market price/earnings (PE) have a long –run equilibrium relationship . To test the stability of short run, and long run coefficients in the ARDL error correction model the CUSUM, and CUSUMS Q tests were employed, and the results show that the model is structurally stable.

Keywords: Amman Stock Exchange stock price index; ARDL Model, Microeconomic, Jordan.

1. INTRODUCTION

The relationship between stock market, and selective macroeconomic factors has attracted a great deal of interest in the past whether from researchers practitioners or investors due to their believe that the stock market considered as a fuel for economic growth by pooling of saving from different parties, and availing them to companies in order to activate productive investment project (kimani,2013). The subscribed, and traded in shears of public shareholding companies in Jordan back to early thirties, before the Amman financial market established in 1967. The Amman Stock Exchange (ASE) established on march 1999 ,after the restructure process of Amman financial market in 1997, as a non-profit institution with administrative, and financial autonomy, and authorized to function as an exchange for the trading of securities in Jordan, to achieve the following objectives: creating an attractive, and safe environment for investment, developing processes and methods of

trading securities in the stock market enhance the public awareness of all segments of society and disseminating trading information to the largest possible number of dealers and interested parties (<http://www.ase.com>). The main aim of this study is to investigate the equilibrium relationship between micro and macroeconomic variables and Amman stock exchange (ASE) index through ARDL model (the bound test approach). The structure of this study is organized as follow: Section 2 presents the literature review. Section 3 discusses the methodology and data description and Source. Section4 reports the Empirical Investigation, and finally section 5 provides the study conclusions.



2. LITERATURE REVIEW

The literature regarding the effect of macroeconomic variables on stock market performance has attracted a great deal of interest in the past, it is initiated at the late of 1970's, such as Fama (1977), Fama (1981), Pearce and Roley (1985), Roll and Ross (1986), and others. Many of these studies revealed adversity of conclusions depend on the methodologies, test and variables used.

A. A Brief literature survey upon the Jordanian economy

A study carried out by Mayhyereh (2002) employed Johansen's (1988) cointegration analysis to test the causal relationship among stock market prices and macroeconomics factors in Jordan. The results showed that the macroeconomics were echoed in the stock prices of capital market in Jordan. Al-Sharkas. Adel (2004) investigated the dynamic relationship between macroeconomic factors and the Jordanian stock market utilized vector error correction model (VECM), the empirical results showed that the stock prices and macroeconomics variables namely real economic activity, money supply, inflation, and interest rate have a long –term equilibrium. Another study by El-Nader and Alraimony (2012) investigated the impact of macroeconomics factors namely real money supply (RMS2), real gross domestic product (RGDP), inflation (CPI), real exchange rate (EI), weighted average interest on loan and advances (WAIR), and a dummy variable (DUM) on Amman stock market (ASE) returns used ARCH /GARCH estimation models. The results showed that RMS2, CPI, EI, and the dummy variable have a negative role on the ASE returns. In contrast the RGDP has a positive impact. In their article Bekhet and Matar (2012) examined the short and long –run equilibrium relation between the stock prices index (SPI) and the macroeconomics variable in Jordan, namely industrial production index (IP), money supply (M2), exchange rate (EX), inflation (CPI), and discount rate (DR). The results suggest the existence of long-term equilibrium relationship between SPI and the macroeconomics variables (IP, M2, EX, CPI, and DR). AL-Shubiri (2013) investigated the relationship between economic variable and abnormal returns in Amman stock exchange, the results showed that the consumer price index, gross fixed capital formation, and money supply on index abnormal stock returns is statistically significant, while the industrial production index and interest rate were insignificant. Al –Assaf and Al-Majali (2014) studied the long and short run relationship between stock market index (SPI), and main macroeconomics variables performance in Jordan (gross

domestic product (GDP), consumer price index (CPI), credit facilities extended licensed banks to private sector (CP), weighted average interest rate on time deposits (DR), and dummy variable denote to global financial crisis (DUM-CRIS) by using vector error correction (VECM). The results revealed that there is a bi-direction long run relationship between SPI and CP, DR, CPI.

B. Foreign studies

Maysami et al. (2004) examined the long –term equilibrium relation between selected macroeconomic variables, and the Singapore stock market index, as well as with various Singapore exchange sector indices – the finance index, the property index, and the hotel index. The study concludes that the Singapore's stock market, and the property index form cointegration relationship with changes in the short and long –term interest, industrial production, price level, exchange rate and money supply. In his article Ali (2011) investigated the impact of changes in selective microeconomics and macroeconomics variable on stock returns at Dhaka stock exchange, based on regression coefficient, it was found that inflation, and foreign remittance have a negative influence, while industrial production index, market price/earnings, and monthly percent average growth in market capitalization have a positive influence on stock returns. Aamir et al. (2012) analyzed the causal relationship both long –run and short –run between Karachi stock exchange, and some macroeconomics variable in Pakistan, the study revealed the presence of long–run association between macroeconomics variables, and stock prices. Monjurul Muhammed, (2012) investigates the effects of macroeconomic variables of treasury bill interest rate and industrial production on stock returns on Dhaka Stock Exchange for the period between January 2000 and February 2007 on the basis of monthly time series data using Autoregressive Integrated Moving Average (ARIMA) model. The paper has taken the overall market stock returns as an independent variable. It does not consider the stock returns of different companies separately. The ARIMA model finds a positive relationship between Treasury bill interest rate and industrial production with market stock returns but the coefficients have turned out to be statistically insignificant. Singh (2012) explore the causal relation between stock market index i.e. BSE Sensex and the macroeconomic variables of Indian economy namely wholesale price index, indexed industrial production, and exchange rate. Results showed that the indexed industrial production is the only variable having bilateral causal relationship with BSE Sensex, while wholesale price index is having unilateral causality with BSE Sensex. Also the study concluded that Indian stock market is approaching towards informational efficiency. Makan et al. (2012) studied the effect of macroeconomic

variables namely industrial production index, consumer price index, interest rate, exchange rate, oil price, foreign institutional investment, and gold price on Indian stock market. The results showed that the exchange rate, foreign institutional investment, and interest rate have a significant influence on Indian stock market, also the study reveals that in long run the Indian stock market is more driven by domestic macroeconomic factors rather than the global factors.

The survey of literature upon the Jordanian economy shows that numerous studies have been analyzed the factors influence Amman stock exchange performance, majority of them entirely focused on the relationship between Amman stock exchange and selective macroeconomic variables likes gross domestic product, exchange rate, inflation, interest rate, etc. Accordingly, there is a scarce evidence on the nature of interaction between microeconomic variables and Amman stock exchange price index, as far to the knowledge of the researcher, this study attempt to shed light on the relationship between Amman stock exchange price index, and selective microeconomic variables namely capitalization (MC), and market price/earnings.

3. METHODOLOGY

A. Data description and Source

In this paper the Amman Stock Exchange (ASE) performance measured by ASE price index weighted by market capitalization of free – float shares is considered as dependent variable, while the industrial production index (IPI), money supply (MS), Investors confidence (NJI), market capitalization (MC), and market price/earnings (PE) are considered as independent variables. Monthly data of all the dependent and independent variables have been taken for the period between 2011:1 to 2014:3. The data of industrial production index (IPI), and money supply variables were collected from central bank of Jordan data base, while the data of Investors confidence (NJI), market capitalization (MC), and market price/earnings (PE) variables were collected from (ASE) data base. Based on the economy theory and coupled with the results of previous studies, this paper hypothesize certain relationships between the independent variables and Amman Stock Exchange (ASE) performance as measured by ASE price index, the full descriptions of the above mentioned variables, and their hypothesize relationships are explained below.

Amman Stock Exchange (ASE) performance (ASEPI);

It is the dependent variable of the model which measured by ASE price index weighted by market capitalization of free float shares, which is a major stock

market index that tracks the performance of Amman Stock Exchange, and constructed as a results of global development in the domain of the indices calculation (<http://www.ase.com>).

Industrial Production Index (IPI)

This independent variable has been used as a proxy to measure the growth rate in real sector. Industrial production index measures monthly developments of real activity in the industrials sector, comprising Mining and Quarrying, Manufacturing, and Electricity, and it is calculated according to production quantity of a sample representing most domestic industries, and weighted by the production values for industry in base year, according to the production survey carried by department of statistics in 1999 (CBJ monthly statistical bulletin, vol.50 no.4 April 2014), IPI affects stock prices through its influence on expected future cash flows. It is hypothesized that an increase in industrial production is positively related to ASE price index.

Money Supply (M2)

The Money Supply (M2) is equals money supply (M1) plus quasi-money, on the asset side it equals net domestic assets plus foreign assets of the banking system (CBJ monthly statistical bulletin, vol.50 no.4 April 2014). Increase in money supply leads to increase in liquidity that ultimately results in upward movement of nominal equity prices. It is therefore hypothesized that an increase in money supply is positively related to ASE price index (Hasan and Nasir, 2008).

Investors confidence (NJI)

The percent of the Non-Jordanian Ownership of Market Capitalization (NJI) has been used as proxy of Investors confidence, It's expected that an increase in NJI will positively affect the ASE price index

Market Capitalization (MC)

Market Capitalization (MC) represents the number of subscribed shares times the last closing price of the company. It is hypothesized that an increase in Market Capitalization (MC) will leads to an increase in market prices of shares, so it is positively related to ASE price index.

Market Price /Earnings Ratio (PE)

This independent variable is calculated by divided the Market Capitalization by Earnings, and it is expected that an increase in Market Price /Earnings Ratio (PE) will positively affect the ASE price.

B. Research Methods and Model Specification

to check the existences of the long run, and short run relationship among study variables, the current study applies the Autoregressive Distributed lag (ARDL) approach to Cointegration (The bounds test method

Cointegration). This methodology is chosen as it has certain advantages on other co-integration procedures likes Engle and Granger (1987) test, fully modified OLS procedure of Phillips and Hansen's (1990), maximum likelihood based Johansen (1988, 1991) and Johansen-Juselius (1990) tests. The Bounds test method for Cointegration is being applied irrespective of whether the underlying regressors are purely I(0), I(1) or mutually, but no variable is integrate of I(2) or higher (Pesaran et al,2001), as well as the short-run and long-run coefficients of the model are estimated simultaneously. To estimate the parameters of long-run equilibrium relationship between Amman Stock Exchange (ASE) performance (ASEPI), and macro and micro -economic factors, and the short-run dynamic error correction model. The following model is used:

$$\text{ASEPI} = f(\text{IPI}, \text{MS}, \text{MC}, \text{NJI}, \text{PE}) \quad (1)$$

Which can be written in a semi log liner form as

$$\text{LNASEPI} = \alpha_0 + \alpha_1 \text{LNIP}_{t-1} + \alpha_2 \text{LNMS}_{t-1} + \alpha_3 \text{LNNMC}_{t-1} + \alpha_4 \text{LNNJI}_{t-1} + \alpha_5 \text{PE}_{t-1} + \varepsilon_t \quad (2)$$

The conditional error correction of ARDL model for ASE price index and its determinants is given below:

$$\begin{aligned} \Delta \text{LN}(\text{ASEPI}_t) = & \alpha_0 + \sum_{i=1}^n \alpha_1 \Delta \text{LN}(\text{ASEPI}_{t-i}) + \sum_{i=1}^n \alpha_2 \Delta \text{LN}(\text{LNIP}_{t-i}) + \sum_{i=1}^n \alpha_3 \Delta \text{LN}(\text{LNMS}_{t-i}) + \\ & \sum_{i=1}^n \alpha_4 \Delta \text{LN}(\text{LNNMC}_{t-i}) + \sum_{i=1}^n \alpha_5 \Delta \text{LN}(\text{LNNJI}_{t-i}) + \sum_{i=1}^n \alpha_6 \Delta (\text{PE}_{t-i}) + \psi_1 \text{LN}(\text{ASEPI})_{t-1} + \psi_2 \text{LN}(\text{IPI})_{t-1} + \\ & \psi_3 \text{LN}(\text{MS})_{t-1} + \psi_4 \text{LN}(\text{MC})_{t-1} + \psi_5 \text{LN}(\text{NJI})_{t-1} + \psi_6 \text{PE}_{t-1} + \varepsilon_t \end{aligned} \quad (3)$$

Where LNASEPI, LNIP, LNMS, LNNMC, LNNJI, and PE ,are the macroeconomic and microeconomic variables that have been defined in section (3), Δ is the first difference operator, $\alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6$ are the short run coefficients, and the $\psi_2, \psi_3, \psi_4, \psi_5$ and ψ_6 , are the long run coefficients, and ε_t is the white noise error term. As industrial production, money supply, market capitalization, Investors confidence and Market Price /Earnings Ratio (PE) are expected to have a positive effect on Amman Stock Exchange (ASE) performance (ASEPI), therefore the coefficients $\alpha_2, \alpha_3, \alpha_4, \alpha_5$, and α_6 , are expected to be positive, i.e. $\alpha_2, \alpha_3, \alpha_4, \alpha_5$, and $\alpha_6 > 0$

4. EMPIRICAL INVESTIGATION

A. Unit Root Test For Stationary

Augmented Dickey –Fuller (ADF) unit root test was exercised to check the order of integration of the variables, the obtained results clearly indicated that the null hypothesis of unit root for all variables in level forms cannot be rejected at 5%, and 10% significance level except for LNNMC ,and PE variables which are level stationary i.e. I(0), however the null hypothesis of

unit root for the rest variables namely LNASEPI, LNMS, LNIP, and LNNJI can be rejected at 1% significance level when ADF test applied to the first difference i.e. I(1). The applied ADF test reveals that the variables have different orders to be integrated, I(1) or I(0), therefore we cannot apply the Engle Granger (1987) or Johansen Juselius (1990) techniques to find out the co-integration between study variables, since these techniques require that all variables must be stationary and with equal order of integration (Bekhet,2012), the mutually cointegration of I(0) and I(1) gives justification to adopt the bounds test or ARDL approach to be applied in this study, since the bound test method for cointegration is being applied irrespective the order of integration of the variable, there may be either integrated I(1) or I(0). The ADF unit root test results are reported in table (1) below.

Table (1) ADF unit root tests results

Variables	Level	First Differences	Decision Inference
	Constant	Constant	I(1)
LNASEPI	-2.913547	-5.830774***	I(1)
LNMS	-0.117340	-5.885809***	I(1)
LNIP	-1.086994	-6.700244***	I(1)
LNNMC	-	-	I(0)
LNNJI	2.981279**	-	I(1)
PE	-1.515554	-6.080789***	I(1)
	-2.724938*	-	I(0)

Note : ***, **, * imply significance at the 1%, 5%, 10% level respectively

Source: output of EViews Packing, version 7.2

B. ARDL Bounds Test For Cointegration

Having concluded from the ADF results table (1) that the variables have a mutually Cointegration of both I(0) and I(1), which gives justification to adopt the ARDL approach in this study, according to this approach there are two types of relationships among variables; the long-run relationship and short-run dynamic relationship (Malawi,2013). The ARDL approach to Cointegration consists of three stages (Hasan and Nasir,2008). In the first step, the existence of a long-run relationship between the variables is established by testing for the significance of lagged variables in an error correction mechanism regression. Then the first lag of the levels of each variable are added to the equation to create the error correction mechanism equation, and a variable addition test is performed by computing an F-test on the significance of all the lagged variables to test the null hypothesis of no long run relationship, which defined by

$H_0 : \psi_2 = \psi_3 = \psi_4 = \psi_5 = \psi_6 = 0$ against its alternative

$H_1 : \psi_2 \neq 0, \psi_3 \neq 0, \psi_4 \neq 0, \psi_5 \neq 0, \psi_6 \neq 0$

the decision of rejecting or accepting the null hypothesis of no Cointegration among the variable is based on the following procedures (Malawi,2014):



1-If the F statistic $>$ upper bound , the H_0 can be rejected, and the variables are co- integrated

2- If the F statistic $<$ lower bound , the H_0 cannot be rejected, and the variables are not co integrated

3- If the F statistic falls between the lower and upper critical values , the results is inconclusive.

If the F statistic reveals the existence of Cointegration among the study variable , we move to the second stage to estimate the ARDL form of equation where the optimal lag length is chosen according to Schwarz Bayesian. The third stage entails the estimation of the error correction equation using the differences of the variables, and determines the speed of adjustment of returns to equilibrium. The table (2) reveals that the result of the bounds co-integration test demonstrate that the null hypothesis of against its alternative is rejected at 1% significance level since the calculated F-statistics of 7.7906 is greater than the upper critical values 5.06, and thus, infer that there exists a co-integrating relationship among the study variable in the level form.

Table (2) Bound test result

The Model	Calculated F-statistics	Critical values			Inference
		Sig level	Lower bound	Upper bound	
F _{LNASEPI} (LNASEPI, LNMC, LNNJI, PE, LNIPI, LNMS)	F= 7.7906 [.000]	1%	3.74	5.06	Cointegration
		5%	2.86	4.01	
		10%	2.26	3.35	

The critical values are obtained from Persaran et al .(2001) table CI(iii) Case III: Unrestricted intercept and no trend

Source : output of Micro fit Package ,version 4

The results of long -run representations of our analysis are presented in table (3). The estimated coefficients of all variables are statistically significant at 1% level, and have a positive sign as hypothesized, and expected, except the variable LNNJI , indicating that one percent increase in industrial production(IPI), money supply (MS) , market capitalization (MC),and market price/earnings (PE) leads to increase in (ASE) index by (0.3968),(0.428),(0.9217),(0.00349) respectively.

Table (3) : Estimated Long Run Coefficients of LN ASEPI using the ARDL Approach: ARDL(1,2,0,1,0,1) selected base on Schwarz Bayesian

The Long-Run Estimation Results				
	Coefficient	Standard Error	t-statistics	P-Value
Intercept	-12.9492	1.241	-10.4298	0.000
LNMC	0.92177	.036538	25.2279	0.000
LN NII	-1.4924	0.11778	-12.6710	0.000
PE	.0034948	0.7260E-3	4.8137	0.000
LN IPI	.039687	.011246	3.5291	0.002
LNMS	0.42803	0.052765	8.1119	0.000
R-Squared = 0.99370 Adjusted R-Squared = 0.99128 D-W Statistic = 2.5579 Durbin's h-Statistic = -1.9056 [0.057] F-Statistic = 410.0082 [0.000]				

Source : output of Micro fit Package ,version 4.1

The results of error correction representations of estimated ARDL model are shown in table (4) . As can be seen from the table(4) below , the results are in line with the long -run results, except for the PE variable which its coefficient turned out to be statistically insignificant in short run .The one percent increase in industrial production(IPI), money supply (MS) and market capitalization (MC) , leads to increase in (ASE) index by (0.0371),(0.205),(0.953) respectively, Also the results showed that the market capitalization (MC),and money supply (MS) have a great impact on (ASE) index in both short and long run .The equilibrium correction coefficient ECM(-1) estimated (-0.77393) has the right sign (negative) and is highly significant at 1% . The absolute value of coefficient ECM(-1) is very big indicating the very high speed of adjustment to equilibrium following short run shock , the (0.77%) of the disequilibrium caused by the previous months shock converges back to long -run equilibrium in the current month. , this results provides the evidence of Cointegration (long -run relationship) among variables in the model (Samreth.2009).

Table (4) The Short Run Dynamic for Δ LNASEPI : Error Correction Representation for the selected ARDL Model

Regressor	Coefficient	Standard Error	t-statistics	P-Value
Δ LNMC	0.95358	0.35441	26.9058	0.000
Δ LNNJI	-1.1550	0.14456	-7.9901	0.000
PE	-0.4627E-3	0.7341E-3	-0.63023	0.533
Δ LNIPI	0.030715	0.0082482	3.7238	0.000
Δ LNMS	0.20516	0.11216	1.8293	0.078
ECM(-1)	-0.77393	.074842	-10.3409	0.000
ECM= LNASEPI - 0.92177LNMC + -1.4924 LNNJI - .0034948PE (25.2279) (- 12.6710) (4.8137) - .039687LNIPI - 0.42803LNMS + 12.9492C (3.5291) (8.1119) (- 10.4298)				

t -value between ()

Source : output of Micro fit Package ,version 4.1



The robustness of the model has been definite by several diagnostic test such as serial correlation , normality , function form, and Heteroscedasticity by using LM test , skewness and kurtosis test, Ramsey Reset test ,and white test respectively . All diagnostic test reveals that the model has the aspiration econometric properties ,it has a correct functional form ,and the models residuals are serially uncorrelated ,and normally distributed ,and the Heteroscedasticity problem doesn't appear, results of diagnostic test are reported in table (5).

Table (5) Diagnostic Test

Item Prob	Test Applied	CHSQ(x2)	F
Serial Correlation 0.241	Lagrange Multiplier Test	20.6624	1.4755
Normality 0.311	Test of Skewness and Kurtosis	1.5200	1.0710
Functional Form 0.625	Ramsey RESET Test	.093849	NA
Heteroscedasticity 0.294	White Test	1.1605	1.1333

NA: Not applicable

Source : output of Micro fit Package ,version 4.1

Finally to check the stability of short run and long run coefficient in the ARDL error correction model the current study employed the cumulative sum (CUSUM) and cumulative sum of squares(CUSUMSQ) tests. The CUSUM and CUSUMSQ statistics are plotted against the break points. If the plots of CUSUM and CUSUMSQ statistics stay within the critical bonds of 5 percent level of significance, the null hypothesis of all coefficients in the given regression are stable and cannot be rejected, so the model is structurally stable (Green,1993). A graphical presentation of these two test is provided in figures 1 and 2, show that both the CUSUM and CUSUMSQ are within the critical bounds of 5 percent level of significance indicates that the model is structurally stable. The Fig (3) shows the actual fitted values.

Figure 1 Plot of Cumulative Sum of Recursive Residuals

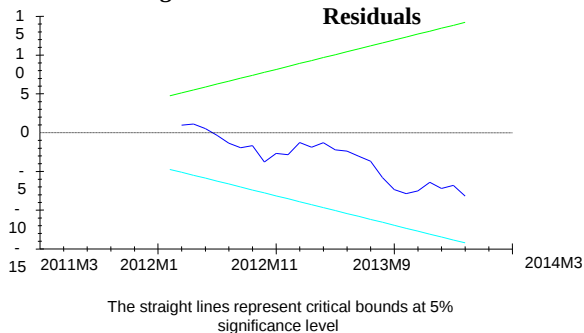


Figure 2 Plot of Cumulative Sum of Squares of Recursive Residuals

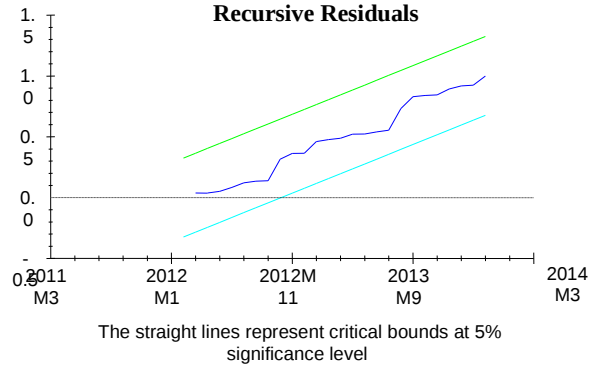
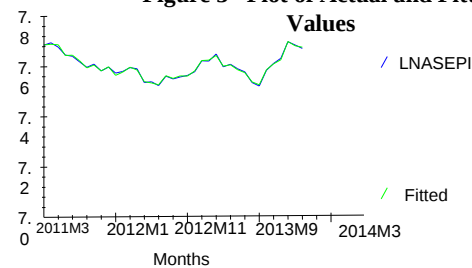


Figure 3 Plot of Actual and Fitted Values



5. CONCLUSION

This paper investigates the equilibrium relationship between micro and macroeconomic variables, and Amman stock exchange (ASE) index through ARDL model(the bound test approach), by using monthly data for the period 2011:1 to 2014:3. Unit root test based on Augment Dickey Fuller (ADF) test procedure shows that the set of the study variables; the industrial production index (IPI), money supply (MS), Investors confidence (FNJI), market capitalization (MC), and market price/earnings (PE) are mutually integrated i.e. I(1),I(0). Consequently the Autoregressive Distributed Lag (ARDL) approach to cointegration was used to explore the long run relationship as well as short term dynamics of relationship between micro and macroeconomic variables ,and Amman stock exchange (ASE) index, Results of ARDL long run coefficients reveal that industrial production (IPI), money supply (MS) , Investors confidence (NJI), market capitalization (MC) , and market price/earnings (PE) are statistically significant in determining (ASE) index in a long run , indicating that an increase in industrial production index (IPI) as a proxy of the growth rate in real sector, money supply(MS) , Market Capitalization (MC), and Market Price /Earnings Ratio (PE) will lead to an increase in ASE price index as a proxy of Amman Stock Exchange (ASE) performance .

The results of error correction model based upon ARDL approach which captures the short term dynamics of (ASE) index and it's determinant, are in line with the long –run results except the results of market price/earnings (PE) which became insignificant . The error correction variable ECM (–1) has been found negative and statistically significant. The Coefficient of the ECM term suggests that adjustment process is quite fast and 77 percent of the previous months disequilibrium in (ASE) index from its equilibrium path will be corrected in the current month .

Data has been tested to examine econometric problems like serial correlation, functional form, normality, Heteroscedasticity. Results indicate that econometric problems like autocorrelation, conflict to normal distribution has not been observed., no model specification error exists with reference to Functional form, and the Heteroscedasticity does not exists. The plots of CUSUM and CUSUMSQ are drawn to check the stability of short run and long run coefficients in the ARDL error correction model. These plots show both CUSUM and CUSUMSQ as within the critical bounds of 5 percent which is an indication of the fact that the model is structurally stable.

REFERENCES

- Aamir Muhammad, . Rasool Nosheen . Fayyaz Maleeha .and Mumtaz Maryam .(2012), The Impact of Macroeconomic Variables on Stock Prices :An Empirical Analysis of Karachi Stock Exchange Mediterranean Journal of Social Sciences Vol. .3(3) September.
- Al Shubiri F.N .(2013), Analysis of Relationship Between Economic Factors and Abnormal Stock Return : Empirical Evidence ,Polish Journal of Management Studies Vol.8.
- Ali Mohammad Bayezid .(2011), Impact of Micro and Macroeconomic Variables on Emerging Stock Market Return : Case on Dhaka Stock Exchange (DSE) ,Interdisciplinary Journal of Research in Business Vol.1 issue .5
- Al-Majali Ahamd A , and Al –Assaf Ghazi I.(2014), Long – Run and Short- Run Relationship Between Stock Market Index and Main Macroeconomic Variables Performance in Jordan ,European Scientific Journal Vol.10 No 10.
- Al-Sharkas, Adel.(2004), The Dynamic Relationship Between Macroeconomic Factors and the Jordanian stock Market ,international Journal of Applied Econometrics and Quantitative Studies Vol.1-1
- Amman Stock Exchange ,<http://www.ase.com>
- Bekhet, Hussain Ali, and Mater Ali. (2012), Co-integration and Causality Analysis Between Stock Market Prices and Macroeconomic Variables in Jordan ,Economic Modeling ,ECMODE-D-12-00995
- El-Nader Mohammed, and Alraimony Diab.(2012),The Impact of Macroeconomic Factors on Amman Stock Market Returns, International Journal of Economics and Finance ;Vol .4,No.12
- Green H,William .(1993) ,Econometric Analysis, Prentice-Hall international ,INC,2nd edition .
- Hasan Arshad , and Nasir Zafer Mueen.(2008), Macroeconomic Factors and Equity Prices :An Empirical Investigation by Using ARDL Approach, the Pakistan development review 47:4 part 11.
- Kimani , K,Danson. and Mutuku,M,Cyrus.(2013), Inflation Dynamics on Overall Stock Market Performance The Case of Nairobi Securities Exchange in Kenya, the Economics and Finance Review Vol .2(11
- Makan Chandni , Ahuja Avneet Kaur ,and CHauhan Saakshi.(2012), A Study of the Effect of Macroeconomic Variables on Stock Market : Indian Perspective ,Munich Personal RePEc Archive , MPRA Paper No43313
- Malawi,Ahmad Ibrahim , and Al Mansi.(2014), Economic Globalization and Labor Productivity: An Application of Autoregressive Distributed Lag (ARDL) bounds Testing Approach, International Journal of Business and Statistical Analysis No.1(JUN-2014) ,University of Bahrain
- Malawi,Ahmad Ibrahim .(2013) The Output Effect of Foreign Aid and Foreign Direct Investment in Jordan ,ARDL Modeling Analysis , Dirasat (Administrative Sciences) , University of Jordan ,Amman , Jordan Vol .40.No.2 July.
- Mayhyereh A.I.(2002)., Causal Relations Among Stock Prices and Macroeconomic Variables in the Small Open Economy of Jordan .available at <http://ssrn.com/abstract=317539> ; //dx.doi.org/10.2139/ssrn.317539
- Maysami Ramin Cooper , Howe Lee Chuin ,and Hamzah Mohamad Atkin .(2004), Relationship Between Macroeconomic Variables and Stock Market Indices : Cointegration Evidence from Stock Exchange of Singapore's All-S Sector Indices ,Journal Pengurusan 24(2004) 47-77.
- Monjurul Muhammed .(2012) .The Effect of Macroeconomic Variables On Stock Returns on Dhaka Stock Exchange .International Journal of Economics and Financial Issues Vol. 2, No. 4, 2012,
- Pesaran M. Hashem , Shin Yongcheol , and Smith Richard .(2001) , Bounds Testing Approaches To The Analysis Of Level Relationships ,Journal of Applied Econometrics 16. DOI 10.1002/jae.616.
- Samreth Sovannroeun , (2009)Estimating Money Demand Function in Cambodia: ARDL Approach, Munich Personal RePEc Archive MPRA ,Paper No:16274
- Singh Dharmendra . (2010), Causal Relationship Between Macro-Economic Variables and Stock Market : A Case Study for India ,Pakistan Journal of Social Sciences (PJSS) Vol .30.No.2