“Impact of the investment and gross domestic product (GDP) on the Amman stock exchange index”

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Impact of the investment and gross domestic product on the Amman Stock Exchange index

Abstract

This research aims to study the effect of the change in investment and gross demostic product (GDP) on the Amman Stock Exchange Index, through the study of the relationship between the change in the investment and the rate of growth in gross domestic product (GDP) and the movement of Amman Stock Exchange index for the period of 1990-2009. To test the hypotheses the study has used statistical analysis (SPSS), and chooses the multiple regression to analyze the relationship between the dependent variable (Amman Stock Exchange Index) and the independent variables (the investment and GDP).

The study concluded that there are relationship between two macroeconomic indicators (the investment and GDP) and the Amman Stock Exchange index, and between each of them separately and the stock index, which means that the movement of prices in the Amman Stock Exchange affected by the movement of these two variables, and there is the effect of both variables on the movement of Amman Stock Exchange index. The impact of the change in investments was greater than the impact of change in GDP on the Amman Stock Exchange index.

The study recommended the importance to the investment in Jordan because of it's great impact on the Amman Stock Exchange index, and increase investment into the Jordanian economy, and the adoption of economic policies that stimulate the diversification of the components of the Jordanian economy in order to increase the impact of growth in gross domestic product on the index, especially that the index includes various sectors of the Jordanian economy.

Keywords: investment, gross domestic product (GDP), Stock Exchange.
JEL Classification: E22, E23, E44.

Introduction

The financial indicators in the stock market are affected by the environment and the variables of all or some elements of the macroeconomic and through the stages of economic development will lead to an economic fluctuations regularly affecting significantly the levels of economic and financial activity, and the movement and direction of economic indicators, and the elements of the economy affecting the GDP and the investments over periods of time (O'Sullivan & Steven, 2003, pp. 57-310), and these elements lead to changes the movements of the index "up or down". At the same time it affects the movement of this element on the trends in stock prices and thus on the stock exchange.

The activity of public shareholding companies that are trading their securities in the financial market is the most important and the largest impact in the economic activity and the index would reflect the general situation of the economy, because it is a mirror that reflects the general situation of the market and price trends, and the investor can predict present and future trends by analyzing the stock exchange, and this provides the tools and information that facilitate investment decisions that will protect its capital through diversification of securities, or choose the right tool or hedging instruments to reduce the loss in the future through investing into a futures or options markets.

The Amman Stock Exchange is affected by the change in macroeconomic indicators in addition to the privacy-related nature of the Jordanian economy and financial system that is characterized by high surplus in the funds and liquidity in a few of the companies, for example: the financial assets are concentrated in the sector banks, 240% of the gross domestic product in Jordan in 2006 (Central Bank of Jordan, 2006), in addition to the Stock Exchange index is affected by other elements such as cash flows from outside Jordan and the foreign capital that is part of the investments (Joseph, 2008, p. 14).

The Amman Stock Exchange include a number of companies reached until the year 2010 (268), companies representing three main sectors (financial sector, the service sector, the industrial sector) (United Company for Financial Investments, 2010, pp. 497-499).

Due to the importance of stock exchange indices in making investment decisions, especially for users of technical analysis method, the study of the elements that affect the index is important, and when analyzing the work of the stock exchange and indices it was noted that there is an effect on stock prices and consequently on the index, caused by the change in the main economic factors in that country, therefore the problem of the study are summarized to answer the following questions:

1. Is there effect of the value of the macroeconomic indices (the investment and GDP) on the Amman Stock Exchange index?

2. Is there effect of the investment on the Amman Stock Exchange index?
3. Is there effect of the change in the GDP on the Amman Stock Exchange index?

The importance of the study shed light on the knowledge of the main elements in the Jordanian economy that impact the Amman Stock Exchange Index, the importance of the use of this indicator by investors, who use technical analysis to make decisions to buy and sell securities.

The gross domestic product (GDP) and the investment of the important factors are affecting the Amman Stock Exchange index.

The importance of this study is to achieve the following:

1. Knowledge of the impact of some main variables in the Jordanian economy on Amman Stock Exchange index.
2. Identify the relationship between the change in the rates of GDP and the investment in the Jordanian economy and the movement of the Amman Stock Exchange index.

1. The theoretical framework

1.1. Concepts. *1.1.1. Amman Stock Exchange and indicators of financial markets.* The stock market is a place which brings buyers and sellers together to complete the financial transactions and the exchange of short-term, medium or long-term securities (Hanafi, 2002, p. 12), and is in exchange which ensures the success of the trading process to achieve the objectives of the stock market and investors (Alzarkan, 2006, p. 9).

The Amman Stock Exchange aims mainly to provide the right environment to ensure the success of trading operations and the interaction of the supply and demand for securities traded and achieves fair trading (Khatib, 2006, p. 30).

The indicators are statistical data used as a criterion to measure the overall performance of the market and financial market trends, and these indicators vary in terms of style of calculation and number of securities to calculate the index. The index is a numeric value that measure actual changes in the financial markets, and is composition in the first stage of the founding stock index then compared the value of the index with the base year or the start point, and through the index is identified the movements of prices and trends, in addition to its use as a criterion for the performance of stock exchanges, and are followed index by investors who depend on the style of technical analysis in financial markets in order to get the profits, and Kovl sees that those who follow the index achieves the real profits, because their decisions are based on information and one of the basic information is price (Kovl, 2007, pp. 38-39) and the common thing among all stocks traded in the market is the price that reflects the data objectivity. We can compare prices and measure its movement through the index, because the price is what makes the news.

Indicators and financial markets play an active role in the trading of securities in financial markets because reflect the prices and its movement and the importance of indicators in the following:

1. The index is a summary to the performance of financial markets because it contains prices of companies in all sectors and in turn, reflects their performance because the amount affected by changes in economic conditions and is used to judge the performance of managers.
2. The index helps the financial markets and participants to re-regulate the market, through arbitrage operations that define the elements that led to the deviation of prices and corrected the direction of prices accurately and measure systemic risk.
3. The indicator is an effective tool to compare the level of the stock or sector or the market with standards or with selected indicators of financial markets in other countries and contributes to the prediction what the situation will be in the market.

We must be given the care of sufficient scientists who select the sample and the construction of the index. This sample is appropriate on three sides (Al Shabib, 2011, p. 93): size, breadth, the source when you join the stock to the list of stocks selected to build the index. The size is the number of securities comprising the pointer, and the widening is to cover the index of all sectors in the market, and the third condition that the secondary market is the basic source on stock prices upon which the index, and other conditions such as degree of liquidity of the stock, while avoiding the focus on one sector and weighting using the capital value of the company and its shares follow-up and fully paid shares of companies that declare bankruptcy or merge with the other companies.

1.1.2. The objectives of financial indicators in the financial markets. The financial indicators aimed to understand the general direction of price movements in the financial market in terms of height up or down and helps in making buying and selling decisions, and support some investors. These indicators as an instrument of investment are contracted on this basis, such as derivative contracts, and there are many factors that affect these indicators through the impact on the buying and selling and the price of stocks that depend on the movement of these indicators, these factors are:

1. The accuracy and transparency of data, information, and news in the financial market.
2. The ability of dealers to use the rumors to influence the movement of prices and trading size.
3. Time.
4. The nature of competition and speculation in the financial market (for example, large corporations affect small businesses).

1.1.3. Amman Stock Exchange index. This index depends on the basis of selection of a sample of 100 companies of the total number of companies on the Stock Exchange with $277 company, five criteria has been adoption for selecting stocks in index to reflect the firm size and liquidity, and these standards are: the market value of the company, the number of trading days, the rate of rotation of the arrow, trading volume and number of shares traded and are taking the sectorial representation when selecting the sample.

The index is based on free float securities, so that it gives a better representation of the movements of stock prices in the market and reduces the impact of companies with high market value in order to reduce its impact on the value of the indicator, and the index built on the arbitrage market value of the shares free-for-trading (Free Float) in companies and not the total number of shares listed for each company (www.jsc.gov.jo).

1.1.4. The investment. Investment is spending of the business sector on capital goods and inventory and it is in addition to real assets produced in the economy during a specific time period, and the investment is affected by fundamental economic concepts, as: income and consumption and savings, Kenneth defined the investment that employs money and assets for a period of time in order to obtain profits (Kenneth, 2007, p. 3).

According to Koyo (Lucio, 2008, p. 44) investment is a postponing current consumption as for consumption and greater benefit in the future, Al Shbib defined the investment (Al Shabib, 2009, p. 15) in the invest of funds available in the diverse assets for the real financial flows in the future. These flows of a compensation obtained by the investor instead of using these funds by other investors throughout the period.

The importance of investment is increasing production and productivity, and production of goods and services that satisfy the needs of citizens and a surplus for export to the outside (Lucio, 2008, p. 36). The foreign direct investment increase employment and contribution in the formation of fixed capital, and thus contribute to job creation in two stages, first during the construction phase, and the second at the entry of new investments in production (Meit, 2010, p. 18).

The investments are aimed to transfer purchasing power and the financing of trade in goods and services as well as capital transfers between countries (Hiti and Alkshali, 2007, p. 166).

The investment in the stock market is characterized from other investments in many of the factors (Shawawrah, 2008, pp. 41-42), a change in the rate of return because of the presence of two types of returns for securities which the current returns and capitalism returns and the low degree of overall risk because of the possibility of diversification of investment instruments available for trading in the financial market, and provide an element of liquidity to the secondary market (Kevin, 2008, p. 6).

1.1.5. GDP. Gross domestic production (GDP) is the total value of goods and services produced by different economic sectors during the year, and GDP is the sum of monetary values of all final goods and services produced by the society during the period of one year (Yanne, Arttu, Philipp and Isabel, 2007, p. 3).

It is a measure of the size of the economic production of goods and services from the resources owned by the citizens of a particular area in a period of time (Stephany and Krishnan, 2006, p. 13).

Joseph define the GDP (Joseph, 2008, p. 23) is one of methods of measuring the quantity of the economy and the growth of the economy and it measures the level of well-being of the individual and the standard of living of the individual, through the calculation of the values of goods and services of a countries within a year only, the gross domestic product, is an indicator of total economic activity in the country, and assesses the economic policies of the countries.

1.2. Previous studies. There are several studies that focused on factors affecting on the stock exchange index. Tuomas, Ricardo & Isabel (2011) investigate the factor basics, financial, and dynamic investment in emerging markets. The study used the methodology of the direction of the gradient regression (PVAR) to analyze the adaptation of private investment in the short term to shocks to the fundamental factors and financial in emerging market economies, the researcher concluded the following: (1) the investment adapts slowly with shocks of these investments; (2) GDP and shocks in stock prices has a positive impact and significant investments in the financial market; (3) the investment response to developments in the credit market will be driven by demand. In addition, the events indicate that the effects of vibrations on the stock prices are identical in emerging Asia and Latin America, but the emotion, the credit is more important in Latin America. Moreover, the impact of the lending rate will be very clear and negative in the European emerging markets, and finally show that the stock market bubbles may be an incentive in real investment in nineties.

Boyer and Filion (2011) study the impact of investment flows on stock returns in the stock market, the study aimed to analyze the relationship between stock market index returns and cash flows (net purchases of shares) for a large number of investment groups in the United States during a period of 1952-2004, the study found a strong relationship between the automatic quarterly flows of different investment groups and between the stock prices, and existence of a close relationship between stock market returns and the cash flow of investment funds and foreign investors.

Bennacer, Boughrara, Ghazouani (2007) study measuring the interaction between asset markets and monetary policy on a sample of eight countries and found that there is little effect of monetary policy on the share price.

Zubi (2000) study "The impact of variables on stock prices and trading volume in Amman Stock Exchange for the period (1978-1998). This study aimed to investigate the effect of macroeconomic variables on the Amman Stock Exchange index, the study concluded Amman Stock Exchange index responded to macroeconomic variables together, and there was no any relationship between each independent variable of variables selected separately and the dependent variable only when the general index of the financial market slowed down.

Al Shubiri (2010) study the determinants of the movement of stock prices in the Amman Stock Exchange case study of commercial banks in Jordan. The study has found there is relationship between market prices and net asset value per share, and there is no relationship between prices and the inflation rate and the rate of interest rates.

Billmeier Massa (2008) study the macroeconomic determinants of stock market. The study aimed to assess the macroeconomic determinants of stock market in 17 markets from emerging countries in the Middle East and Central Asia in addition to the markets of countries with rich natural resources. The study used many traditional variables in assessing the determinants of macroeconomic and its impact on market shares in the markets. The authors concluded that the variables have institutional impact on the shares of the market, while the traditional variables and institutional relationship were strong in the markets with poor natural resources. The study showed that the main factor that affected the determinants of stock prices in the countries with rich natural resources was affected mainly by the price of oil.

Altwaijri (2006) studied the "Factors affecting on the Saudi stock market". The aim of this study was to investigate the factors affecting the stock market in Saudi Arabia. The study found that the most important influencing factors are: oil prices, national income, money supply, interest rates and inflation rates.

Mitas (2004) studied the "Factors Affecting on the Mechanisms of the Stock Exchange". The aim of this study was to investigate the factors influencing the indicators of the Egyptian Stock Exchange, the result has shown the most influential factors are: the supply and demand, transparency, and rumors, and the economic situation and political climate.

1.3. Hypotheses. The study aimed to explain the effect of the investment and GDP on the Amman Stock Exchange index. We test the following hypotheses.

The main hypothesis: The dimensions of the investment and GDP have positive impact on the index of Amman Stock Exchange.

This main hypothesis is divided in to two sub-hypothesis:

H1: The dimensions of the investment have positive impact on the index of Amman Stock Exchange.

H2: The dimensions of the gross domestic product have positive impact on the index of Amman Stock Exchange.

2. Methodology of the study

The study adopted the descriptive and analytical system that had been seen on the literature study and previous studies, and used the information provided by the Central Bank of Jordan and Amman Stock Exchange about the size of investment, gross domestic product (GDP) and Amman Stock Exchange Index. The data were taken for the years 1999-2009 to test hypotheses of the study.

2.1. Test hypotheses. This section contains the results of the study that aimed to study the effect of the investment and GDP on the Amman Stock Exchange index, using the SPSS statistical analysis program for the purposes of analysis.

2.1.1. Test the main hypothesis. The dimensions of the investment and GDP have positive impact on the index of Amman Stock Exchange.

To test the main hypothesis the study uses the multiple regression to analyze the relationship between the dependent variable Amman Stock Exchange index (y) and the independent variables (the investment (x_1) and GDP (x_2), it has been shown that the values of the correlation coefficient of the three, namely, simple correlation coefficient R equal to

0.97 and the coefficient of determination R_2 equal to 0.94 and finally the coefficient of determination debugger, R_2 equal to 0.939, which means that the independent variables (the investment, gross domestic product) were able to explain the almost 0.94 of the changes taking place in Amman Stock Exchange Index (y) and the remainder (0.06) is attributable to other factors.

The analysis of variance and the explanatory power of the model as a whole through statistical table of F, and analysis of variance to test the significant high F ($P < 0.0001$) confirms the high explanatory power for the multiple linear regression model from a statistical standpoint.

Table 1. The values of the regression coefficients of the capabilities and statistical tests of the significance of these transactions

Dependent variable	Dependent variable		
Y	Fixed limit	X_1	X_2
Value of coefficient	-.767	2.543	0.27
Values of t test	-2.76	9.114	-2.182-
Significance	0.013	0.000	0.043

We can conclude from Table 1 that the independent variables (the size of investment and GDP) were significant from a statistical standpoint, according to t test (at the level of significance $P \leq 0.05$), and by scientific logic to analyze the relationship between the investment and GDP and the index there are influence of the movement of the two elements on the index, and have had a direct correlation with the index, that is if the investment and gross domestic product rise the index will rise also, and that means there are the effect of both variables (the investment and GDP on the movement of Amman Stock Exchange index).

The coefficient of the size of investment was (2.54), which was identical to the main hypothesis, and meant that every increase in the investments by one would lead to increase the index by 2.5 points, and the GDP was (0.27), which meant that every increase in gross domestic product by one point would lead to a rise by the index (0.27) points.

2.1.2. Test the first hypothesis. The dimensions of the investment have positive impact on the index of Amman Stock Exchange (H1).

To test the first hypothesis multiple regression was used to analyze the relationship between the dependent variable Amman Stock Exchange index (Y) and the independent variable investment (x_1). It has been shown that the values of the correlation coefficient are simple correlation coefficient R which equal to 0.96 and the coefficient of determination R_2 equal to 0.93 and finally the coefficient of determination debugger R_2 which is equal to 0.927, which means that the independent variable (the investment) can be explained by 0.92 almost from the changes taking place in the Amman Stock Exchange index (Y) and the remainder (0.08) is attributable to other factors.

The analysis of variance and the explanatory power of the model as a whole through statistical table of F, and analysis of variance to test the moral high F ($P < 0.0001$) confirms that there is explanatory power for the multiple linear regression model from a statistical standpoint. Table 2 shows the values of the regression coefficients of the capabilities and statistical tests of the moral to the investment and the Amman Stock Exchange index.

Table 2. The values of the regression coefficients of the capabilities and statistical tests of the moral to the investment and the Amman Stock Exchange index

Dependent variable	Independent variable	
Y	Fixed limit	X_1
Value of coefficient	-963.4	1.990
Values of t test	-3.333	15.515
Significance	0.004	0.000

From the table we conclude that the independent variable (the investment) is significant from a statistical standpoint, according to T test (at the level of significance $P \leq 0.05$).

According to scientific logic to analyze the relationship between the investments and the stock market, there is effect of the investment on the movement of Amman Stock Exchange index. The value of the coefficient of the investment is (1.9), which is identical to the first hypothesis, which means that every increase in the investments by one will lead to increase in the index by 1.9 points.

2.1.3. Test the second hypothesis. The dimensions of the gross domestic product have positive impact on the index of Amman Stock Exchange (H2).

To test the second hypothesis a multiple regression was used to analyze the relationship between the dependent variable Amman Stock Exchange index (Y) and the independent variable GDP (x_2). It has been shown that the values of the correlation coefficient are simple correlation coefficient R, which equal to 0.82 and the coefficient of determination R_2 equal to 0.68 and finally the coefficient of determination debugger R_2 which equal to 0.662, which means that the independent variable (GDP) can explain almost 0.62 of the changes taking place in Amman Stock Exchange index (Y) and the remainder (0.38) is attributable to other factors. The analysis of variance and the explanatory power of the model as a whole through statistical table of F, and analysis of variance to test the significant high F ($P < 0.000$) confirm there is explanatory power for the multiple linear regression model from a statistical standpoint.

Table 3 shows the values of the regression coefficients of the capabilities and statistical tests of the significance of the GDP and the Amman stock exchange index.

Table 3. The values of the regression coefficients of the capabilities and statistical tests of the significance of the GDP and the Amman stock exchange index

Dependent variable	Independent variable	
Y	Fixed limit	X_1
Value of coefficient	-639.016	0.509
Values of t test	-0.977	6.186
Significance	0.342	0.000

From the table we conclude that the independent variable (GDP) was significant from a statistical standpoint, according to t test (at the level of significance $P \leq 0.05$).

According to scientific logic to analyze the relationship between GDP and the stock market there is effect of GDP on the movement of Amman Stock Exchange index.

That the value of the coefficient of the volume of investment (0.509), which is identical to the third hypothesis, which means that every increase in the size of investments by one will lead to increase the index by 0.509 points.

2.2. Model study. Relied on a model of the Amman Stock Exchange index to assess the effect of the presence of statistical significance between the independent variables (the investment and GDP) and the Amman Stock Exchange index as the dependent variable and study the relationship between independent variables and the dependent variable study used the following form.

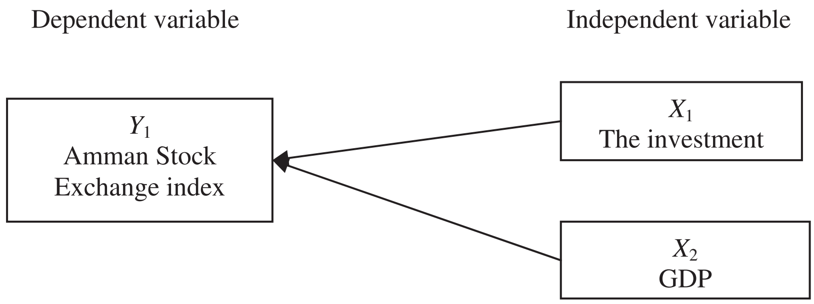

Fig. 1. Model study

2.3. Sources of data. This study based on actual data available in the reports of the Central Bank and the Department of Statistics of Jordan for the period 1990-2009, as well as data of the Amman Stock Exchange index for the same period, and the model will help its results in determining the impact of the investment and GDP on the movement of prices in the Amman Stock Exchange and Table 4 represents the data.

Table 4. The investment and GDP and Amman Stock Exchange index

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Size of investment (million dinar)	850	739	1209	1422	1451	1554	1499	1322	1224	1246
GDP	2760.9	2958	3610.5	3884.2	4357.4	4714.7	4911.3	5137.4	5609.9	5778.1
Amman Stock Exchange Index	804	1000	1299	1585	1436	1591	1534	1692	1701	1673
Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Size of investment (million dinar)	1341.4	1340	1365.3	1506.5	2215.6	3047.9	3286	3856.9	3914.5	4008.9
GDP	5998	6363	6794	7228	8090	8925	10378	12056	15053	16226
Amman Stock Exchange Index	1330.3	1727	1700	2614	4245	8191	5518	7519	6243	5520

Conclusion

The study concluded the following results: (1) there is a relationship between two indicators of macroeconomic (the investment and GDP and the Amman Stock Exchange index), and this means that the movement of prices in the Amman Stock Exchange is affected by the movement of these two variables and there is the effect of both variables (the investment and GDP) on Amman Stock Exchange index movement; (2) the results showed that the investments have impact on the Amman Stock Exchange index; (3) the results showed that GDP has an impact on the Amman Stock Exchange index, but less than of the impact of the investments.

Recommendations

The study recommended the following: (1) the Jordanian economic police increase investment into the

Jordanian economy; (2) the Jordan must adopt the economic policies that stimulate the diversification of the components of the Jordanian economy in order to increase the impact of growth in gross domestic product on the index, especially that the index includes the various sectors of the economy of Jordan; (3) the Jordan must create an investment environment that encourages the investment in Jordan.

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