The Effects of Macroeconomic Variables on Stock Returns in the Jordanian Stock Market

*Ibrahim Ahmed Mohamed¹, Sohail Ahmed²
¹Deparment of Accounting and Finance, Management and Science University, Malaysia
²Faculty of Business Management, University Technology MARA, West Malaysia

This study investigated the effects of six macroeconomic variables on the stock returns in the Jordanian financial market between 1976 and 2016 using annual data. The study used the stock return data for 218 companies listed on the market and the quarterly data of the six macroeconomic variables (Industrial production, interest rates, money supply, inflation, GDP, import prices). Autoregressive Distributed Lag (ARDL) model was employed for the estimations. The reason to test these models in the Jordanian stock market was motivated by the fact that the returns of shares in the Arab markets in general do not follow the normal distribution. The results of the estimated ARDL model revealed that the industrial production has a statistically significant effect on the returns of shares at a significant level of 1 percent, and in line with the hypothesis of the study because the relationship was positive. The effect of the money supply on the stock returns is statistically significant, (positive impact of money supply on stock returns), while the impact of import prices was negative and statistically significant on the stock returns. This work has found that it is imperative to search for new markets for the disposal of Jordanian products, and not rely on traditional markets only such as Gulf markets, the Iraqi market, this requires policies to strengthen and support the role of local industries, to develop global quality requirements, and to develop preferential features for products to be compared with those in other foreign markets.

Keywords: Stock returns, Industrial output, Money Supply, interest rate, ARDL, Jordan

INTRODUCTION

Effective or efficient financial markets are regarded as one of the most important factors that contribute to achievement of the desired economic growth in both developed and developing countries. Companies borrow money from these markets or they even sell their stocks in such markets in order to fund or finance their investment activities. This fosters and strengthens the growth, thus giving an evident importance to the financial markets and the relationship between financial development and economic development as a whole. Therefore, the country that invests money well often attracts the most attention of both market participants and policy-makers to its market. This includes the stock market, which is considered the main indicator of the economic power and the progress or development of any country.

The stock market is known as the place where different companies are engaged or involved in purchasing and selling their stocks. This market plays an important role in promoting the economic growth by providing the means for a large aggregation of the capital in the long run through the issuance of stocks and bonds. In general, development of any economy is a basic function of the efficiency of the performance of the stock market. Thus, the stock market with good performance usually has positive impact on the economic activities through growth and provision and allocation of the efficiency of investment. This economy attracts more foreign direct investment and enhances savers’ trust and confidence on such investment funds (Beter, 2014).

*Corresponding Author: Ibrahim Ahmed Mohamed, Deparment of Accounting and Finance, Management and Science University, Malaysia.
E-mail: babailh_22@yahoo.com
Stock exchange market is affected by many interrelated economic, social and political factors. These factors interact with each other in a very complicated way. Therefore, in general, identification of the effective factors on the stock price index and the interaction between financial market variables and macroeconomic variables has been difficult over the past few decades. Studying the relationship between macroeconomic variables and the stock exchange has attracted the interest of many researchers in both developed and developing countries. It has been also often argued that stock prices are determined by some macroeconomic variables such as interest, inflation, money supply, and so on. Moreover, it has been observed that stock prices tend to fluctuate in response to those variables (Ashraf & Suleimam, 2013).

The events surrounding the financial global crises and its financial repercussions have led a strong focus on the relationships between capital markets and real economies. One of these relationships is related to the performance of stock exchange markets and the impact on unemployment rates and expectations of future economic conditions, which have a significant impact on the stock markets of both developed and developing countries, especially Arab countries where the characteristics of such stock markets are different compared to those in developed markets. In addition, most of the stock markets in the Arab countries and the Middle East were founded only a few years ago, and therefore, the nature and work of these stock exchanges are different from those in similar organizations in the USA, Japan and UK. These stock markets are also characterized by fewer listed companies, lower market values, reduced trading volumes, lower turnover, and hence a limited market liquidity compared to the advanced stock markets (Ali, 2011). The contribution of the current study is to investigate the causes of these events and differences that made the Arab stock exchange markets vulnerable to multiple political and economic shocks over time. Thus, long-term stock returns have been recognized as an indicator of the business cycle.

This study therefore, examines the effects of some macroeconomics variables (such as the industrial output, the money supply, inflation rates, import prices, interest rates and GDP) on the stock returns of Jordanian Stock Exchange Market. The remains of this paper is arranged as follows: section two deals with the literature review, section three explains the methodology of the study, sections four and five discuss the results and the conclusion of the study, respectively.

LITERATURE REVIEW

This section reviews the theoretical and recent empirical studies that tested the relationship between stock returns and macroeconomic variables, in order to explain the importance of their effects on stock returns and the extent of strength of such statistical relationships between them. One of the most important previous empirical studies on the relationship between stock returns and industrial production is the study by Rahman et al. (2009) which used different measurement models. The study found that the variable of industrial production has a significant positive impact on the Kuala Lumpur Composite Index (KLCI) compared to the other remaining variables, which had a negative impact on the Malaysian stock market. Roberta et al. (2010) studied the relationship between stock returns and financial leverage based on another previous study by Modigliani and Miller (1958). The study indicated that leverage should be priced as a risk factor for stock returns and therefore, it requires adequate presentation in common asset pricing models. In a study by Yao Shen et al. (2011), the researchers examined the role of macroeconomic variables on the movement of stock prices in Côte d’Ivoire, where the stock price index (SPI) was used to represent the stock market of Côte d’Ivoire and some of the macro-economic variables in the long and short term using Granger test on cointegration and causality.

Said and Ghazali (2012), Ahmed et al. (2017) and Ashraf et al. (2013) are also among the recent studies. On the relationship between stock returns and interest rate, there are several studies (Flannery & James, 1984; Choi et al., 1992; Reilly et al., 2007) which have examined the relationships between the differences or variations of the interest rate and the changes in stock price, and found significance relationships. Moya & Ferrer (2014), Emrah (2009), Mojisola (2010), Asankha (2012), Cengiz and Cagatay (2014) and Nararuk (2014’s studies were also reviewed. Others are Dilek and Elcin (2014), Wanling et al. (2015), Akoth (2016) and Amado (2016).

METHODOLOGY

From the model of Modigliani and Miller (1958), extended by Roberta et al. (2010) and in the model of Flanneri and James (1984) and the studies of Mofleh (2011), Hatem (2014), Nyambo (2016) and Herath (2013) through the inclusion of interest rates, money supply, inflation rate, GDP growth and import prices. In addition, the inclusion of industrial output to determine the level of stock returns in a country’s stock exchange market was an idea used by many researches (see Emrah 2009, Nyajure 2015). Based on these studies, the basic model for this study is presented as follows:

\[ LSTC_t = \beta_0 + \beta_1 \text{Lind}_t + \beta_2 \text{Lintr}_t + \beta_3 \text{LM2}_t + \beta_4 \text{Infl}_t + \beta_5 \text{LGD}_t + \beta_6 \text{Ip}_t + \epsilon_t \]  \hspace{1cm} (1)

where \( STC \) denotes stock returns measured by the stock exchange yields, \( ind \) is the industrial output, \( M2 \) is money supply, \( infl \) is the inflation rate, \( GDP \) is economic growth and \( ip \) is the import price. All data for the variables were collected from the central Bank of Jordan. The expectations of this study are that industrial output, money supply and economic growth should have positive impact on stock returns, while inflation rate, interest rates and import price to have negative impacts on stock returns of the Jordanian stock exchange market.

To achieve the objectives of this study, autoregressive distributed lag (ARDL) bounds testing approach developed by Pesaran, et al (2001) is used. The approach is based on the estimation of unrestricted error correction model (UECM) due to advantages it possesses, some of which are that the model can be applied for small sample size (30-80) data, it estimates for short run and long run model simultaneously and whether the variables are integrated of I(0) or I(1), and the selection of lags is done automatically (Pesaran, et al. 2001). Furthermore, to test for the cointegration or the existence of long run relationship between stock returns and macroeconomic variables, we suggest the use of bounds test as mentioned earlier. Firstly, we estimate the following ARDL-UECM for the Stock returns and the independent variables as follows.

\[ \Delta LSTC_t = \alpha_0 + \sum_{i=1}^{\rho} \alpha_1 \Delta LSTC_{t-i} + \sum_{i=0}^{q} \alpha_2 \Delta \text{Lind}_{t-i} + \sum_{i=0}^{q} \alpha_3 \Delta \text{Lintr}_{t-i} + \sum_{i=0}^{q} \alpha_4 \Delta \text{LM2}_{t-i} + \sum_{i=0}^{q} \alpha_5 \Delta \text{Infl}_{t-i} \\
+ \sum_{i=0}^{q} \alpha_6 \Delta \text{LGD}_t + \sum_{i=0}^{q} \alpha_7 \Delta \text{Ip}_{t-i} + \beta_1 LSTC_{t-1} + \beta_2 \text{Lind}_{t-1} + \beta_3 \text{Lintr}_{t-1} + \beta_4 \text{LM2}_{t-1} + \beta_5 \text{Infl}_{t-1} \\
+ \beta_6 \text{LGD}_{t-1} + \beta_7 \text{Ip}_{t-1} + \epsilon_t \]  \hspace{1cm} (2)

where \( \Delta \) is the difference operator, \( \rho \) and \( q \) are optimal lag length chosen; \( \alpha_0 \) is constant term and \( \epsilon_t \) is the disturbance term in the growth equation. At that point we employ the method suggested by Pesaran et al. (2001), to test for bounds cointegration, which means testing for the existence of long run relationships amongst variables of interest. An F-test, which can be denoted as \( F_{STC} (STC/\text{ind}, \text{intr}, M2, \text{infl}, \text{GDP}, \text{ip}) \) is proposed. The null hypothesis for non-cointegration is \( H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0 \) against the alternative hypothesis \( H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq 0 \), which is rejection of the null hypothesis that cointegration between variables exists, hence, industrial output, interest rate, money supply, inflation rate, economic growth and import price affect stock returns.

The value of the F-statistics is compared with upper and lower critical values provided by Narayan (2005). If the F-statistics exceeds the upper critical value, we reject the null hypothesis and conclude that a long run relationships exists. If the F-statistics fall below the lower critical value, we accept the null hypothesis of no cointegration and then we continue the estimation under the assumption that no log run relationship. The result is inconclusive if the F-statistics fall between the two bounds.

In the event that stock returns and the explanatory macroeconomic variables are cointegrated after estimation (2), the following ARDL equation will be estimated and modified to account for spurious effects as the ARDL-ECM:

\[ LSTC_t = \theta_0 + \sum_{i=1}^{\rho} \theta_{1i} LSTC_{t-i} + \sum_{i=0}^{q} \theta_{2i} \text{Lind}_{t-i} + \sum_{i=0}^{q} \theta_{3i} \text{Lintr}_{t-i} + \sum_{i=0}^{q} \theta_{4i} \text{LM2}_{t-i} + \sum_{i=0}^{q} \theta_{5i} \text{Infl}_{t-i} + \sum_{i=0}^{q} \theta_{6i} \text{LGD}_{t-i} \\
+ \sum_{i=0}^{q} \theta_{7i} \text{Ip}_{t-i} + \epsilon_t \]  \hspace{1cm} (3)

The optimal lag length in equation (3) is selected based on Schwartz Bayesian Criterion (SBC) as suggested by Pesaran et al. (1996). If cointegration exists, we then specify an ARDL-ECM equation as follows:

\[ LSTC_t = \theta_0 + \sum_{i=1}^{\rho} \theta_{1i} LSTC_{t-i} + \sum_{i=0}^{q} \theta_{2i} \text{Lind}_{t-i} + \sum_{i=0}^{q} \theta_{3i} \text{Lintr}_{t-i} + \sum_{i=0}^{q} \theta_{4i} \text{LM2}_{t-i} + \sum_{i=0}^{q} \theta_{5i} \text{Infl}_{t-i} + \sum_{i=0}^{q} \theta_{6i} \text{LGD}_{t-i} \\
+ \sum_{i=0}^{q} \theta_{7i} \text{Ip}_{t-i} + \epsilon_t \]  \hspace{1cm} (4)
\[ \Delta LSTC_t = \gamma_0 + \sum_{i=1}^{\rho} \gamma_{1i} \Delta LSTC_{t-1} + \sum_{i=0}^{q} \gamma_{2i} \Delta \text{Ind}_{t-1} + \sum_{i=0}^{q} \gamma_{3i} \Delta \text{Intr}_{t-1} + \sum_{i=0}^{q} \gamma_{4i} \Delta LM_{2t-1} + \sum_{i=0}^{q} \gamma_{5i} \Delta \text{Inf}_{t-1} + \sum_{i=0}^{q} \gamma_{6i} \text{LGDP}_{t-1} \]

\[ + \sum_{i=0}^{q} \gamma_{7i} \text{Lip}_{t-1} + \lambda \text{ECM}_{t-1} + \mu_t \]

(4)

where \( ECM_t \) is the error correction term defined as

\[ ECM_t = LSTC_t - \left[ \theta_0 + \sum_{i=1}^{\rho} \theta_{1i} \Delta LSTC_{t-1} + \sum_{i=0}^{q} \theta_{2i} \Delta \text{Ind}_{t-1} + \sum_{i=0}^{q} \theta_{3i} \Delta \text{Intr}_{t-1} + \sum_{i=0}^{q} \theta_{4i} \Delta LM_{2t-1} + \sum_{i=0}^{q} \theta_{5i} \Delta \text{Inf}_{t-1} \right. \]

\[ \left. + \sum_{i=0}^{q} \theta_{6i} \text{LGDP}_{t-1} + \sum_{i=0}^{q} \theta_{7i} \text{Lip}_{t-1} \right] \]

(5)

From equation (4), \( \gamma_1, \gamma_2, \gamma_3, \gamma_4 \) and \( \gamma_5 \) are short run dynamic coefficients of the model’s convergence to equilibrium, \( \lambda \) is the speed of adjustment parameter and \( ECM \) is error correction term.

**RESULTS**

In this section, we present the results. Table 1 reports the unit root test results, which checks the level of stationarity of all variables under study. The Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) were used in checking the stationarity of the data.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Statistic Values</th>
<th>Significance</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lstc</td>
<td>Augmented Dickey-Fuller</td>
<td>-5.166642</td>
<td>0.0002</td>
</tr>
<tr>
<td></td>
<td>Phillips Peron</td>
<td>-4.594910</td>
<td>0.0001</td>
</tr>
<tr>
<td>Lop</td>
<td>Augmented Dickey-Fuller</td>
<td>-7.289717</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>Phillips Peron</td>
<td>-15.24277</td>
<td>0.0000</td>
</tr>
<tr>
<td>Lm2</td>
<td>Augmented Dickey-Fuller</td>
<td>-5.377969</td>
<td>0.0002</td>
</tr>
<tr>
<td></td>
<td>Phillips Peron</td>
<td>-6.307970</td>
<td>0.0002</td>
</tr>
<tr>
<td>Lint</td>
<td>Augmented Dickey-Fuller</td>
<td>-4.786613</td>
<td>0.0002</td>
</tr>
<tr>
<td></td>
<td>Phillips Peron</td>
<td>-6.946013</td>
<td>0.0000</td>
</tr>
<tr>
<td>Linf</td>
<td>Augmented Dickey-Fuller</td>
<td>5.042704</td>
<td>0.0001</td>
</tr>
<tr>
<td></td>
<td>Phillips Peron</td>
<td>-11.87367</td>
<td>0.0000</td>
</tr>
<tr>
<td>Lind</td>
<td>Augmented Dickey-Fuller</td>
<td>-6.113222</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>Phillips Peron</td>
<td>-10.11009</td>
<td>0.0000</td>
</tr>
<tr>
<td>Lgdp</td>
<td>Augmented Dickey-Fuller</td>
<td>-7.061998</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>Phillips Peron</td>
<td>-6.249841</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

The unit root test is done to ensure all the variables are not spurious. It is required to be performed in order to ascertain the stationary of the data either at the level {I (0)} or at the first difference {I (1)}. The result of the unit root test showed that not all the variables are stationary at level, this rendered the use of Johansen Jusellius and Engle-Granger based cointegration test not feasible. However, the results revealed that all the variables are stationary at first difference and at one present significant level, using both ADF and PP tests. This rendered the use of Autoregressive Distributed Lag (ARDL) model developed by Pesaran, et al. (2001) feasible. Based on this we employed the ARDL approach in estimating the cointegration relationship among our variables of interest; and establish the global relationship between the dependent variables and the independent variables. The cointegration bounds test of the ARDL is conducted to determine the existence of long run relationship between the variables of interest; hence the global relationships between the variables are established.

**ARDL Bounds Test**

Based on the findings in Table 2, the computed value of \( F \) statistics is 5.82, this value is greater than the critical value of the upper bound in Narayan (2005) table at 1 percent. It indicates the existence of cointegration between the dependent variable and the independent variables. Therefore we can reject the null hypothesis that there is no co-integration between the variables, and thus we can proceed to estimate long run coefficients and short run model.

<table>
<thead>
<tr>
<th>Model</th>
<th>Critical Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>( F_{ls}^{Istc/(lop, lm2, linf, lint, lind, lgdp)} )</td>
<td>5.82***</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F-stat</th>
<th>Sig</th>
<th>Lower</th>
<th>Upper</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.82</td>
<td>1%</td>
<td>4.01</td>
<td>5.79</td>
<td>Co-Integration</td>
</tr>
</tbody>
</table>

**Note:** The critical values are from Table III Unrestricted Intercept with no Trend in Narayan (2005), *** Denotes 1% significance level.
On testing the Autoregressive Distributed Lag (ARDL) model cointegration bounds test, we found that the independent variables are cointegrated with the dependent variable. This means that stock returns have a long run relationship with the macroeconomic variables used by this study. The cointegration bound test is done to ensure the existence of long run relationship among the variables of interest. The results revealed that the variables are cointegrated at 1 percent significance level which means that long run relationship exists between the dependent variable and the independent variables. This relationship can be explained by the fact that the F-statistics (5.82) is greater than the values of both the lower I (0) and the upper I (1) bounds of the Narayan (2005) table at 1 percent critical values; these values are 4.01 and 5.790 respectively. Since the variables are cointegrated it means that global relationship has been established between stock returns (dependent variables) and the independent. Therefore, the estimate of their long run coefficient can be obtained.

Long run Model

Long run is the conceptual time period in which there are no fixed factors of production, so that there are no constraints preventing changing the output level by changing the capital stock or by entering or leaving an industry. The long run contrasts with the short run, in which some factors are variable and others are fixed, constraining entry or exit from an industry. In macroeconomics, the long run is the period when the general price level, contractual wage rates, and expectations adjust fully to the state of the economy, in contrast to the short run when these variables may not fully adjust. The Table 3 below presented the results of the long run model with stock returns (LSTC) as the dependent variable.

Table 3: Results of the Long run model with LSTC as the dependent variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>T-Ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lm2</td>
<td>1.990090</td>
<td>0.911372</td>
<td>2.183618</td>
<td>0.0341</td>
</tr>
<tr>
<td>Lindf</td>
<td>-3.300702</td>
<td>1.024221</td>
<td>-3.22264</td>
<td>0.0023</td>
</tr>
<tr>
<td>Lint</td>
<td>0.486213</td>
<td>0.972103</td>
<td>-0.500166</td>
<td>0.6193</td>
</tr>
<tr>
<td>Lind</td>
<td>3.196600</td>
<td>0.982042</td>
<td>3.255054</td>
<td>0.0021</td>
</tr>
<tr>
<td>Lop</td>
<td>-5.225272</td>
<td>2.232345</td>
<td>-2.350068</td>
<td>0.0231</td>
</tr>
<tr>
<td>Lgdp</td>
<td>0.482703</td>
<td>0.362340</td>
<td>1.332185</td>
<td>0.1894</td>
</tr>
<tr>
<td>inpt</td>
<td>-2.426074</td>
<td>23.93622</td>
<td>-0.101356</td>
<td>0.9197</td>
</tr>
</tbody>
</table>

Note: The Long run Model was Based on ARDL (1, 4, 1, 0, 1, 4, 0), inpt is a constant

From the above Table 3, this study discovered that four out of six of the macroeconomic variables considered as the independent variables have exhibited significant relationship with the dependent variable, stock returns (Lstc). The four variables that revealed significant relationships are money supply, inflation rates, industrial production and import prices, which is measured by the oil price. The relationship between money supply and stock returns showed a positive one, which means that a 1 percent increase in money supply leads to 1.99 percent proportionate increase in stock returns in Jordan, the relationship is significant at 5 percent. The rate of inflation in Jordan is negatively related to stock returns; a 1 percent increase in the rate of inflation in Jordan will lead to 3.3 percent decrease in the rate of stock returns of the country and the effect is significant at 1 percent level. Industrial production and stock returns in the case of Jordan are related positively and significantly; a 1 percent increase in industrial output proportionately leads to 3 percent increase in stock returns and at 1 percent significance level. On the other hand, oil price represented by the import price, is negatively related to stock returns in Jordan, a 1 percent increase in oil prices will explosively trigger a 5 percent decrease in returns from stock. The relationship is significant at 5 percent level of significance. Moreover, all these relationships between the four explanatory variable mentioned above and the explained variable are in line with the expectation of this study. Besides, GDP growth and interest rates do not exhibit significant relationships with stock returns in Jordan.

An interesting question concerning this insignificant relationship between interest rate, in particular, is that can interest rates affect stock returns positively? The answer to this simply puts; The positive effect exhibit by interest rate on stock return gains, although not that meaningful because the probability value is more than 0.61 was as a result of the accumulated interest loans in the country.

The Short Run Model and the Error Correction Term

All production in real time occurs in the short run. The short run, in economics, expresses the concept that an economy behaves differently depending on the length of time it has to react to certain stimuli. The short run does not refer to a specific duration of time but rather is unique to the firm, industry or economic variable being studied. A key principle guiding the concept of short run and long run is that in the short run, firms face both variable and fixed costs, which means that output, wages and prices do not have full freedom to reach a new equilibrium. Results of the short run and the error correction term are presented in Table 5 below.

Table 4: Results of the Short-run model with LSTC as the dependent variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>T-Ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lm2</td>
<td>1.799090</td>
<td>0.682744</td>
<td>2.634969</td>
<td>0.0114</td>
</tr>
<tr>
<td>Lindf</td>
<td>5.449002</td>
<td>0.871721</td>
<td>6.250886</td>
<td>0.0000</td>
</tr>
<tr>
<td>Lint</td>
<td>-3.86213</td>
<td>0.972103</td>
<td>3.000166</td>
<td>0.6193</td>
</tr>
<tr>
<td>Lind</td>
<td>3.194557</td>
<td>0.739416</td>
<td>-4.320381</td>
<td>0.0001</td>
</tr>
<tr>
<td>Lop</td>
<td>4.824846</td>
<td>1.736027</td>
<td>2.779246</td>
<td>0.0079</td>
</tr>
<tr>
<td>Lgdp</td>
<td>-0.482703</td>
<td>0.362340</td>
<td>-1.332185</td>
<td>0.1894</td>
</tr>
<tr>
<td>ECM – 1</td>
<td>-1.186393</td>
<td>0.107179</td>
<td>-11.06929</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Note: The short run Model was Based on ARDL (1, 4, 1, 0, 1, 4, 0), ECM is error correction term
The real GDP per capita on the other hand did not show significant impact on stock returns in the long run and short run. The relationship revealed that real GDP per capita did not induce or increase stock returns in the short run. The positive association between Growth and stock failed to conform to the theory of growth. Lee (2013) also found Growth and stock do not cause one another nor contribute to the development of one another. To make stock returns a reality in Jordan, there is a need to improve the real GDP per capita growth of the country increase in productivity of some vital sectors like the oil and the agricultural sectors will help boost export and internally generated revenue. The error correction model (ECM) coefficient showed a negative value of -1.186 with a significant level of 1 percent. This means that the speed of adjustment from the long run to the equilibrium point is 100% annually, Shin, et al. (2001). This means that the validity of the ECM coefficient is to have a negative value, not necessary less than unity (one) and to be significant.

The Diagnostic Test

The diagnostic checks showed that the variables under study are free from problems of serial correlation, functional form misspecification and heteroskedasticity. The results of the diagnostic checks are displayed in the table below.

Table 5: Results of the Diagnostic Test

<table>
<thead>
<tr>
<th>Test Statistics</th>
<th>LM Version</th>
<th>F-Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Correlation</td>
<td>CHSQ(2)=1.1488[.563]</td>
<td>F(2, 23)=.42822[.657]</td>
</tr>
<tr>
<td>Functional Form</td>
<td>CHSQ(1)=2.4438[.118]</td>
<td>F(1, 24)=1.9844[.172]</td>
</tr>
<tr>
<td>Heteroskedasticity</td>
<td>CHSQ(1)=1.2555[.262]</td>
<td>F(1, 30)=1.2251[.277]</td>
</tr>
</tbody>
</table>

The above diagnostic test is performed after we found that all the variables are cointegrated which means global relationship exists between the dependent variable and the independent variables. The diagnostic test results above revealed that the variables under study are free from functional form misspecification and Heteroskedasticity in the error term. The Durbin-Watson statistics is fairly high this indicates the absence of serial correlation among the variables. Serial correlation is the relationships between a given variable and itself over various time intervals.

CONCLUSION

This study examined the relationship between stock returns and six macroeconomic variables using the cointegration bounds test of the ARDL model in the Amman Stock Exchange, in Jordan. The results revealed that industrial production positively and significantly impacts stock returns of the Jordanian stock exchange market, the impact is in line with expectation of the current study and several other previous ones outside Jordan. The money supply also impacts positively on stock returns, the relationship is significant and conformed to expectation of the study. On the other hand, inflation and import price affect the stock returns of Jordan negatively and significantly, which is also in line with priori expectation of this study and the previous studies outside Jordan.

Furthermore, this study recommends that the role of domestic and foreign investment should be enhanced. The search for new markets for the disposal of Jordanian products, and not rely on traditional markets only as Gulf markets, the Iraqi market, this requires policies to strengthen and support the role of local industries, to develop global quality requirements, and to develop preferential features for products comparable to those in other foreign products. Diversifying the sources of income, finding the necessary infrastructure to improve the role of investment, reduction of budget and balance of payment deficits are also hereby recommended.

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