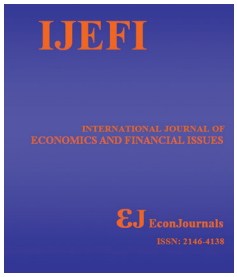

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Overconfidence Bias, Over/Under-reaction of Financial Analysts on the Tunisian Stock Market, and Their Impacts on the Earnings Forecasts

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ABSTRACT

This paper aims to investigate the effect of financial analysts' recommendations on the overconfidence and over or under-reaction to previous years' earnings, as well as their impact on investment decisions in the Tunisian stock market. Literature mostly turned out that a positive bias in analysts' forecasts overreacted to prior earnings changes. Our study is based on the assumption that overconfidence among analysts can be understood through the accuracy of their forecasts, but also it is detected by the way that analyst provides a clear recommendation or not. The analysis employs a panel regression models using annual and bi-annual data over the period 2010-2015. Empirical results show that analysts on the Tunisian stock market are too confident in their forecasts on average, and there is clearly an overall over-reaction to past earnings changes. However, self-confidence is greater for those forecasts that are equipped with a recommendation, when the over-reaction is greater for the not equipped forecasts.

Keywords: Overconfidence, Overreaction, Analysts' Recommendations, Earnings Forecasts
JEL Classifications: G02, G11, G14, G21

1. INTRODUCTION

The significant increase in the volume of information is not very helpful for the financial analyst in the improvement of their forecasts. According to Dreman and Berry (1995) for example, beyond a certain threshold, additional information does not improve the quality of thinking of the expert, although it greatly increase confidence carried on their thoughts. It is also necessary that financial analysts carry judgments on asset prices of short-term firm and guide some variables at the same time to get an idea. In a way, their activity is perfectly more anxious and more critical than a lawyer job, a radiologist or a clinical psychologist. Financial analysts manage a large volume of data, which does not improve the accuracy of their forecast. They always show an exaggerated confidence in the relevance of their analysis. This state of spirit brings them to make highly risky decisions and caused excess enthusiasm by nature to make them sensitive to market events.

Moreover, analysts are eternal optimists, regardless of economic conditions. Whether the economy is growing or in recession, analyst's error margin remains the same. Several researchers supported the observation that customers are dismayed when they see that the recommendations do not meet their expectations. Buffett (1996) adopts a methodology namely the determination of future earnings or to come up by a simple extrapolation based on prior earnings, especially when the past trend draws a stable and steady progression.

Being interested by these financial market anomalies and more specifically the psychological bias of analysts, would lead us to come back to the emergence of a new paradigm of behavioral finance. Indeed, dealing with movements that mark the international financial scene, the weaknesses of the efficient financial markets' theory can no longer be classified at the level of detail point. Behavioral finance then developed as an alternative to the standard theory by challenging in cause the issue about the rationality of agents in their decisions and hence, the possibility to act contrary to their interests and highlight investor psychology to explain their behavior. Behavioral finance will invalidate the foundations of the traditional approach of finance and prove

through extensive research the existence of psychological biases. This theory considers that individuals are not rational since their decisions are usually affected by psychological biases, which are classified into two categories, the cognitive and the emotional biases.

The contribution of this study is to detect the excessive self-confidence among financial analysts, the over or under-reaction to previous earnings changes, and their impact on investment decisions in the Tunisian stock market, during the last 6 years' period. The analysis is conducted by using an econometric model that associates both variables of the forecast earnings, the actual earnings and the analysts' recommendations.

This paper is organized as follows. Section 1 exposes shortly the literature. Data source and methodology adopted for the econometric estimates are developed in Section 2. Section 3 presents the descriptive analysis and conducts the univariate test variables. Results are reported and interpreted in Section 4. Finally, we conclude in Section 5.

2. LITERATURE REVIEW

The accuracy of earnings forecasts of financial analysts is a crucial topic in the analysis of stock markets for both financial experts and investors. Besides, one of the key factors in the methods of share evaluation is the price earnings ratio (PER) (Arnold et al., 1984), in which we find forecasts of future earnings. The large number of financial analysts currently operating on the stock market proves the need to more accurate earnings forecasts. This situation presented a fertile ground for academic research devoted to evaluate and judge the accuracy and other properties concerning the analysts' forecasts. In addition, various studies have used the assumption of analysts' forecasts as a reliable indicator of market expectations in research on share price reaction to unexpected earnings information.

According to the most recent studies and more specifically to the work of Duru and Reeb (2002), analysts are more accurate than time-series models, and this is true even for the more sophisticated time-series models, as shown by Lee and Chen (1990). However, it remains to see if there are any biases in the forecasts provided by these analysts and is there a kind of immediate under or over-reaction to information on earnings. Firstly, is there any evidence proving that analysts continuously estimate earnings too high (positive bias) or too low (negative bias) compared to actual earnings? We can say that there is more evidence in favor of analysts' earnings forecasts being overly optimistic, as firstly shown by Fried and Givoly (1982), and later by many others, like De Bondt and Thaler (1990), Dreman and Berry (1995), Capstaff et al. (2001), and Duru and Reeb (2002). However, Brown (1996; 1997) argued that analysts' earnings forecasts are significantly pessimistically biased (pessimism bias) based on three main reasons. First, institutional pressures by firm managers in order to boost analysts' expectations have reversed. Second, hard-to-quantify productivity growth has increased companies' profitability. Third, analysts have underestimated the impact of globalization on boosting firms' corporate profits.

Nextly, do analysts systematically under or over-react to the (imminent) earnings information? Overreaction represents the first forms of irrationality in the stock market and it is defined as the overweighting of unanticipated and dramatic information. It causes a return reversal and a negative auto-correlation over long horizons that challenge the efficient market hypothesis. Thus, the majority of the individual's behavior in decision-making tends to violate the law of Bayes rule by overweighting the recent information to the detriment of the past information. According to De Bondt and Thaler (1990), analysts over-react to extreme earnings and this is in line with their previous study (De Bondt and Thaler, 1985), which proves that the stock market over-reacts to new information. Patz (1989), Capstaff et al. (1995), Hussain (1996), and Capstaff et al. (2001) reached the same conclusion. Klein (1990), O'Hanlon and Whiddett (1991), Mendenhall (1991), Abarbanell and Bernard (1992), and Ali et al. (1992) studies report an opposite evidence since they show that financial analysts under-react to earnings announcements.

Finally, are analysts too confident in the sense that they exaggerate in estimating their own competence and underestimate risk? The behavioral literature asserts that overconfidence is one of the most robust behavioral findings (Shefrin, 2008). It is regarded as a prominent bias that relies on the core of volatile beliefs (Akerlof and Shiller, 2009), and a persistent dynamic phenomenon (Shiller, 1999). In the case of earnings per share (EPS) analysts, overconfidence presents itself in their undue faith in their own private information and hence disregard of those bits of information which disconfirm that conviction (Easterwood and Nutt, 1999; Thaler, 2005). They attach too much importance to events that confirm their belief (Daniel et al., 1998a,b). Following De Bondt and Thaler (1990), Capstaff et al. (2001), and Rothovius (2007), if an analyst is confident of his forecast, he would be also more willing to give a recommendation on the company under investigation.

3. EMPIRICAL DESIGN

3.1. Data Source

The empirical analysis is focused on a sample of 57 companies listed in the Tunisian stock exchange over the period 2010-2015. Historical amounts of actual and forecast earnings are employed, which explain the choice of the analysis' period also determined by the availability of data during this time interval. Recommendations are collected from brokers who are present on the Tunisian stock market, namely MAC sa, Tunisie Valeurs, Amen Invest, Axis Capital, CGF and BNA Capital. Recommendations are monthly, and they are regularly revised by financial analysts after the publication of the bi-annual financial statements of the listed companies. Forecasts are published against every half-year following the financial statements publication. The consensus forecast is also collected from the brokers already mentioned. The actual EPS are reported from the balance sheets of companies published according to activity reports on the BVMT website.

3.2. Methodology

Our study tries to detect overconfidence bias and over/under-reaction among the Tunisian financial analysts when analysts

provide a very clear recommendation (strong buy, buy, underperform, sell) or not. Our analysis concerns financial analysts whose mission is to estimate the fundamental value of a share. Technical analysts (chartists) are excluded as they do not have the same forecasting methods or the same forecast horizon. In our testing procedure, the direction of analysts' reaction to earnings information (over or under-reaction) is estimated from two different views: (i) The generalized overreaction, and (ii) the over/under-reaction to earnings announcement. For each view, we run a model with three regressions with and without taking into account the presence of recommendation. Panel data analysis is conducted following the Rothovius (2007), for different forecast horizons (6 and 12 months intervals for the full-sample).

More specifically, the first model checks whether financial analysts operating on the Tunisian Stock Exchange exhibit over-confidence and over-reaction in their behavior by determining the empirical effect of variation in actual earnings between two semesters. Thus the first testing hypothesis (H_1) is that of over-reaction in analysts' forecasts, with and without take into account the presence of recommendation and this by adding a dummy variable. The goal is to see whether analysts over-react differently in the case of recommendation. We estimate the following model:
Model 1

$$EPS_t\text{-}EPS_{t-1}=\alpha_i+\beta_i\,(FEPS_t\text{-}EPS_{t-1})+\varepsilon_t \quad (1)$$

$$EPS_t\text{-}EPS_{t-1}=\alpha_i+\beta_i\,(FEPS_t\text{-}EPS_{t-1})+\lambda_i\,Dum+\varepsilon_t \quad (2)$$

$$EPS_t\text{-}EPS_{t-1}=\alpha_i+\beta_i\,(FEPS_t\text{-}EPS_{t-1})+\lambda_i\,Dum+\delta_i\,Dum*(FEPS_t\text{-}EPS_{t-1})+\varepsilon_t \quad (3)$$

Where:

- EPS_t-EPS_{t-1} is the actual changes in EPS of the firm i between the ongoing semester t and the previous t−1.
- $FEPS_t$-EPS_{t-1} is the difference between the forecasted EPS and actual EPS of the firm i between the ongoing semester t and the previous t−1.
- DUM is a dummy variable, which takes the value 0 when the recommendation is either (strong buy, buy, underperform, sell) and the value 1 otherwise (not recommendation).
- α_i, β_i, λ_i and δ_i are model parameters.
- ε_t is a zero mean error term.

The biases of overconfidence, over and under-reaction of financial analysts suppose the presence of a relationship between the variation in actual earnings and the difference between the estimated and the real earnings. In other words, the coefficients α_i and β_i estimated by regression are significantly different from zero and one, respectively. If the coefficient α_i is negative, then analysts are over-confident about the forecast earnings they will make, and conversely if it is positive it means they lose confidence in their own abilities of judgments on the accuracy of forecast earnings and raise the mistake possibility. The coefficient β_i relates to the assumption for over or under-reaction of analysts. If $\beta_i < 1$ then there is a tendency to over-estimate regarding the earnings forecasts because the variations are very extreme (over-reaction), and if this coefficient is strictly >1 so analysts are too conservative and underestimate their earnings forecasts (under-reaction). The over-confidence bias in analysts forecast without recommendation is confirmed by a negative value of the coefficient α_i, while the over-confidence of analyst in the presence of recommendation is confirmed by a negative value of $(\alpha_i\text{-}\lambda_i)$. The over or under-reaction to actual earnings in analysts' forecasts without recommendation is confirmed by a strictly lower or higher value to 1 of β_i, respectively, and the over-reaction of the analyst in the presence of recommendation is confirmed by a value of $(\beta_i\text{-}\delta_i) > 1$.

The second hypothesis (H_2) we test is that of whether overly extreme earnings forecasts are best characterized in terms of over-reaction or under-reaction to prior earnings. In order to test (H_2) we employ the following regression of forecast error in a given year against the actual earnings change for the prior year:
Model 2

$$EPS_t\text{-}FEPS_t=\alpha_i+\beta_i\,(EPS_{t-1}\text{-}EPS_{t-2})+\varepsilon_t \quad (1)$$

$$EPS_t\text{-}FEPS_t=\alpha_i+\beta_i\,(EPS_{t-1}\text{-}EPS_{t-2})+\lambda_i\,Dum+\varepsilon_t \quad (2)$$

$$EPS_t\text{-}FEPS_t=\alpha_i+\beta_i\,(EPS_{t-1}\text{-}EPS_{t-2})+\lambda_i\,Dum+\delta_i\,Dum*(EPS_{t-1}\text{-}EPS_{t-2})+\varepsilon_t \quad (3)$$

Where:

- $FEPS_t$-EPS_{t-1} is the difference between the forecasted EPS and actual EPS of the firm i between the ongoing semester t and the previous t−1.
- EPS_{t-1}-EPS_{t-2} is the prior earnings changes between t−1 and t−2.
- α_i, β_i, λ_i and δ_i are model parameters.
- ε_t is a zero mean error term.

If $FEPS_t$ is an efficient forecast, then β_i would be zero. An estimate greater than (less than) zero is indicative of under-reaction (over-reaction) to prior year's earnings changes. The key implication in model 2 is that β_i can be positive, indicating under-reaction. Furthermore, we test hypothesis (H_2) of whether overly extreme earnings forecasts are best characterized in terms of over-reaction or under-reaction, with take in account the presence of recommendation, by adding a dummy variable. The over or under-reaction to prior year's earnings changes without recommendation is confirmed by a strictly lower or higher value to 0 of β_i, respectively, and the over-reaction of the analyst in the presence of recommendation is confirmed by a value of $(\beta_i\text{-}\delta_i) > 0$.

3.3. Data Preliminary Analysis

Table 1 provides a summary of data preliminary analysis for 650 observations under the analysis period 2010-2015. On average, the mean of actual earnings (EPS) are slightly higher than the mean of forecasts earnings per share (FEPS), although the medians are almost the same. In addition, the standard deviations are very close to each other. The variables of bi-annual variation for actual earnings (ΔEPS) and for FEPS-EPS are lower on average and volatility. We record a mean of 0.0131 and a standard deviation of 1.343 for the variable (ΔEPS).

We notice from the descriptive statistics that the "skewness" is different from 0, and the "kurtosis" is >3 for all the variables. This is evidence for the deviation of the empirical distributions of these variables from the parameters of the normal distribution (Gauss). Therefore, the symmetry information assumption is rejected. These coefficients show the presence of asymmetric information on the Tunisian stock market during the years of study.

The correlation matrix shows that there is no multicollinearity problem and the analysis of simple correlations indicates a positive relationship between the different variables tested. The correlations related to the dependent variable ΔEPS are greater with the variable of the forecast error (FEPS-EPS) and lower with the variable Dum*(FEPS-EPS). For the explanatory variable (FEPS-EPS) robust associations were noticed between this one and the variable Dum*(FEPS-EPS) on one hand, and ΔEPS of the other (Table 2).

4. EMPIRICAL RESULTS

4.1. Over-confidence and Generalized Over-reaction of Financial Analysts

4.1.1. Bi-annual estimates

A first series of estimates tries to detect whether financial analysts exhibit excessive confidence in their forecasts of future earnings (FEPS), and covers the full period of analysis from the first semester of 2010 to the second semester of 2015. Our analysis is conducted in panel data.

Table 3a presents the regression results for the model 1 in its simplest form (equation 1) as well as after the addition of dummy variables depending on there is a recommendation from financial analysts or not through (equations 2 and 3). The estimated coefficients are statistically significant for all variables, implying the existence of the over-confidence bias or excessive confidence on the Tunisian stock exchange from which suffer financial analysts.

According to the estimation results of the specification (1), the constant α (−0.0071) estimated in this regression takes the negative sign, proving that financial analysts are very confident and over-estimate their forecasted earnings with time. This coefficient is significant at the 99% level. In light of these findings, we assert that this behavior is due to the over-confidence bias or excessive confidence from which suffered the financial analysts in Tunisian stock market. The model is overall significant with a coefficient of determination R^2 = 53.73%. The analysis of the coefficient β shows a generalized excessive over-reaction of analysts compared to actual earnings. Thus, the expected changes in earnings forecasts are very extreme. This coefficient is positive in the order of 0.7617 and statistically significant at the 99% level of confidence.

Similarly for the estimation results of specifications 2 and 3, in which the earnings' forecasts are divided into two portfolios depending on there are recommendations (strong buy, buy, underperform, sell) or not. We report that the coefficients λ and δ are also significant at the 95% and 90% level. The coefficient λ was estimated at 0.1074 higher than that of α (−0.0419) which proves that over-confidence bias or excessive confidence was amplified among financial analysts for the earnings forecasts equipped recommendation. However, the coefficient δ (−0.1020) is much lower than that of β (0.7459). This result detects a major over-reaction of these analysts relative to earnings' forecasts that are not equipped with a recommendation.

4.1.2. Annual estimates

A second set of tests attempts to confirm the over-confidence bias of financial analysts and to check its robustness with annual data, by estimating our three equations of model 1 previously presented, with and without the recommendation dummy variables.

Table 3b reports the regression results. They show that coefficient of the tested variables keep their positive and negative signs for the all specifications, but also exhibit higher magnitude and higher

Table 1: Descriptive statistics (n=650)

Variables	EPS	FEPS	ΔEPS_t	FEPS-EPS	ΔEPS_{t-1}	EPS-FEPS
Mean	0.6514	0.6381	0.0131	0.0095	0.0367	0.0087
Median	0.3059	0.3160	0.0023	0.0020	−0.00069	−0.0100
Maximum	20.218	15.915	19.308	15.005	19.207	11.361
Minimum	−4.438	−11.012	−8.609	−11.229	−5.446	−6.151
Standard deviation	1.459	1.555	1.343	1.359	1.322	1.083
Skewness	5.554	2.236	4.383	0.7836	5.387	3.0622
Kurtosis	60.517	36.469	68.675	40.398	78.610	38.987

EPS: Earnings per share

Table 2: Simple correlations

Variables	EPS	FEPS	ΔEPS	FEPS-EPS	Dum*(FEPS-EPS)	ΔEPS_{t-1}	EPS-FEPS	Dum*ΔEPS_{t-1}
EPS	1	0.7395	0.5336	0.3215	0.3547	0.0715	0.2703	0.0560
FEPS	0.7395	1	0.2080	0.5685	0.5269	0.2290	0.4462	0.1765
ΔEPS	0.5336	0.2080	1	0.6820	0.5906	0.5826	0.4099	0.5112
FEPS-EPS	0.3215	0.5685	0.6820	1	0.8243	0.4040	0.3853	0.3752
Dum*(FEPS-EPS)	0.3547	0.5269	0.5906	0.8243	1	0.3577	0.2813	0.4556
ΔEPS_{t-1}	0.0715	0.2290	0.5826	0.4040	0.3577	1	0.2334	0.7844
EPS-FEPS	0.2703	0.4462	0.4099	0.3853	0.2813	0.2334	1	0.1790
Dum*ΔEPS_{t-1}	0.0560	0.1765	0.5112	0.3752	0.4556	0.7844	0.1790	1

EPS: Earnings per share

level of significance compared to those found with bi-annual data. These findings corroborate our previous estimates, and suggest that the excessive confidence and the generalized over-reaction biases among financial analysts on the Tunisian stock exchange are so robust. This model is overall significant with a coefficient of determination R^2 de 63.13%.

Globally, both bi-annual and annual data estimates prove that financial analysts are afflicted by an over-confidence bias in their forecasts and they over-react to new information. These results corroborate the empirical literature, and particularly the Rothovius (2007) study. We conclude that the self-confidence of financial analysts can be seen through forecast accuracy. So if an analyst is confident of his forecast, he would be more willing to give a recommendation on the company he or she is investigating.

4.2. Over/Under-reaction in Earnings Announcements

4.2.1. Bi-annual estimates

A first series of tests use bi-annual data of the Tunisian stock market. They attempt to verify the over-reaction bias of financial analysts to prior changes in earnings, by estimating our equations of model 2 previously exposed, with and without the recommendation dummy variables.

Table 4a reports the regression results. Estimates suggest that analysts are inefficient regarding their reaction in the earnings announcements. The coefficient β is negative than about −0.1893 and statistically significant at 99% level of confidence in specification 1. The sign of the intercepts α still remain negative (−0.0165), suggesting analysts' optimism. These findings support the over-reaction and over-optimism hypothesis of analysts.

In the regressions with the dummy recommendation variables, we find results validating analysts' over-reaction. The coefficient λ in specification 2, is estimated at 0.0203 higher than that of α (−0.0101), which proves that over-reaction bias is amplified among financial analysts for the changes in earnings forecasts not equipped recommendation. Results from specifications 3 show that the difference between the coefficients β and δ is always different than zero, positive, and statistically significant at 99% level of confidence. As the previous case of generalized over-reaction, our estimates support that analysts react differently regarding recommendations.

4.2.2. Annual estimates

A second set of tests attempts to validate the direction of financial analysts' reaction to prior changes in earnings, by estimating our three equations of model 2 with Tunisian market annual data.

Table 4b presents the estimates results. According to the specification 1, the coefficients α and β exhibit the significant and negative expected sign. Despite somewhat loss in magnitude of coefficients, results confirmed the assumption that forecasts are overly optimistic and analysts over-react to prior earnings announcements. Estimates with regard to recommendations, provide similar robust results. The coefficient (β-δ) is always different than zero, positive and statistically significant, suggesting that over-reaction prior earnings announcements is greater when analysts have no recommendations.

Table 3a: Analysts' over-reaction to actual EPS changes regressions results of model 1 - bi-annual estimates period of analysis (S1 2010 - S2 2015)

Variables	Specification 1	Specification 2	Specification 3
Intercept	−0.0071***	−0.0419	−0.0248**
	(0.0012)	(0.0397)	(0.0128)
FEPS-EPS	0.7617***	0.7085***	0.7459***
	(0.1242)	(0.0399)	(0.0602)
Dummy		0.1074*	0.0580**
		(0.0838)	(0.0968)
Dum*			−0.1020**
($FEPS_t$-EPS_{t-1})			(0.0452)
Adjusted R^2 (%)	53.73	52.16	47.68
F-statistic	63.13***	9.12***	10.224***
Observations	643	638	638

***,**, and * denote statistical significance at the level of 1%, 5% and 10%, respectively, EPS: Earnings per share

Table 3b: Analysts' over-reaction to actual EPS changes regressions results of model 1 - annual estimates period of analysis (2010-2015)

Variables	Specification 1	Specification 2	Specification 3
Intercept	−0.0303***	−0.0425***	−0.0206**
	(0.0107)	(0.0093)	(0.0089)
FEPS-EPS	0.7804***	0.8497***	0.7773***
	(0.1164)	(0.0217)	(0.0483)
Dummy		0.0418***	0.0524***
		(0.0135)	(0.0165)
Dum*			−0.1355**
($FEPS_t$-EPS_{t-1})			(0.0579)
Adjusted R^2 (%)	71.06	83.39	68.18
F-statistic	132.83***	29.19***	191.73***
Observations	323	321	321

***,** denote statistical significance at the level of 1% and 5% respectively, EPS: Earnings per share

Table 4a: Analysts' under-reaction/over-reaction to prior earning changes regressions results of model 2 - bi-annual estimates period of analysis (S1 2010 - S2 2015)

Variables	Specification 1	Specification 2	Specification 3
Intercept	−0.0165***	−0.0101*	−0.0324*
	(0.0012)	(0.0058)	(0.0275)
FEPS-EPS	−0.1893***	−0.1568***	−0.0830***
	(0.0371)	(0.0434)	(0.0237)
Dummy		0.0203*	−0.0080
		(0.0127)	(0.0357)
Dum*			−0.0777***
($FEPS_{t-1}$-EPS_{t-2})			(0.0266)
Adjusted R^2 (%)	6.48	4.12	16.94
F-statistic	1.66***	1.44**	44.72***
Observations	645	644	644

***,**, and * denote statistical significance at the level of 1%, 5% and 10%, respectively, EPS: Earnings per share

Overall, our results allow us to specify the direction of analysts' reaction to prior earnings announcement. We find that analysts are over-optimistic and that on average over-react to information.

Table 4b: Analysts' under-reaction/over-reaction to prior earning changes regressions results of model 2 - annual estimates period of analysis (2010-2015)

Variables	Specification 1	Specification 2	Specification 3
Intercept	−0.0222***	−0.0369***	0.0213**
	(0.0027)	(0.0083)	(0.0109)
FEPS-EPS	−0.0061**	−0.0037*	−0.0039***
	(0.0030)	(0.0029)	(0.0007)
Dummy		−0.0331**	−0.0457***
		(0.0162)	(0.0141)
Dum*			−0.0221*
($FEPS_{t-1}$-EPS_{t-2})			(0.0136)
Adjusted R^2 (%)	13.35	13.38	1.73
F-statistic	1.87***	1.85***	2.86**
Observations	318	318	318

***,** and * denote statistical significance at the level of 1%, 5% and 10%, respectively, EPS: Earnings per share

There are two potential reasons, which may explain our results, regarding the over-reaction of analysts. First, there may be "institutional reasons" that trigger the reported over-reaction. Analysts employed in brokerage firms probably report over-optimistic forecasts, in order to make their customers to increase the volume of trade, and as a result to increase brokerage firm's profitability. The second reason is related to private information. Some of the listed companies employ analysts who trade their stocks on their behalf. These analysts are considered to have private information. Also, Daniel et al. (1998b) find that investors who have private information over-react to it. As a result, the reported over-reaction may be due to the private information that analysts collect.

5. CONCLUSION

To sum up, the accuracy and correctness of earnings forecasts is a crucial point for practitioners and experts regarding on investment decisions because the PER forecast which contains forecasts of future earnings is one of the key factors in the method of shares evaluation. Thus, the accuracy of analyst' earnings forecasts has been object of an intensive investigation in the empirical literature during several decades.

In this paper we provide further evidence of financial analysts' reaction to earnings information in the Tunisian stock market over the period 2010-2015. More specifically, we assess two forms of bias, over-confidence and over-reaction to prior earnings, in relation to analysts' recommendations. We establish evidence of an excessive confidence per se of Tunisian financial analysts as well as generalized over-reaction and over-reaction to prior earnings. Furthermore, our study supports that the over-confidence of analysts is much greater for forecasts that are equipped with a recommendation, while the over-reaction to previous earnings changes is on the contrary greater for forecasts that are not equipped with a recommendation.

However, it is still an open question whether there is an over-confidence bias in forecasts, and whether analysts systematically under or over-react to new information on actual earnings. There is more evidence in favor of excessive confidence and over-reaction for financial analysts but some argue otherwise.

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