The Relationship between the EPS & the Market Stock Return (Case Study: Industrial Sector-Jordan)

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Abstract

This topic is one of the more threads of financial market theory that have been studied by researchers in the accounting and finance field, and on the following the attempts by some scientists specialized financial to confirm or explain the result that reached by each of the study (Ball, R & P Brown) and study (Brown, L. D), which lead to low explanatory power of profit-variable in the regression model used to describe the relationship between stock returns and accounting profits. Because those researchers found during their review of previous studies and its evaluations in this area that profits generally do not explain more than 11% of the change in stock returns.

After we test the relationship between each of the (EPS &LEBS) and the market stock return we found the ability of each variable of the change in earnings per share and a variable level of earnings per share does not explain more than 9.9% of the market returns of shares joint stock companies listed in the industrial sector in the Amman Financial Market; The variation in the ability of winning each of the variable change in earnings per share and variable earnings per share in the interpretation of stock market returns makes it subject to identify the most variable interpretation of returns is not possible, or at least is characterized by a certain degree of difficulty. Finally the use of more than one representative of profits in the form of the relationship makes profits more ability to interpret market returns and reduce bias resulting from errors in the measurement of profits.

Keywords': Earnings per Share, Level of EPS, Industrial Sector, Amman Stock Exchange (ASE), Expected & Unexpected Return, Market Stock Return.

1. **Introduction:**

This topic is one of the more threads of financial market theory that have been studied by researchers in the accounting and finance field, and on the following the attempts by some scientists specialized financial to confirm or explain the result that reached by each of the study (Ball, R & P Brown)[1] and study (Brown, L. D) [2], which lead to low explanatory power of profit-variable in the regression model used to describe the relationship between stock returns and accounting profits. Because those researchers found during their review of previous studies and its evaluations in this area that profits generally do not explain more than 11% of the change in stock returns.

and for the importance placed of this subject by the concerned for thought the accounting and financial theory in the western world, especially in the United States and British, and an extension of the efforts of researchers in this dynamic field of investment theory, this study comes to aim testing the relationship between accounting earnings or earnings per share (EPS) and Stock returns for stock's companies in the industrial sector in the Amman Stock Exchange (ASE).

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[1] Ball, R. and P. Brown, "an Empirical Evaluation of Accounting Income Number", Journal of Accounting Research; autumn, 1968, 11.159-177.

[2] Brown, L. D. et. al., "an Information Interpretation of Financial Analysis Superiority in Forecasting Earnings", Journal of Accounting Research; 1987, pp. 49-67.

2. The Importance of Study:

- The test of relationship between Stock returns and accounting profit (or EPS) for the stock's firms in the industrial sector in the Amman Financial Market, earns itself a particular importance for the study, because of differences between the previous studies conducted on the market and this study, in terms of the level of market efficiency and volume of information available to investors and quality the size of the accounting disclosure in annual reports of joint stock companies, especially that most of these studies were have been before the global financial crisis.
- This study will contribute to improving the methodology for field studies in this regard, as it will demonstrate the statistical test and verify whether different measure of profits used to describe the relationship between stock returns and profits affect the accounting profits explanatory power for stock returns.
- The results of this study expected to serve users of financial reports, in particular, financial analysts, as much depend on earnings per share in determining the Stock prices of companies. Knowing the ability of this variable in explaining the change in stock prices and the description most explanation of the relationship between stock market returns and accounting profits, will enable them to reduce the margin of error in their estimates for the stock prices of companies.

3. The Problem of Study

The Studies show that the explanatory variable of market returns in the Model of the relationship between accounting profits and market returns is a variable of unexpected earnings and because these earnings in the fact are unexpected represent a non-static variable, so it must find a representative to that variable. In this regard, there are two models:

3.1. 1st Model: The **Traditional** Model; Uses the change in the level of earnings per share to represent the unexpected earnings.[3]

The assumptions which based on the traditional model have faced many criticisms from several studies contemporary; like study (Kothari)[4] and study (Ohelson and Shroft)[5]. the assumption of convergence substance informational earnings with substance informational prices stock, which means any assumption to stock prices do not precedes profits, is an inaccurate assumption, because the ability of accounting earnings as opposed to shareholder expectations of future cash flows. Restrictive norms and accounting principles that govern the measurement process accounting, such as the principle of historical cost and the principle of reservation and objectivity, and therefore, this assumption is not suitable to justify the use of a measure of change in the share of earnings to represent the earnings is expected as the assumption that annual profits do not behave randomly any to profit for the year the former is the appropriate representative of the expected profits for the current year is presumably true in the case assuming no guarantee earnings on temporary items. Since this assumption is not practical, the adoption of the change in earnings per share will be represented in the form of weak relationship and that its use will lead to an error in the measure.

3.2. 2nd Model: The **Contemporary** Model; As a result of the previous criticism in the traditional model were proposed for Contemporary Studies, a new model describe the relationship between accounting earnings and market returns based on use of a variable level of earnings per share. Despite the importance of the modern model in understanding the relationship of market returns & accounting earnings, but the follower of the efforts in this regard, it is noted clearly the researchers

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3 Unexpected Return= Actual Return-Expected Return : UER = $\frac{(Pit)-(Pit-1)}{(Pit-1)}$ - ER

4 Kothari, S. P. and R. G. Sloan, "Information in Earnings about Future Earnings: Implications for Earnings Response Coefficient", Journal of Accounting Research; Vol. 15, 1992, pp. 143-171.

5 Ohelson, J. and P. K. Shroft, "Changes versus Levels in Earnings as Explanatory Variables for Return: Some Theoretical Considerations", Journal of Accounting Research; Vol. 30, 1992, pp. 210-226.

do not agree on the preference representation unexpected earnings in the description of the relationship between accounting earnings and market returns [6]. This means that the researcher cannot favor one over the other in the representation of accounting earnings in the specification of this relationship of companies listed on the Amman Stock Exchange. Therefore search can be formulated in the following question: What is the most appropriate specification of the relationship between accounting earnings and market returns of Stock traded on the Amman Stock Exchange (ASE)).

4. The Study Hypotheses:

4.1. There is a significant effect for the percentage change in earnings per share (EPS), on the Market Stock Returns in the industrial companies which listed in Amman stock exchange (ASE).

4.2. The level of earnings per share explains the market stock return better than percentage of change in earnings per share (EPS).

4.3. The ability of the earnings to explain the market stock returns will not be affected when it represent more than one variable in the model of the relationship between profits and returns.

5. Literature Review:

5.1. Haddad 2003 study entitled: "The relationship between stock prices and future accounting profits: study applied to industrial companies Jordanian public shareholding".

The study aimed to test the relationship between current accounting earnings and stock returns with the current accounting earnings and the future accounting profits of industrial company's listed public shareholding in the Amman Stock Exchange, and this relationship was examined using multiple regression method.

Where the study sample consisted of 25 industrial companies 1999, has reached - listed on the Amman Stock Exchange during the period between 1985 study to the existence of a relationship between profits current accounting and the accounting profits future, and thus the existence of information content of earnings current accounting and the future profits.

5.2. Study Ershaid, 2004 entitled: "The determinants of stock prices in the Amman Stock Exchange"

The study aimed to identify the determinants of stock prices in the Amman Stock Exchange within the overall framework, and has been a focus on the nature of the relationship between the index of stock prices as the dependent variable in this market and the variables reprise congenital College for the period (1997-1978) through the adoption of a mathematical model and use the gradient method. Findings have shown by computer and existence of spirits relationship with statistical significance between the number of stock prices as the dependent variable and the following independent variables: the index of industrial production, inflation, money supply. And there are no statistical significance between the index and all of the discount rate and exchange rate.

5.3. Al Khalayla (1998) study, entitled: Correlation degree between measures of financing risk and its Relationship with market beta and aggregate risk".

The study has found a strong and statistically significant correlation with 1% importance level between measures of financial risk. This fact supports the use of some of these measures in general as powerful alternatives. The results of market beta regression analyze on different measures of financing risk, were consistent with those of the previous studies, where the results indicate the existence of a positive relationship between market beta and the four measures of financing risk: (total debt to assets, total debt to book value property rights, long term liabilities to property rights, total debt to market value property rights) this is a statistically significant relationship to all financing risk measures, with the exception of

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6 AlDab'e, ma'mon and Mohammed Abu Nassar, Specification relationship between market returns and accounting profits of Jordanian shareholding companies, the Journal of Studies, Volume 26, Issue 2, 1999, pp. 312-329

the ratio of total debt to market value property rights. The study didn't found any results supporting the existence of a statistically significant relationship between financing risk measures and standard deviation of stock returns.

5.4. Smith and his colleagues study (conducted in 1990) entitled: "the Impact of Financial Leverage on Return on Investment".

This study has been conducted on a group of 59 companies among the American industrial companies, and it shows the existence of a relationship between financing cost and financial leverage which influences on the return on investment. Moreover, the study recommended that the cost of borrowed and possessed financing must be used to eliminate the impacts of financial inflation that is shown in the financial statements, in order to determine the true and net value of returns and achieve the budget between financing cost and the financial leverage.

6. Methodology:

6.1. The study population : To achieve the objectives of the study were used descriptive analytical method which can be defined as a method of analysis based on sufficient and precise information about the phenomenon or a specific topic, and during the period or periods of time information in order to obtain practical results have been interpreted in an objective manner and in line with the data of actual phenomenon to study the variables that contribute to determine the relationship between the EPS (earnings per share) & the market stock return , relying on the descriptive approach in the presentation of the theoretical aspect of the study and then using the analytical method in practical application and conduct the necessary tests, so the researchers choose the industrial sector (that have included 78 firms listed in this sector) in the Amman Stock Exchange to create a random sample under standards selected by researchers, and then make the test for this sample and generalize the results for all firms in this sector.

6.2. The study Sample: A Random sample among the companies composing the industrial sector has been chosen for conducting this study after omitting all companies who don't meet the following criteria:

1) To be among the registered companies and traded in industrial sector
2) Trading in the company stocks wasn't suspended according to a decision made by the board of directors of the market during the period from 2/1/2006 till 31/12/2010
3) Trading in the company stocks wasn't interrupted, and its type of ownership wasn't transformed or merged during the period from 2/1/2006 till 31/12/2010
4) Availability of sufficient data such as income statement, balance sheet in order to calculate financial indicators and ratios that were used in the study
5) Availability of all monthly & annually closing prices for the companies stocks during the whole period in which the study was conducted.

According to the abovementioned criteria, a random sample has been chosen for this study comprising (26) industrial companies listed in the Amman Stock Exchange. They are all following the Gregorian calendar and their financial year ends up in the 31st of December of each year.

6.3. The study Variables:

6.3.1. Dependent Variable: from the explain above we can notes that the dependent variable is the **stock return** for each firm that have been selected in the study sample.

- The Market Stock Return:

the researcher calculates the monthly market return for each company based on the data available in the market reports on the movement of share prices of companies study sample for the period from 02/1/2006 to 31/12/2010 using equation (1), then the by identifying market earnings per share compound for a period of 12 months to represent the complex market return for a year, according to the equation (1):

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \ldots\ldots\ldots\ldots (1)$$

When,

R_{it}: the market stock return company (i) at the end of the month (t).
P_{it}: the closing price for stock company (i) at the end of the month (t).
P_{it-1}: the opening price for stock company (i) at the end of the month (t).

6.3.2.   **Independent Variable**: the researchers have been selected many ratios as a Independent variables for this sector (Industrial Sector) according with hypotheses above, and these variable as follow;

- **The percentage change in earnings per share (EPS):**

$$\Delta EPS_{it} = \frac{X_{it} - X_{it-1}}{P_{it-1}} \ldots\ldots\ldots\ldots (2)$$

When,
ΔEPS_{it}: The percentage change in earnings per share (EPS)
X_{it}: the earnings per Share for Company (i) at the period (t).
X_{it-1}: the earnings per Share for Company (i) at the period (t-1).
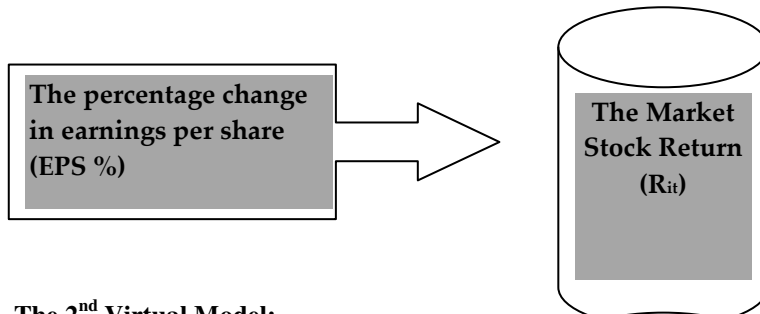
- **The level of earnings per share:**

$$LEPS_{it} = \frac{X_{it}}{P_{it-1}} \ldots\ldots\ldots\ldots\ldots (3)$$
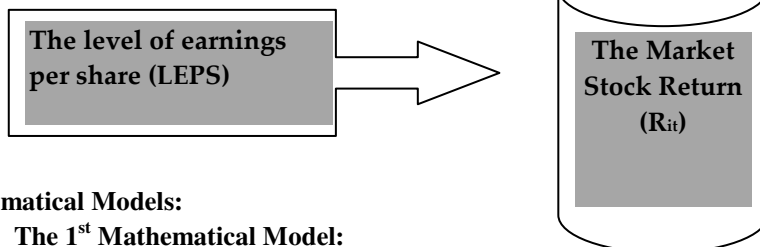
When,
$LEPS_{it}$: The level of earnings per share (EPS)
X_{it}: the earnings per Share for Company (i) at the period (t).
P_{it-1}: the opening price for stock company (i) at the end of the month (t)

6.4. The Study Models:
6.4.1.   The 1st Virtual Models:

| The percentage change in earnings per share (EPS %) | → | The Market Stock Return (R_{it}) |

6.4.2.   The 2nd Virtual Model:

| The level of earnings per share (LEPS) | → | The Market Stock Return (R_{it}) |

6.5. Mathematical Models:
6.5.1.   The 1st Mathematical Model:

This model used to test the relationship between the percentage change in earnings per share (EPS %) and the market stock return:

$$R_{it} = \alpha_0 + B_1 * \Delta EPS_{it} + \bar{e}_{it} \ldots\ldots\ldots\ldots (4)$$

When,

R_{it}: the market stock return company (i) at the end period (t).

ΔEPS_{it}: The percentage change in earnings per share (EPS).

$\bar{e}_{it}$: Random Error.

6.5.2. The 2nd Mathematical Model:

This model used to test the relationship between the level change in earnings per share (LEPS$_{it}$) and the market stock return:

$$R_{it} = \alpha_0 + B_1 * LEPS_{it} + \bar{e}_{it} \ldots\ldots\ldots\ldots (5)$$

When,

R_{it}: the market stock return company (i) at the end period (t).

LEPS$_{it}$: The percentage change in earnings per share (EPS).

$\bar{e}_{it}$: Random Error.

7. Data Analysis & Test Hypotheses:

7.1. Correlation between the variables:

The (1) show the result for the correlation between the variables, the researchers make this test to know the variables do not affect the result of the analysis because there is a correlation between them.

Table (1): the matrix Correlation between the variable:

ΔEPS_{it}	R_{it}	The Variables
0.536	0.303	LEPS$_{it}$
0	0.312	ΔEPS_{it}:

*Under significant level: 0.05

7.2. In order to make sure that the results of the model that it is not the result of a high correlation between the two independent variables of the model for both: ΔEPS_{it} and LEPS$_{it}$ The researchers tested the correlation between them using the test (VIF) Variance Inflation Factor, which explains the contrast ratio effective to contrast macro-scale (CN) Condition Number, which measures the sensitivity of the regression estimates for simple changes to data and defined as the square root of the ratio of the greatest value to the smallest value in the correlation matrix of independent variables. Table (2) shows this result.

Table (2) VIF& CN test results: [2]

year	LEPSit		ΔEPS_{it}	
	CN	VIF	CN	VIF
All years	1.00	1.976	1.454	1.976
2006	1.00	1.351	1.757	1.351
2007	1.00	1.897	1.688	1.897
2008	1.00	1.842	1.931	1.842
2009	1.00	1.956	1.867	1.956
2019	1.00	2.491	1.956	2.491

7.3. Test Hypotheses:

Table (3): Regression analysis for the two models

LEPS$_{it}$					ΔEPS$_{it}$					Year
DuribinWatson	F	R^2	T	Bi	DuribinWatson	F	R^2	T	Bi	
1.482	3.95	0.088	1.88*	0.423	1.491	4.13	0.0964	1.93*	0.398	N*
Residuals Statistics^a					Residuals Statistics^a					
	Minimum	Maximum	Mean	Std. Deviation	N		Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5.092E-02	5.936E-02	5.929E-02	7.366E-04	130	Predicted Value	4.051E-02	8.552E-02	5.929E-02	1.157E-02	130
Residual Std.	-.1794	.2506	2.966E-17	7.815E-02	130	Residual Std.	-.1948	.2478	3.326E-17	7.730E-02	130
Predicted Value	-11.358	.096	.000	1.000	130	Predicted Value	-1.624	2.267	.000	1.000	130
Std. Residual	-2.286	3.195	.000	.996	130	Std. Residual	-2.511	3.194	.000	.996	130
a. Dependent Variable:					a. Dependent Variable: Y					

7.3.1. The results of the analysis of variance of the models number (4 & 3) and listed in the table (No. 3) to the health of the view of the researchers in the first hypothesis which describes the value of t calculated the value of the regression coefficient for each of the ΔEPS$_{it}$ and LEPS$_{it}$, that each effect statistically significant on returns market capitalization at the 5% level of significance.

As the F-test for statistical models acceptance at 5% level of significance as well. Thus, the results of this hypothesis were consistent with the results of previous studies ranging study of Ball and Brown. The results also confirmed this hypothesis the results of previous studies

On the low explanatory power R2 profit variables. Where did not explain variable ΔEPS$_{it}$ more than 0.0964 from the market stock return, the variable LEPS$_{it}$ the film explains more than 0.0887.

7.3.2. The results of the second hypothesis included in Table (3) Unlike was expected, as show those results that variable LEPSit not more able of variable ΔEPS$_{it}$ to explain the market stock returns, not even the ability less than capacity and as clearly from the coefficient of determination R2for the two models. There is no doubt that this result confirms explanation the researcher to the low explanatory power of earnings does not support the view Ohelson and Shorft and the results of the study of Eston and Harris and study Abu Nassar, which held that ΔEPS$_{it}$ variable is essential to explain the market stock returns.

7.3.3. Results from the information inserted in Table (4) that the power earnings explanatory increased when market returns increase the number of variables representing earnings in the standard model.

There is no doubt that this result supported a strong opinion of (Brown et. al) to the effect that the use of more than one representative of earnings could lead to a reduction of bias resulting from errors in the measurement of earnings. As well as the fact that result reached by the researcher fully consistent with the results of a study (Easton and Harris).

Table (4): The results of the explanatory power for the two independents variables

F	R^2	LEPS$_{it}$		ΔEPS$_{it}$		all
		T	b2	T	b1	
3.11**	0.198	2.01**	0.451	1.59*	0.422	years

Residuals Statistics[a]					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4.051E-02	8.552E-02	5.929E-02	1.157E-02	130
Residual Std.	-.1948	.2478	4.068E-17	7.730E-02	130
Predicted Value	-1.624	2.267	.000	1.000	130
Std. Residual	-2.501	3.182	.000	.992	130
a. Dependent Variable: Y					

8. Results & Recommendations'

The most important conclusions reached by a researcher to test hypotheses in the following points:

8.1. The ability of each variable of the change in earnings per share and a variable level of earnings per share does not explain more than 9.9% of the market returns of shares joint stock companies listed in the industrial sector in the Amman Financial Market.

8.2. The variation in the ability of winning each of the variable change in earnings per share and variable earnings per share in the interpretation of stock market returns makes it subject to identify the most variable interpretation of returns is not possible, or at least is characterized by a certain degree of difficulty.

8.3. The use of more than one representative of profits in the form of the relationship makes profits more ability to interpret market returns and reduce bias resulting from errors in the measurement of profits.

8.4. The Results should be treated with this kind of careful study and that the small size of the market and the consequent relatively small sample size in addition to the normal circumstance, which is located under the weight of the Jordanian economy, not to mention the low efficiency of the market, compared with developed financial markets.

8.5. Repeat conducts such a study on other companies to make sure that the findings, especially regarding the impact of varying the size of the company.

8.6. The use of more than one representative of the variable profits approach is one of several methods to improve the capacity of explanatory profits for market returns so researchers can examine another approach, such as the style of inverted price-to-profit ratio.

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