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The Association between Accounting Earnings, Dividends, Stock Prices and Stock Returns: Value Relevance of Accounting Standards in the Tunisian Stock Market

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Abstract

This present study aims to examine the relationship between accounting earnings, dividends, stock prices and stock returns for companies listed at the Tunisian stock exchange. Using panel data obtained from the annual reports and financial statements of 57 Tunisian companies over the period 2005-2015, we show the existence of an earning-dividend-return significant positive relation by applying four models developed from Easton and Harris (1991), Frino and Tibbits (1992) and Kothari and Zimmerman (1995). The empirical results indicate a significant value relevance of accounting earnings and dividends reported by Tunisian companies under the standards generally accepted in Tunisia. Particularly, it appears from our main findings in regressions the relative explanatory power of above variables on stock market returns which clarifies the important proportions of variations of stock returns in Tunisia. The findings from the study also reveal that shareholders pay a special attention to the impact of dividend and dividend yield on stock returns. Moreover, investors should consider informative earnings numbers as investment criteria as well as many other factors for example interest rates and industry performance affecting stock returns when it comes to

make investment decisions. Based on these results and due to the importance of accounting earnings in investment decisions we recommend that there is need for investors to carefully use financial advisory information that financial analysts provide to them in order to determine what the correct and comparable earnings per share (EPS) or dividend per share (DPS) of each company.

Keywords: earnings relevance, earnings per share, dividends per share, stock prices, stock returns, return models, emerging markets (Tunisia)

JEL classification: G11, G12, G21

1. Introduction

The stock market plays an important role in the economies of most countries. Obviously, the key to judge a country's economic condition is by measuring the performance of its stock market (Bashir et al., 2011). Accounting measures like earnings per share (EPS), changes in actual earnings (ΔEPS) and dividend per shares (DPS) have great influence on performance of firms. These financial ratios show the strength of a company. This strength attracts the investors if shares yielding earnings and dividends high enough so that they can invest in those stocks to benefit from high growth and earn abnormal returns. The main interest of financial reporting is earnings information and its components due to the fact that investors and shareholders tend to be always aware of firm performance, investment returns and stock returns. Financial analysts try to explore suitable models to value shares and identify factors that have effect on stock returns of companies which can influence the economic decisions such as buying and selling shares. The relationship that is found between accounting earnings and stock returns has been a topic of international research for last few decades but this area of study has not been thoroughly explored in Tunisia. Ball and Brown (1968) and some literatures in finance have tried to better adapt the incentives of the returns-earnings association and to make it possible forecasting future earnings from stock price movements. According to Beaver (1989), earning per share (EPS) in the financial statements is the figure mostly checked by analysts and investors because it helps them to forecast future cash flows, handle relative investments risks and take rational investing decisions. Reasons why there have been several studies in US, Europe and East trying to enlighten the causes that drive the return-earnings relation and hence evaluate the possibility of achieving the objective of creating a less risky decision-making environment. In addition, dividend policy remains a controversial issue for financial experts and investors. Researchers are interested in a number of questions that they need to be resolved regarding dividends such as: whether or not the dividend paid by a firm has any impact on the stock returns? Does the dividend affect the stock prices in the long run?

In this paper, we seek to best measure and compare the statistical association between accounting earning, dividends and stock returns for firms reporting under Tunisian accounting standards characterized by moderate tax and financial accounting conformity, moderate use of accruals, low importance of the capital market and weak corporate governance. Most of the studies in this field have been concentrated on the well-developed capital markets leaving the cases of less developed and organized stock markets. Thus, this present research examines the issue of earnings relevance within the context of an emerging marketplace like Tunisia and by the way adds something to our existing literature.

The focus on earnings is motivated by its central role in the financial information system of a company. Financial analysts use earnings as a parameter in various ratios to estimate firm's performance and financial stability, to make cross-sectional and historical comparisons. Market specialists express their belief about the future of companies almost always by means of earning forecasts and managers' compensation is often determined by earnings or earnings related measures. For that purpose, Nichols and James (2004) propose three theoretical links between financial reporting (earnings) and stock returns depending on three hypotheses relative to the information contained in earnings and share prices: the present period earning provides information at one part, to predict future periods' earnings and at second part, to develop expectations about dividends in future periods also, it provides information to determine share value, which according to Beaver (1998) refers to the present value of expected future dividends.

Under this framework we investigated the relationship between earnings and stock return based on Easton and Harris (1991) Model, Lintner's Dividend (1956) Model and Gordon's Growth (1959) Model. Specifically, we aim to explore the criteria for investors to make the better decisions through finding responses to these questions which remain still arisen: (1) Is it expected that the current period earning per share or current changes in earning per share of a firm to beginning stock price ratio has an impact on stock returns or not? (2) Is it expected that the current period dividend per share of a firm to beginning stock price ratio has an impact on stock returns or not? (3) Is it expected that the reverse stock price, the current earning per share, the current changes in earning per share and the prior dividend per share to beginning stock price ratio have impact on stock returns or not?

To our knowledge, our research is the first to combine beaver (1968) hypotheses to represent earnings, dividends and share prices together in a stock returns model for an emerging market (Tunisia). The rest of this paper is organized as follows: In Section 2 the previous research on the existence of the return-earnings and return-dividends relation is reviewed and the hypotheses of study are presented. In Section 3 the data sources are provided and the methodology of empirical validation used in tests is formulated and described. Section 4 contains the descriptive analysis as well as the autocorrelation test variables and illustrates the empirical results and their interpretation. Finally section 5 is dedicated to the conclusion and ways for possible future research.

2. Literature Review and Hypotheses Development

The first attempts of estimating the usefulness of accounting earnings to investors were documented in the literature in 1968 when Ball and Brown (1968) and Beaver (1968) issued articles testing empirically the existence of a relationship between reported earnings and stock returns. Following studies were published concerning the earnings/returns relationship for the objective to estimate the explanatory power of accounting income as a variable determining the change in prices and stock returns. The reported results confirmed that earning or/cash flow has a significant positive association with stock prices and stock returns. Lev (1989) explains that earnings describe a very small proportion of stock returns variations: R-squared (R^2) varied from 2% to 5% for very narrow windows of calculated cumulative returns (two to five days) and from 4% to 7% for medium to long windows (a quarter to two years).

In the early 90s, with the growing globalization of financial markets the problem of value

relevance of generally accepted accounting principles in different countries arose. Amir and Lev, (1996) wanted to measure the forecasting ability of financial and nonfinancial information by regressing stock price and stock returns through a set of financial (accounting) and nonfinancial variables. As results, they found that accounting performance measures such as cash flows, earnings, and book values are unrelated but if joined with nonfinancial measures in a price regression they become helpful to the valuation of cellular companies through explaining more and more stock prices. Along the same lines, Banker et al (2000) examined the forecasting ability of some nonfinancial methods like customer satisfaction measures and they showed that customer complaints and customers returns add factors for accounting measures in the hotel industry. It should be noted that all of these findings conclude that nonfinancial measures contain extremely important information in comparison with traditional accounting measures included in the past.

In many papers, authors studied the capacity of return and price models by providing different ways to improve this relationship. The results of Martikainen et.al (1997) and Dumontier and Labelle (1998) in Finland and France respectively are consistent with the evidence found by Kothari and Zimmerman (1995). Using two different measurements of earnings variable, the published earnings in financial statements and the adjusted earnings predicted by the Finnish Committee for Corporate Analysis (COC). They stipulated that the return model specification based on the published accounting data yields superior and more significant return-earnings relation than the differenced model specification with the adjusted accounting data. Dumontier and Labelle (1998) arrived to the same conclusion supporting the high explanatory power and significance of the return model in evaluating better this return-earnings relation. Jindrichovska (2001) also agreed with those previous studies that stock prices lead earnings and reported a statistically significant relationship between returns and accounting data for the developed Czech stock market. Pritchard (2002) investigated the relationship between accounting earnings numbers and returns in the Baltic stock markets (Estonia, Latvia, and Lithuania). She noted that the association between returns and earnings differs substantially among the three countries. Estonia showed the highest value relevance while Lithuania showed the lowest. The result for Latvia is similar to Estonia but given to its high standard errors it was not totally acceptable. In summary, the return model is proved to perform better than the differenced model specification.

There are some studies that were done on the return-earnings relation in emerging markets. Alkhalialeh (2008) gives proof from the Jordanian stock market about the forecasting ability of traditional accounting measures to explain why the variation in stock returns decreased in the 1990s. He assumed that accounting performance measures have lost their strong link with the stock returns during the 1990s compared to the 1980s. Additionally, he argued that the accounting earnings based performance measures are still relevant because they can explain most of the variance in stock returns. Also, he suggested not to discontinue the use of traditional performance measures. Dimitropoulos and Dimitrios (2009) studied the relationship that is found between stock returns and earnings in the Greek capital market. They find that there is a strong value relevancy for the return model as it gave a higher biased earning-returns relationship than that of the price model. Similarly, they also showed that using time-series aggregated data and cross-sectional data resulted in the increase of the explanatory power of

earnings to returns for both models which yielded more significant Earnings Response Coefficients. Fawzi Shubita (2013) followed work previously done by examining two valuation models (return and price models) on Jordan companies. He showed that both models are statistically linked with accounting variables. The study revealed also that the price model's ability to explain the return-earnings relation is higher compared to the return model. In conclusion, taking a look at the literature studying the issue of the valuation ability of different model specifications in developed and emerging markets. We note the existence of conflicting results. Some findings are in favor for the price model's ability and in disagreement others argues that the return model has the best ability to explain the relationship between returns and earnings. Furthermore, all model specifications present serious econometric problems showing the hardness of the analysis which should be manipulated carefully. Kothari and Zimmerman (1995) dealt with those considerations and suggested to use all model specifications instead of considering each model separately because it could help to provide more convincing and reliable evidence.

On the other hand, dividends represent the profit for shareholders and they are very important for both investors and managers as Khan and al (2011) recall. Basically dividend is the source of income as well as the measurement of company's performance for investor. Dividend yields show how much dividends are paid each year by a company to their shareholders. They are generally paid in cash, in stocks or in the form of other assets. Dividend payout is different by countries. For example, Lilley (2000) stated that in New Zealand 95% of the firms declare their dividends each year while 20% firms in US do it (Chen and Dhiensiri, (2009)). Jakarta Stock Exchange (JSX Statistics) reported that only 45% firms paid dividends in various forms: cash, stock dividend and bonus shares. Fama and Babiak (1968) tested the Lintner's model and proposed four other models based on the dividend policy of 392 companies. Their results show that the dividend policy is independent from the investment policy. More importantly, According to previous literatures there is a relationship and also an impact of these variables dividend per share, dividend yield and earnings on stock returns. Easton and Harris (1991) investigated the ability of prior period dividend to beginning stock price ratio and earnings divided by the beginning of stock price to explain returns. As conclusion they considered the earnings and dividend as two explanatory variables for the variation of stock returns.

Despite the numerous above studies analyzing the potential of reported earnings and dividend to explain stock returns, i think further researches are needed to build a comprehensive model. Hence this study attempts to investigate the information content of earnings and dividends and their relationship to explain stock returns for companies listed on Tunis Stock Exchange. The study will be of deep interest to both local and foreign investors in their decision-making purposes. To establish the relationship between earnings, dividends, stock prices and stock returns of Tunisian firms. We formulate our hypotheses referencing to prior literature:

H1: There is a significant positive relationship between the current earning per share to beginning stock price ratio and stock returns.

H2: There is a significant positive relationship between the current changes in earning per share to beginning stock price ratio and stock returns.

H3: there is a significant positive relationship between the current dividend per share to beginning stock price ratio and stock returns.

H4: there is a significant relationship between beginning reverse stock price, current earning per share to beginning stock price ratio, current changes in earning per share to beginning stock price ratio, prior dividend per share to beginning stock price ratio and stock returns.

3. Methodology

3.1 Data Selection

Our sample begins with 57 Tunisian listed firms with December 31st fiscal year ends, appearing in annual reports and financial statements over the 2005-2015 ten-year period. A data collection form was designed to record stock Prices (P_{it}, $P_{i,t-1}$), stock Returns ($R_{i,t}$), Earnings per share (EPS) attributable to ordinary shareholders and number of issued common Dividends per share (DPS).

3.2 Measurement of Variables and Model Specifications

To examine the relationship between earnings, dividends, stock prices and stock returns for companies quoted in the BVMT, regressions and correlation analysis was carried out based on Easton and Harris (1991) and Frino and Tibbits (1992) who gave the theoretical implications of this relationship. Following prior research we calculate our main variable the stock return or rate of return and also known as return on investment by using dividend adjusted:

$$\boldsymbol{R_{it}} = \frac{(\boldsymbol{P_{i,t}} - \boldsymbol{P_{i,t-1}}) + \boldsymbol{D_{i,t}}}{\boldsymbol{P_{i,t-1}}}$$

Where:

$\boldsymbol{R_{it}}$: Annual stock returns of firm i in year t,

$\boldsymbol{P_{i,t}}$: Share price at the end of year t,

$\boldsymbol{P_{i,t-1}}$: Share price at the beginning of year t,

$\boldsymbol{D_{i,t}}$: Dividends per share for year t,

Panel data methodology is used to analyze the relationship between stock returns and the accounting measures variables. Panel data analysis is considered as an appropriate estimation for heterogeneous data. It controls heterogeneity which usually arises due to number of factors. Whereas, it has been usually neglected by cross-section or time series analysis which then lead to biased estimation. Using Hausman test result the decision is made to use the panel data regression with fixed effect. The following regression models are suggested and used to predict the earnings-dividends-returns relation.

The returns models (1) and (2) derived from Easton and Harris (1991) study the relation that is found between the stock returns and the earnings per share (EPS) (changes in earnings per share (ΔEPS)). More precisely, they examine the relationship between EPS or ΔEPS deflated by the price at the beginning of the year and stock returns. Thus, the empirical models for testing these two hypotheses are:

$$\boldsymbol{R_{i,t}} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1 EPS_{i,t}} + \boldsymbol{\varepsilon_{i,t}} \quad (1.1)$$

$$\boldsymbol{R_{i,t}} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1} \frac{\boldsymbol{EPS_{i,t}}}{\boldsymbol{P_{i,t-1}}} + \boldsymbol{\varepsilon_{i,t}} \quad (1.2)$$

$$R_{i,t} = \alpha_0 + \alpha_1 \Delta EPS_{i,t} + \varepsilon_{i,t} \quad (2.1)$$

$$R_{i,t} = \alpha_0 + \alpha_1 \frac{\Delta EPS_{i,t}}{P_{i,t-1}} + \varepsilon_{i,t} \quad (2.2)$$

Where, $\mathbf{R_{it}}$ is the annual stock return of firm i in year t, $\mathbf{EPS_{i,t}}$ and $\mathbf{\Delta EPS_{i,t}}$ are the level and changes in earnings per share of year t, $\mathbf{P_{i,t-1}}$ is the share price at the beginning of the year t, $\boldsymbol{\varepsilon_{i,t}}$ is the error term and $\boldsymbol{\alpha_0}$, $\boldsymbol{\alpha_1}$ are the regression coefficients.

For testing the third hypothesis, the model proposed by Frino and Tibbits (1992) is used to investigate the relationship between the stock returns and the dividends per share (DPS) (Model 3). Specifically, the relationship between DPS deflated by the price at the beginning of the year and stock returns. The model is:

$$R_{i,t} = \alpha_0 + \alpha_1 DPS_{i,t} + \varepsilon_{i,t} \quad (3.1)$$

$$R_{i,t} = \alpha_0 + \alpha_1 \frac{DPS_{i,t}}{P_{i,t-1}} + \varepsilon_{i,t} \quad (3.2)$$

Where, $\mathbf{DPS_{i,t}}$ is the dividend per share of year t. The deflated specifications are used in order to reduce the heteroscedasticity of the error terms and the cross-sectional variation of the slope coefficient which is assumed to be constant.

To describe the model adopted to test our fourth hypothesis. Thus, we follow the adjusted models of Easton and Harris (1991) and Frino and Tibbits (1992) with combining Gordon Growth model (1959) and Lintner's Model (1956). The new regression equation is achieved as follows:

$$R_{i,t} = \alpha_0 + \alpha_1 \frac{1}{P_{i,t-1}} + \alpha_2 \frac{EPS_{i,t}}{P_{i,t-1}} + \alpha_3 \frac{\Delta EPS_{i,t}}{P_{i,t-1}} + \alpha_4 \frac{DPS_{i,t-1}}{P_{i,t-1}} \quad (4)$$

The benefit of this research is that it can be done relatively quickly as the data are all gathered. The above four models were estimated for the whole period (2005-2015) separately as a panel sample. Also, in order to take into consideration the (2010-2011) Tunisian revolution and the impact of different news events (political, economic, social, terrorism) on stock market, we divided our sample into two sub periods (2005-2009) and (2010-2015) in order to examine the relation of returns, dividends and earnings before and after the very specific context (Tunisia's revolution).

4. Empirical Results

4.1 Descriptive Statistics and Correlations

Table 1. Descriptive statistics (N = 559)

	$R_{i,t}$	EPS	ΔEPS	DPS	$\frac{EPS_{i,t}}{P_{i,t-1}}$	$\frac{\Delta EPS_{i,t}}{P_{i,t-1}}$	$\frac{DPS_{i,t}}{P_{i,t-1}}$	$\frac{DPS_{i,t-1}}{P_{i,t-1}}$	$\frac{1}{P_{i,t-1}}$
Mean	0.0683	1.4095	0.0461	1.0873	0.0629	0.0050	0.0444	0.0512	0.1171
Median	0.0125	0.6920	0.0220	0.6000	0.0568	0.0014	0.0398	0.0400	0.0769
Maximum	3.8717	31.828	25.175	19.300	1.8531	1.7322	0.4680	0.4736	0.9433
Minimum	-0.9019	-16.857	-18.336	0.0200	-1.1307	-2.0150	0.0000	0.0000	0.0024
Std. Dev	0.4423	2.8048	2.5561	1.6741	0.1617	0.2001	0.0333	0.0534	0.1331

Table 2. Pearson correlation

	$R_{i,t}$	EPS	ΔEPS	DPS	$\frac{EPS_{i,t}}{P_{i,t-1}}$	$\frac{\Delta EPS_{i,t}}{P_{i,t-1}}$	$\frac{DPS_{i,t}}{P_{i,t-1}}$	$\frac{DPS_{i,t-1}}{P_{i,t-1}}$	$\frac{1}{P_{i,t-1}}$
$R_{i,t}$	1								
EPS	0.1895*** (0.0001)	1							
ΔEPS	0.0462** (0.0352)	0.5949*** (0.0000)	1						
DPS	0.0985** (0.0473)	0.4347*** (0.0000)	-0.1687*** (0.0006)	1					
$\frac{EPS_{i,t}}{P_{i,t-1}}$	0.2684*** (0.0000)	0.4643*** (0.0000)	0.4786*** (0.0000)	-0.0662 (0.1828)	1				
$\frac{\Delta EPS_{i,t}}{P_{i,t-1}}$	0.0340** (0.0493)	0.3443*** (0.0000)	0.6802*** (0.0000)	-0.0128 (0.7963)	0.6330*** (0.0000)	1			
$\frac{DPS_{i,t}}{P_{i,t-1}}$	0.2817*** (0.0000)	-0.0215 (0.6658)	-0.1086** (0.0285)	0.3050*** (0.0000)	0.1782*** (0.0003)	0.0326 (0.5121)	1		
$\frac{DPS_{i,t-1}}{P_{i,t-1}}$	0.0463** (0.0516)	-0.1042** (0.0357)	-0.0182 (0.7141)	-0.0709 (0.1536)	0.0863* (0.0821)	-0.0545 (0.2729)	0.2692*** (0.0000)	1	
$\frac{1}{P_{i,t-1}}$	0.0257* (0.0605)	-0.3172*** (0.0000)	-0.0039* (0.9371)	-0.3739*** (0.0000)	0.0674 (0.1751)	-0.0345 (0.4881)	0.0119 (0.8109)	0.1955*** (0.0001)	1

, **, * statistically significant at the 1%, 5% and 10% levels respectively.*

The descriptive statistics for the main variables included in the regressions are presented in Table 1. Findings show that the listed firms have an average mean EPS of about 1.4095 with a considerable volatility of 2.8048 and an average mean DPS equal to 1.0873 with a variability of 1.6741. However, the medians are 0.6920 and 0.6000 respectively; this is consistent with prior studies that document the earnings-returns relationship as we can see that the average mean of all variables is higher than the median which indicates that data are normally distributed. Also the mean have a lower value in comparison to the standard deviation for all the variables and the minimum and maximum values indicate a wide range of observations in the sample. In addition, we notice that the mean stock return is 0.0683 providing a mean earnings-price ratio and dividend yield of between 4.44 % and above for the whole period of study. Finally, the mean value of EPS, DPS and stock returns are decreasing from 2010 to 2013 (revolution effects) but they reach their peaks in 2010 (annual descriptive statistics are not presented here but they can be provided upon request).

To avoid all problems of autocorrelation in a linear regression, a correlation matrix has been done. Table 2 illustrates the Pearson correlations coefficients for our independent variables adopted in our model. The examination of these coefficients sheds some light on the nature of the main and control variables. We find that the correlation between earnings levels, changes in earnings, dividends levels and stock returns are quite high and statistically significant (0.1895 - 0.0985) suggesting that Tunisian investors increase the demand on stock prices having high EPS and DPS levels which result in increase stock returns. Similarly, Earnings yield and dividend yield have quite similar highly levels of correlation with income variables (0.2684 - 0.2817) which means that the increase in both ratios of the firm also lead to increase the market price of share and stock returns. However, the lowest correlation coefficient is between prior dividend per share to beginning stock price ratio and stock returns (0.0463).This positively low significant association suggests that the high-growth firms will create more investment opportunities to attract new investors and have conventionally higher quality auditors so they pay fewer dividends to the actual shareholders. Overall, the variables expected to forecast stock returns are significantly correlated to each other.

4.2 Relationship between Earnings, Dividends and Stock Returns

All four models were estimated using a panel data estimation procedure in order to examine the impact of both earnings and dividends on returns (value relevant component). By applying fixed effect model the obtained results showed the high value relevancy as measured through the earnings or dividends response coefficients and the coefficient of determination R% of the return models. Beyond this, stock returns annual earnings per share and annual dividends per share were re-estimated over two periods (pre and post Jasmine Revolution) to see how the incorporation of important events into the financial statements can affect the returns-earnings or returns-dividends relation.

We report in Table 3 the results from the estimation of equations (1) and (2) determining the effect of current earnings and current changes in earnings on stock returns. The first two columns contain the results of the return-earnings models (equation 1), the second two columns include results from the return-earning changes models (equation 2) respectively.

Table 3. Main results from the effects of earnings and earning changes on returns in Tunisian stock market for the full period (2005-2015)

Variables	Model 1	Deflated Model 1	Model 2	Deflated Model 2
Intercept	0.0395***	0.0353**	0.0592***	0.0574***
P-value	(0.0095)	(0.0239)	(0.0000)	(0.0000)
t-Statistic	[2.6014]	[2.2644]	[5.3182]	[5.0051]
$\mathbf{EPS_{i,t}}$	0.0219***			
P-value	(0.0000)			
t-Statistic	[4.7236]			
$\mathbf{\Delta EPS_{i,t}}$			0.0135***	
P-value			(0.0034)	
t-Statistic			[2.9403]	
$\mathbf{\frac{EPS_{i,t}}{P_{i,t-1}}}$		0.5782***		
P-value		(0.0000)		
t-Statistic		[4.9846]		
$\mathbf{\frac{\Delta EPS_{i,t}}{P_{i,t-1}}}$				0.1370**
P-value				(0.0433)
t-Statistic				[2.0254]
Adj. R-squared	0.181	0.428	0.055	0.1057
F-Statistics	11.099***	25.565***	5.816**	4.0597**
P-value	(0.000)	(0.000)	(0.016)	(0.044)
χ2	15.563***	17.717***	11.821***	5.129**
P-value	(0.0004)	(0.0001)	(0.0006)	(0.0235)
Observations	547	550	546	547

*, **, *** *statistically significant at the 1%, 5% and 10% levels respectively.*

Table 3 shows that the results of F-statistic test (wald test) are significant at 5% level and therefore the models have specific effects. The results show also significant results for Hausman test at the 1%, 5% and 10% levels respectively. According to this fact fixed effects is considered for testing the significance of intercept and slope coefficients. The evidence indicates that securities returns are significantly associated with the earnings level and the changes in earnings level for both the return model and the deflated return model by the beginning year's price. Specifically, the earning response coefficient (EPS) is 0.021 statistically significant and the adjusted-R^2value that refers to the explanatory power for the model is 18.1%. In the second model, the findings show a (ΔEPS) coefficient of 0.0135 statistically significant and an adjusted coefficient of determination R^2 of 5.5%. For the deflated variables both earnings response coefficients are significant at 10% and 5% confidence levels. The coefficients estimates of the earnings levels and changes deflated by beginning of period stock price are equal to 0.5782 and 0.1370 respectively. We note that in both cases the deflated model (return price model) work better than return model in reflecting the return-earnings relation evidenced by higher explanatory power and earnings response coefficient. Adjusted coefficients of determination R^2 rise to 42.8% and 10.57% confirming the idea that earnings yield under return deflated model have higher informational content and explain best the stock returns. The outcome is consistent with Kothari and Zimmerman (1995) who found that all models yield significant intercept coefficient and the price model provides unbiased earnings response coefficients while the return model yields ones which are biased downward. Having the two assumptions H1 and H2 verified (Easton and Harris (1991)).This result provides additional evidence to previous studies that document the ability of price and return models to describe somewhat better the returns-earnings relationship (Bowen, 1981; Olsen, 1985; Landsman, 1986; Barth et.al, 1990 and 1992; Barth, 1991; Harris et.al, 1994).

In other hand, Table 4 reports the results of testing H3 (Model 3) which investigates the relationship between current dividends, current dividend yield and stock returns.

Table 4. Main results from the effects of dividends and dividend yield on returns in Tunisian stock market for the full period (2005-2015)

Variables	**Model 3**	**Deflated Model 3**
Intercept	0.0506***	-0.0938***
P-value	(0.0026)	(0.0000)
t-Statistic	[3.0308]	[-4.2368]
$DPS_{i,t}$	0.0221***	
P-value	(0.0084)	
t-Statistic	[2.6490]	

$\frac{DPS_{i,t}}{P_{i,t-1}}$		3.3030***
P-value		(0.0000)
t-Statistic		[7.3218]
Adj. R-squared	0.079	0.3097
F-Statistics	3.532*	54.722***
P-value	(0.060)	(0.000)
$\chi 2$	7.781***	8.858***
P-value	(0.0005)	(0.0002)
Observations	444	446

, **, * statistically significant at the 1%, 5% and 10% levels respectively.*

For testing the third hypothesis, F-statistic test (wald test) and Hausman test are used to determine the use of fixed effects, random effects or pooled data regression model and the result shows that fixed effects model is more appropriate. Regarding the results, we can see the degree to which dividends level is related to securities returns for both of models. There is a positive and significant relationship between current period dividend per share and stock returns. The differences between the return model and the deflated return model are expressed in the significant dividend response coefficients (DPS= 0.0221, DPSt/Pt-1= 3.3030) and the adjusted R-square R^2 of 7.9% and 30.97% respectively. This suggests the fact that the variations in current dividends per share explains 7.9% of the variation in the stock returns while 30.97% of the variance in the stock returns can be explained by the variations in dividend yield ratio (current dividend per share to beginning stock price ratio). Thus, the deflated model (return price model) has higher informational content to explain the stock returns due to the huge decrease in the explanatory power and response coefficient when the dividend level (DPS) is used as independent variable. This result fits with the previous studies (Easton and Harris (1991)) and asserts the hypothesis about a strong relationship between the dividends and stock returns of the Tunisian shareholding companies.

Finally, the result to test our last hypothesis showing the effects of all independent variables (current earnings per share and changes in earnings to beginning stock price, prior dividend per share to beginning stock price and the beginning reverse stock price) on stock returns is presented in Table 5.

Table 5. Main results from the effects of earnings, earning changes, prior dividends and reverse stock prices on returns in Tunisian stock market for the full period (2005-2015)

Variables	Model 4
Intercept	-0.2079***
P-value	(0.0000)
t-Statistic	[-6.2579]
$\frac{1}{P_{i,t-1}}$	1.3950***
P-value	(0.0000)
t-Statistic	[5.8928]
$\frac{EPS_{i,t}}{P_{i,t-1}}$	1.3697***
P-value	(0.0000)
t-Statistic	[4.6597]
$\frac{\Delta EPS_{i,t}}{P_{i,t-1}}$	0.5286***
P-value	(0.0036)
t-Statistic	[2.9288]
$\frac{DPS_{i,t-1}}{P_{i,t-1}}$	-0.1745**
P-value	(0.0246)
t-Statistic	[-2.2553]
Adj. R-squared	0.4255
F-Statistics	4.848***
P-value	(0.000)
$\chi 2$	56.851***
P-value	(0.0000)
Observations	441

*, **, *** *statistically significant at the 1%, 5% and 10% levels respectively.*

In the present study, Hausman test is applied and fixed effects model is selected. The above results show that earnings yield, changes in earnings to beginning stock price and beginning reverse stock price have positive significant coefficients (1.3950; 1.3697; 0.5286) respectively , implying that these independent variables are directly impacting stock returns of listed firms. However, dividend yield has significant negative impact on stock returns of firms (-0.1745). The adjusted coefficient of determination is 42.55% which means that there is 42.55% variation on stock returns due to these independent variables. Hence, we accept our research hypothesis indicating that those variables seem very pertinent to explain stock returns. Furthermore, the findings support Easton and Harris (1991) but provide some additional evidence about this specific relationship between the above variables and returns. Based on the results of earnings yield and ΔEPS ratio, we suggest that investors should consider these two measures before investing in the stocks of a firm because both of them significantly affect the prices of firm. It means that when the earning of firms increases, it leads to increase in the growth of firms which is intended to attract additional investors to invest in those firms that have high growth. Thus, the demand of their shares will rise conducting to increase the market prices of firms. Dividend yield ratio also found to have negative impact on stock prices which means that if dividend yield decreases, it results in increasing the market prices. It is supposed that one of the reasons of this result is shareholder's tendency to make investment instead of receiving dividend. the firms having high growth will pay fewer dividends to their stockholders compared to other firms and offer more investment opportunities for new investors which lead to more stock prices volatility. Heaney and Pavlov (2004) also found the negative impact of dividend yield ratio on firm stock prices. Fama and Babiak (1968) and Easton and Harris (1991) indicate that in some years of study to explain the stock returns shareholders had special attention to dividends (significant relationship) and in other years of study, there was not a significant relationship between these variables. They consider that changing attitudes of shareholders during these different years maybe are due to other economic, social and political factors.

Additionally, in order to examine the impact of the 2010-2011 Jasmine revolution on the Tunisian stock market, we divided the sample into to sub-periods the first from 2005 to 2009 and the second from 2010 to 2015 and estimated again the return models (results are not reported here but they can be provided upon request). The return-earning deflated model yields a significant ERC of 0.794 (the t statistic is 5.197) for the pre-2010 period and a significant ERC of 0.394 (t statistic is 2.650) for the post-2010 period, while the return model yield a lower ERC statistically significant (0.0284, t statistic 2.972) (0.0103; t-statistic 4.641) for the pre and post 2010 period respectively. Similar results were found for the return-dividends model case. Overall we can say that in the Tunisian stock exchange, the deflated return model by the beginning stock price describes better both the return-earnings and return-dividends relation compared to the simple specifications but we must not forget that the four models may suffer from value irrelevant noise and time recognition lag problems. Basu (1997) reports that annual earnings do not provide a very efficient measure for all the value relevant events captured by the investors and their timeliness. Therefore, the use of other instrumental variables could improve the return-earnings relation which is based on short period data.

5. Conclusion

In this study we focused on analyzing the association between stock returns, earnings and dividends using four model specifications: the return simple and return deflated models in a Tunisian context given to the fact that information users (investors and financial analysts) interest in accounting profits as they are the primary elements considered in the investment and financial decisions.

The results show the strong predictive ability of return deflated models by beginning stock prices to explain better the relationship between the earnings, dividends and stock returns. On the contrary, the simple return models are less efficient by providing lower significant earnings response coefficients and adjusted R-squares compared to the previous models. These findings are consistent in someway with Kothari and Zimmerman (1995), Martikainen et.al (1997) and Dumontier and Labelle (1998). The low informational ability of the return models could be attributed to the recognition lag. It means that current accounting earnings into the financial statements do not incorporate all the important information about economic events rapidly as share prices information do.

In addition, we also estimated a combined model taking into consideration the impact of all the independent variables on the stock returns in order to improve the previous results and get more value relevancy from the existing relationship. The results support our hypothesis that there exists significant impact of earnings yield, changes in earnings to beginning stock price ratio and prior dividend yield of firms on their stock returns. Earnings yield and earnings changes of firms have positively significant impact on stock returns. However, prior dividend yield found to have negative impact on the stock returns similarly to Fama and Babiak (1968) and Easton and Harris (1991). The overall finding implies that it is recommended for investors to understand the drivers of the return-earnings relation by applying investment criteria that utilize carefully earnings yield and dividend yield to know better future stock market performance in the emerging countries and earn abnormal returns through investing.

Besides, our study did not examine foundational economic, social and political reasons that ground the return-earnings relation as well as the alternative econometric techniques that could improve the results. Another interesting study could be made from the same research framework: it is examine the effect of losses (negative earnings) in the earnings-returns relation and the inclusion of leading periods in earnings and returns as measures of increasing the earnings response coefficients and the explanatory power of the models. Also, further research could analyze the components of earnings per share and cash flows rather than earnings and dividends.

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