Analysis of the Publication of Forecast Information by Managers and Financial Analysts

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Abstract

This paper studies the determinants and the consequences of voluntary disclosure. In a sample of 50 companies listed on the stock exchange of Tunis, empirical findings suggest that a high level of detail of voluntary disclosure decreases forecast error.

1 Introduction

The forecast information is becoming more and more interesting worldwide particularly, in recent decades during which many large international companies have gone bankrupt.
A crisis of confidence in the credibility of forecast financial information given to investors has contributed to instability in financial markets, particularly the Tunisian one. For this purpose, Stolowy and Ding (2003) find that whatever the issuer's motives are, he attract theses markets to buy the shares available, and at the same time minimize the cost of operation.
The idea according to which leaders hold and provide useful information to analysts facilitates the formulation of their forecast and reduces the time they spend looking for reliable information, leads us to wonder whether the means of forecasts benefits available to financial analysts lead to a reduction of the information asymmetry between themselves and the managers. The question is based on the observation quoted above: To what extent do earnings forecasts by financial analysts contribute in reducing information asymmetry and hence the development of the stock market?

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Lev (1992) found that the forecast information allows to reduce the information asymmetry between the managers of the companies quoted in the stock exchange, financial analysts and investors. It is therefore interesting to know the determinants of the level of detail of the forecast information held by leaders in a sample of 50 companies listed on the stock exchange of Tunis in 2010. Moreover, it is also important to analyze the effect of the level of detail of this information on the forecasting error of future income, based on a sample of 50 companies listed on the stock exchange of Tunis (BVMT) in 2009.

Indeed, previous research found longterm underperformed quoted companies. Degeorge and Derrien (2001) explain this underperformance by an excess of optimism on the part of financial analysts and investors on future earnings. Thus, identifying factors for the publication of reliable earnings forecasts by managers is necessary because it contributes to market efficiency by reducing one source of underperformance of the shares issued.

As far as we know, this work is the first to determine the relationship between the level of forecast information and the reliability of earnings forecasts in a context of high information asymmetry.

After a brief presentation of forward-looking publications and commitments resulting, for this, the first part is followed by a review of the literature about the contribution of agency and signal theories to the publication of predictive information and understanding of the forecast error. The constitution of our sample, the methodology and the empirical results are presented in the second part of this article.

2 Importance of the Publication of Forecast Information

The forecast profits are essential for investors to estimate the stock price changes and assess the benefits due to the development of new projects funded by the raised capital. they are indeed unable to know and assess the information held by the managers by themselves, moreover, they interpret the same information differently, some may interpret it positively and others negatively hence the intervention of analysts.

Cheng and Firth (2000) show that forecast earnings estimates have high predictive power on future stocks returns. Thus, investors demand perfect measures of forecast profits for the entirely use the information of past earnings including analysts' forecasts. Consequently, the rate of ownership forecast of shares held by investors can give a signal to companies about the market expectations for them.

Before diffusing the information, the analyst has some of it, and does not sell the same information to each investor and restricts disclosure of the information. Garcia (2002) explains the presence of imperfections in the profit forecast by analysts by the difficulty to handle their share evaluation factors, properly, the analyst himself needs information to give his own opinion.

Matsumoto (2002) finds another explanation of these imperfections in forecasting and the conflicts of interest they face, the analyst will improve his forecasts with the help of the company management, which will enable him to significantly reduce the time and the cost of production of private information. If the information is naturally imperfect, the analyst must adopt a strategy to reduce the risk of errors of forecasts, so the analyst is not able to process all the information, this is due to limited intellectual capacity and lack of time.

It is therefore, non-mandatory information published by the managers of companies that give an idea of the results of a fiscal year. Eng and Mak (2003) evaluate the securities of

companies and analyze changes in stock prices following these forecasts. If there are errors of forecasts regarding the announcement of results, price formation in financial markets will disrupt.

The relationship between financial analysts' forecasts and the dissemination of forecast information by companies is also studied by Bushman, Piotroski and Smith (2004). These authors find that financial analysts' forecasts are more accurate and less scattered when the company improves its financial communication

The importance of publication of forecast information allows us to study the determinants and effects of this publication in the case of a high information asymmetry in which the forecast results published are particularly important for both investors and financial analysts.

3 Literature Review and Hypotheses

This study includes two phases. The first step is to understand the determinants of the level of detail of the forward-looking information to the extent that detailed forecast information is likely to reduce the information asymmetry between managers and investors. This question was rarely discussed because most countries regulatory authorities do not require companies to publish earnings forecasts.

The second stage of this study is to investigate the influence of the level of detail of information on the forecasting error. The question is there to know, whether the forecast error, the gap between the published earnings and the expected benefit is impacted by the level of detail of the forecast information.

3.1 The Publication of Forecast Information

The interest of the forecast information published is useful not only for investors but also for analysts who are reputed to be specialists in the collection and analysis of information. Matsumoto (2002) noted that managers often lead analysts by reviewing in details to predict the results. The managers also manage the accounting profit to publish values higher than expected. According to Hutton (2004), companies manipulate information to manage expectations and avoid bad surprises, manipulations which are undervalued by the financial analysts. Thus managers can easily induce financial analysts into error either leading them to lower their expectations in order to avoid losses or by inflating the earnings of the company.

Theories of signal and agency allow us to justify the publication of voluntary information that suggests that companies have good news are encouraged to publish their earnings forecasts to distinguish companies that have bad news. Taken together, these studies show that because of information asymmetry, managers are usually forced to communicate the value of the firm, by the voluntary publication of earnings forecasts to make a difference for the quality of their companies.

The assumptions tested in this study of the determinants of the level of detail of information publication predictive (Score 1) are as follows:

H1a: The level of detail in forecast information should grow with the firm age (age) quoted in the stock market.

Clarkson and al. (1992) based their opinion on the signal theory to explain the profit forecast. The older companies are encouraged to provide more detailed forecasts to distinguish themselves from others.

Debreceny and Rahman (2005) find that older firms with better control over their market are able to collect detailed and reliable forecast information to construct an identical image to stock brokers which is specific to them by themselves and without resorting.

H1b: The detail of the information should be positively associated with membership of the company to a firm of good quality (Audit).

Depoers (2000) finds that companies that have recourse to several firms should disclose more comprehensive and better information to preserve their reputation and credibility. According to Clarkson, Ferguson and Hall (2003) and Chalmers, Godfrey (2004), the audit quality provided by auditors of large firms leads to an increase in the accuracy of financial information.

H1c: The level of detail of information should be higher within large firms (size).

However, in some studies, the association between firm size and level of detail of information is not significant. Ferguson, Lam and Lee (2002) and Prencipe (2004) show that large companies already get a better understanding of their market.

Other results Depoers (2000), Eng and Mak (2003) and Cormier, Magnan and van Velthoven (2005) refute this hypothesis and explain that the pertinent demand for forecast information should to grow along with large companies rather than with the smaller ones.

H1d: The level of debt (Indebt) should be positively associated with the level of detail of information.

As the agency costs between shareholders and managers increase with the proportion of debt of the company, Bujaki and McConomy (2002) and Ferguson, Lam and Lee (2002) show that firms in high debts may find it difficult to raise new financing. These investigations show a negative association of debt on the level of detail of published information. However Eng and Mak (2003) found a positive association between the level of debt and the level of detail of the information published in Singapore.

H1e: The more sensitive the activity sector (SECT) is to economic fluctuations, the more important the information detail is.

The forecasts are difficult to establish when it comes to a high growing sector. Indeed, Entwistle (1999) and Stolowy and Ding (2003) found that innovative firms are more likely to achieve results higher than firms operating in traditional sectors and should therefore publish more reliable information, hence a positive influence of information detail in relation to the membership of the company to an innovative industry sector.

H1f: The level of detail of information should be positively correlated with levels of profitability (ROE).

The result of Garcia (2002) performed on a sample of Spanish companies' shows a positive influence of firm profitability on the level of information. This argument implies the importance of communication when the financial result of the company is high.

The relationship between disclosure and the level of profitability has been studied without success on a sample of UK companies by Percy (2000) and Williams (2001).

H1g: The level of detail of information should decrease with the share of insiders in the company (Share Ins).

Haw, Hu, Hwang and Wu (2004) argue that firms with a high share of insiders are more politically visible and use the information for strategic purposes to make transfers of wealth in favor of government.

Shen and Chih (2005) note that the manager is willing to adapt his financial reporting. Consequently, insiders cannot judge the action of the manager against them and consequently will call financial intermediaries to judge this situation.

3.2 The Profit Forecast Error

A second field of literature on forecast information sought to estimate the quality of the forecast information through the study of differences in earnings forecasts.

After analyzing the determinants of the level of detail of forecast information held by directors, we are going to study the quality of these forecasts. This study completes the literature about international gap in earnings forecasts.

Studies about the profit forecast gaps were conducted in Hong Kong (Chen, Firth and Krishnan, 2001), Australia (Lee, Stokes, Taylor and Walter, 2003) and Canada (Jog and McConomy, 2003). These studies have used linear regression models to explain the level of forecast reliability. The independent variables used are: the age of the company, the forecast horizon, the size of the company, debt and the level of profitability of the company. The results of these independent variables are different from one study to another.

The hypotheses tested in this study about the importance of the predictive information through the study of differences in earnings forecast (ERROR) in the prospectus of Tunisian firms are as follows:

H2a: The more detailed the forecast information (score1) is, the weaker the forecast error will be.

This hypothesis has never been a priori tested before. It assumes that the level of detail of the forecast information is a signal of the reliability of profit forecasts.

H 2b: The forecast error should decrease with the firm size (SIZE).

According to O'Brien and Bhushan (1990), large companies have a good understanding of the market, and moreover, they are able to allocate more resources to make predictions.

The results of Ackert Athanassakas (2003) and Doukas and McKnight Pantzalis (2005) confirm this hypothesis and explain that a large company distributes good forecast information, which makes it easier for analysts to estimate these forecasts and make their forecast reliable.

H 2c: The forecast error should decrease along with the companies age (AGE).

Ginglinger and Faugernon (2001) found that older firms are encouraged to provide more detailed forecasts to distinguish themselves from other ones. In addition, Lang, Lins and Miller (2004) find that older firms having a better control of their market, find it easier to set forecast earnings and this will increase their predictive power and make it more reliable.

H 2d: The forecast error should decrease with the proportion of insiders in the capital (Insider).

Ackert and Athanassakas (2003) argue that the reliability of the results is associated with the progressive interest granted by insiders to the company. Indeed, the proportion of insiders works as a control mechanism of forecast earnings for they constitute the constant demanders of information claiming transparency and accurate forecasts.

H 2e: The forecast error should decrease along with the corporate profitability (ROE).

Indeed, McNicholas and O'Brien (1997) argue that analysts often follow the titles of profitable companies for which they are optimistic, find it easy understand and narrow the

gap prediction. The study Krische and Lee (2000) combines the reliability of forecast earnings with profitability.

H 2f: The prediction error is expected to increase with the level of the company indebtedness (Indebt)

Since the variability of returns is higher when firms are much more indebted, the gap is expected to grow along with the forecast debt. Ferguson, Lam and Lee (2002) and Cormier, Magnan and Van Velthoven (2005) managed to show a positive association between the level of debt and the forecast gap.

H 2g: The forecast error is expected to increase along with the forecast horizon (HORIZ).

The more the horizon is growing, the more difficulties companies will have to control events occurring late. Dumontier (2003) suggests that managers find it difficult to control the events occurring in the future and, as a consequence, the difference in forecast increases. In addition, Jog and McConomy (2003) find that managers are not able to provide detailed forecasts over a long enough period.

4 Empirical Results

The approach followed is made before an analysis of empirical results obtained.

4.1 Sample and Methodology

After a presentation of the sample, the methodology used is described.

4.1.1 Sample

Our sample is limited to 50 companies quoted in the stock exchange of Tunis (Tunis Stock Exchange), we have included all companies quoted in the stock market in 2010.

Our questionnaire to companies quoted in the stock market aims to calculate the utility score they give to forecast information published in annual reports. However, the variable to explain is based on research data emerging from the questionnaires conducted with financiers working in these companies.

We directly circulated questionnaires to 50 companies in March and April 2012. We arranged a reply rate rising to 100%. We note that 40 questionnaires have been filled in our presence during an interview with the Financial Officer. For the other persons, who requested to fill in the questionnaire alone, given their unavailability, we examined whether the respondent has filled in all the boxes and or has met some difficulties of understanding.

4.1.2 Calculation overall scoring

The variable of the study to explain is a score that measures the level of detail of the information published by the companies in the sample. We study the companies that have the choice whether to publish the information held by the managers, that is to say, that issue or not companies securities during the year. For each company a score was calculated from a list of 49 items that companies are likely to spread. The approach is dichotomous: a report from the list takes the value 1 if it is adopted, otherwise it takes the value 0.

For each of the 50 companies in the sample observed, a score of publication is calculated. This score is the sum of points obtained from the questionnaire conducted among companies quoted in the stock market and after (reading the annual report) hence:

$$ST_i = \sum_{j=1}^{n} Sj$$

with:
- **ST_i**: Total score of firm i
- **n**: number of items in the index
- **Sj**: Score of item j is equal to 1, if the item is published, and 0 otherwise.

4.1.3 Calculation of the mean forecast (Error):

Analysts tend to follow the values of the companies whose results are predictable. Indeed, the uncertainty regarding the future results of the company creates a risk to analysts. This has been verified by numerous studies including those of Marston (1997) and Lang, Lins and Miller (2004), the variability of the results is expected to increase the difficulty of predicting the outcome.

Therefore, to estimate the reliability of these forecasts, we analyze the following two variables: ITPO, the benefit provided by the company i for year t, and Brit, the profit for the year t, to calculate the difference forecast. The dependent variable of the study corresponds to the average deviation of forecast financial analysts (ERROR):

The average spread prediction is calculated by the following ratio: (brit-ITPO) / | ITPO |, which indicates a bullish indication of the analyst (Brit <BPit) or pessimistic indication (BRit> ITPO). If the predictions are accurate, the difference is zero.

4.2 Empirical Results

4.2.1 Methodology

As a first step, we analyzed the determinants of publication of forecast information. The variable studied (Score 1) being binary, we are going to use a logit regression.

In a second step, the study will focus on the impact of the quantity and quality of forecast information on the profit forecast error. Our hypothesis is that when a company publishes detailed forecast information, the profit forecast error will be weaker.

To assess the determinants of forecast information, we use the following model:
Model1:

Score 1= $\alpha + \alpha_1$ (Age) + α_2 (Audit) + α_3 (Size) + α_4 (Indebt) + α_5 (Sect) + α_6 (ROE) + α_7 (Share Ins) + $\varepsilon_{i,j}$ (1)

Table 1: Definitions and measurements of variables

Hypotheses tested	operational definition	operational name	Sign	Data source
Age	Ln(Age)	Age	+	Annual Report
The quality of the audit agency	0: bad practice 1: good practice (binary variable)	Audit	+	Annual Report
Size	Ln (total assets)	Size	+	Annual Report
Indebtedness	Book value of debt	Indebt	+	Annual Report
Sector of activity	dichotomous variable High technology: 1 Other: 0	Sect	+	Annual Report
Level of profitability of the company	$\dfrac{\text{Net income}}{\text{Equity}}$	ROE	+	Annual Report
Visibility of insiders	Proportion of insiders	Share Ins	-	Annual Report

Model of forecast error is as follows:
Model 2:

$$\text{Erreur} = \alpha + \alpha_1\,(\text{Score 1}) + \alpha_2\,(\text{size}) + \alpha_3\,(\text{Age}) + \alpha_4\,(\text{S Insid}) + \alpha_5\,(\text{ROE}) + \alpha_6\,(\text{Indebt}) + \alpha_7\,(\text{Horiz}) + \varepsilon_{i,j} \tag{2}$$

Table 2: Definition and measurement of variables in the model of forecast error

Hypotheses tested	operational definition	operational name	Sign	Data source
Score 1	Level of forecast information	Score 1	-	Binary
Size	Ln (total assets)	Size	-	Annual Report
Age	Ln(Age)	Age	-	Annual Report
Visibility of insiders	Proportion of insiders	S Insid	-	Annual Report
Level of profitability of the company	Net income/ Equity	ROE	-	Annual Report
Industry	dichotomous variable High technology: 1 Other: 0	Sect	+	Annual Report
Indebtedness	Accounting value of debt	Indebt	+	Annual Report
Horizon	Forecast horizon in years	Horiz	+	Annual Report

4.2.2 Empirical results

Table 3 presents the empirical results on the study of determinants. Overall, the proposed model is explained at 74.10%, the Durbin-Watson statistics are almost equal to 2, hence no problem of autocorrelation. Only three variables emerged as significant ones: the sector of activity, the share of insiders and the level of corporate profitability. Thus, innovative and high technology companies are more likely to achieve greater results than the companies operating in traditional sectors. This conclusion can accept the fifth

hypothesis (H_1e) which the companies that belong to a high-tech sector provide more reliable information than other ones. Also, the results show that the proportion of insiders reduces the level of detail of the information, which is consistent with our hypothesis (H_1g). On the other hand, the level of corporate profitability has a positive and significant impact on the level of detail of the information, which allows us to accept the ninth hypothesis (H_1f) postulating that the level of detail of information is correlated positively with the level of profitability. The other variables are not significant.

Table 3: Determinants of forecast information

Variables	Coefficient	Prob.
C	10.91384	0.4604
AGE	-0.048968	0.3993
AUDITEUR	-0.720105	0.8674
INSIDER	-28.73049*	0.0021
ROE	0.042528**	0.0289
SECT	-14.52086**	0.0491
SIZE	0.386810	0.6006
INDEBT	-0.073763	0.9106

R-squared= 0, 74082
Adjusted R-squared= 0,637122
F-statistic= 7,145120
Prob (F-statistic) = 0,000006
Durbin-Watson stat= 1,671281

Table 4 presents the empirical results on the forecast error. Our model explained at 72.68% and the Durbin-Watson test is almost equal to 1, hence no problem of autocorrelation. We test two variables in the model: one with the capital structure and the other without it. Indeed, the study of the determinants showed that this variable does not explain the forecast error.

Four variables are significant:

- **Indebt**. The coefficient on this variable is positive, this supports the idea the forecast error increases with debt. Moreover this coefficient is statistically significant at a level of risk equal to 5%. This result allow us to accept the ninth hypothesis (H_2f) assuming that the forecast gap should be more important for the most indebted companies.

We find that the forecast gap is higher in the most indebted companies, which find it more difficult to raise new funds, they will consequently spread false information about their situation.

-ROE. The variable representing the return on equity, the results show that the coefficient is negative, which implies that the forecast gap is negatively related to the level of profitability of the company, all the wore as this coefficient is significant at a level risk equal to 5%. This conclusion allows us to accept the seventh hypothesis (H_2e) postulating that the forecast error should decrease with the level of corporate profitability.

Thus, in profitable companies, the forecast error decreases, shareholders will have no surprise the day of the off announcement of profits, allowing these companies to distinguish themselves from others.

-SCORE 1.The estimated coefficient on this variable is negative, this supports that the publication of a detailed forecast information reduces the forecast error. Furthermore, this

coefficient is statistically significant at a level of risk equal to 1%. Hence, the level of detail of the forecast information is a signal of the reliability of the forecast profit published, this conclusion allows us to accept the first hypothesis (H_2a) postulating that the more forecast information is detailed, the weaker the forecast error will be.

-Size. The results show that the coefficient associated to this variable is negative, implying that size has a negative effect on the level of the error. Furthermore, the coefficient is significant at a level of risk equal to 5%. This conclusion can accept the second hypothesis (H_2b) stating that the forecast error should decrease with the size of the company.

However, large companies with significant resources to effect forecasts attempt to improve confidence with other stakeholders by reducing forecasts profit errors to ensure their sustainability.

The other variables are not significant.

Table 4 : Forecasts profit errors

Variables	Coefficient	Prob.
C	2.211837	0.0767
INDEBT	2.25E-09	0.0532***
ROE	-1.096192	0.0180*
SCORE	-0.116332	0.0000*
SIZE	-0.180581	0.0131*
SECT	0.537690	0.4357
AGE	0.002266	0.7093
INSIDER	-0.896631	0.1649

R-squared= 0, 726887
Adjusted R-squared= 0,648855
F-statistic= 9,315202
Prob (F-statistic) = 0,000000
Durbin-Watson stat= 0,763674

5 Conclusion

We identified two successive issues raised by the publication of forecast information by managers and financial analysts: what are the determinants of the level of detail of the forecast information published? And what is its impact on the forecast profit error?

As far as we know, this work is the first to study the relationship between the level of forecast information and the reliability of forecasts profits in the context of the Tunisian stock market.

Our results show that only three variables, the share of insiders, the level of profitability and the sector of activity show a positive and significant association with our measurement of the level of forecast information held by the managers.

Four variables also explain the forecast profit error: the publication of forecast information, the level of profitability and the size decrease the forecast error while it increases in the most indebted companies.

This study may have implications for market regulators to the extent that it provides an obligation to publish detailed forecast information would improve market efficiency by reducing forecast error.

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Appendix

1. Question to company manager: Please indicate the degree of importance you attach to each of the following information items that may be disclosed in annual reports of companies listed on the BVMT.

1. Important, 0. Not important.

Pieces of information of the analysis grid Botosan (1997)		
1 - Information on the goals and strategies of the company		
Presentation of company goals	0	1
Presentation of the general strategy of the company	0	1
Discussion of actions taken during the year to achieve the objectives	0	1
Discussion of actions to be undertaken in future years	0	1
Presentation of a timetable for reaching the targets set	0	1
2-non-financial information		
Publication of information on the number of employees	0	1
Publication of information on the backlog	0	1
Publication of information on the percentage of orders to be delivered next year	0	1
Publication of the percentage of sales for products in the past five years	0	1
Publication of information on market share	0	1
Publication of information on the amount of new orders placed this year	0	1
Publication of information on sales growth in key regions for which no segment information is produced	0	1
3 - Forward-looking information		
Discussion of the impact of the opportunities the company on future sales or profits	0	1
Discussion of the impact of risks facing the company sales and future profits	0	1
Comparison of profit forecasts with actual earnings of the year	0	1
Ccomparison of sales forecasts with actual sales of the year	0	1
Presentation of cash flow forecasts	0	1
Presentation of forecast capital expenditure or R & D costs	0	1
Presentation of forecast market share	0	1
Presentation of cash flow forecasts	0	1
Presentation of forecasts of future profits	0	1
Presentation of forecasts of future sales	0	1
4-Information on analysis of management		
Change in operating profits	0	1
Change in net income	0	1
Change in capital expenditures or costs of R & D	0	1
Change in inventories	0	1
Change in sales	0	1
Change in receivables	0	1
Change in market share	0	1

Items of information added to the analysis grid Botosan (1997)		
5 - Financial Information	0	1
Publication of information on the capital structure	0	1
Publication of information on the variation in turnover	0	1

Publication of information on the history of the stock price	0	1
Market perception about the value of the company	0	1
Publication of information and amounts on advertising expenses	0	1
Publication of information on the financial value	0	1
Publication of information on capital employed	0	1
Publication Information on the liquidity ratio	0	1
Publication of information on the PER	0	1
Publication of information on other financial ratios	0	1
6 - Information on earnings forecast		
Publication of information on the evolution of stock price	0	1
Publication of information on the profitability of the securities of shareholders	0	1
Presentation of operating income forecast future	0	1
Existence of a summary table of key figures	0	1
Explanation of variations between previous forecasts and realizations	0	1
Future cash horizon from 2 to 5 years	0	1
7 - Information published in annual reports		
Publication of annual report	0	1
Publication of Financial Statements	0	1
Publication of reports of the auditor	0	1
Presentation of EBE, VA and operating income	0	1