Journal of Accounting and Taxation Vol. 3(3), pp. 47-59, July 2011
Available online at http://www.academicjournals.org/JAT
ISSN 2141-6664 ©2011 Academic Journals

Full Length Research Paper

Disclosure frequency and earnings management: An analysis in the Tunisian context

Youssef RIAHI* and Mounira BEN ARAB

Department of Finance and Strategy of Businesses, Institute of Higher Management of Tunis, University of Tunisia, 23 Impasse 5 Rue 4267 DEN 2011, Tunis- Tunisie.

Accepted 31 May, 2011

The aim of this paper is to study the relationship between information disclosure by quoted Tunisian firms and earnings' management. Our survey has been achieved on a sample of 19 firms listed in the Tunis stock exchange over a period spanning from 1999 to 2008. The results confirm the existence of a negative and significant relationship between disclosure by firms which constitute this study's sample and earnings management. This study's survey shows that information disclosure related to financial decisions and performances constitute a constraint to the proliferation of earnings' management.

Key words: Disclosure frequency, financial information, disclosure score, earnings management, transparency.

INTRODUCTION

Most studies carried out about the relationship between earnings' management and information disclosure frequency are divided into two trends. The first indicates, forecasting earnings and voluntary information disclosure, which encourages firms to manage earnings (Graham et al., 2005; Rahman et al., 2007); whereas the second foresees that information disclosure exposes earnings management and helps investors to detect this phenomenon (Lobo and Zhou, 2001; Hunton et al., 2006; Jo and Kim, 2007).

Beyer (2008) concluded that analysts have some incentives to disclose forecasts that foresee earnings correctly and directors have some incentives to disclose earnings that match or go beyond the predicted outcome yielded by analysts. Then, financial analysts can encourage earnings' management, by setting targets of earnings that are difficult or impossible to meet. Likewise, according to Rahman et al. (2007), the press in Singapour[1] reported the concern that with more frequent disclosures under a quarterly reporting regime, firms will focus on short-term earnings and engage in earnings management on a more frequent basis. Contrarily, other researches emphasize that disclosure strategy enables the improvement of the transparency of publications, thereby facilitating the detection of earnings' management practice. Indeed, Lobo and Zhou (2001) stress the existence of a negative correlation between disclosure quality and earnings' management. The former demonstrated that corporate managers who disclose more information have less management flexibility.

Hunton et al. (2006) examined the scale at which the transparency of financial publications affects attempt of earnings management whether during an upward trend or a downward trend. In fact, they found that the increased transparency reduced but did not eliminate managers' attempt to enter into the practice of earnings' management. Jo and Kim (2007) show that disclosure increases transparency and therefore reduces incentives

*Corresponding author. E-mail: youssef.riahi@gmail.com Tel: 0021698331472.

[1] The Business Times, 2 November, 2002b; The Business Times, 21 August 2002c.

to manage earnings because increased transparency helps investors to detect earnings' management. Greater disclosure frequency exposes earnings management, and accordingly, disclosure frequency and earnings' management are negatively associated. Within sight of all this, we notice that the role of information disclosure in the reduction of information asymmetry received a meaningful attention in the literature, but as ascertained by Cormier and Martinez (2006), in spite of this vast literature, the politics of disclosure is not again completely included.

The objective of this paper is to enrich the debate on this issue while studying the impact of information disclosure on earnings' management in the Tunisian context.

Our survey has been motivated by the following incentives: first, to know the reforms and mutations in the Tunisian context which remain a field of investigation and not exploration; secondly, the impact of disclosure frequency on earnings management is not, until our days, especially explained completely in the emergent countries; thirdly, we want to study the specific distinct feature of Tunisian firms as compared to firms in other countries, such as US, England and other Asian countries.

In order to test this study's hypotheses, we constituted a sample of 19 non-financial firms that are listed on the Tunisian Stock market (BVMT) over the 10-year period (1999 to 2008). It is necessary however, to note that the estimations of our model are made on panel data since the regressions are about two dimensions: temporal and individual, which enables some tests to be checked. These tests are essentially Pearson test and vifs of independent variables. To detect the multicollinearity between these variables, test of the presence of individual effect, Hausman test and heteroscedasticity test were used.

INFORMATION DISCLOSURE, TRANSPARENCY AND EARNINGS' MANAGEMENT: LITERATURE REVIEW

Beforehand, it is not clear, whether the highest disclosure and the transparency of a country should increase or reduce the level of earnings' management. On the one hand, high disclosure and transparency exercise strong pressures on firms to communicate voluntary information, which brings them to manage earnings (Degeorge et al., 1999, 2005; Iatridis and Kadorinis, 2009), while on the other hand, in countries with high disclosure, investors and financial analysts can be disincentives to earnings' management because they can get information easily on firms (Baber et al., 2006; Yu, 2008; Allayannis and Simko, 2009).

In their effort to meet financial analysts' forecasts and the expectations of investors, firms find earnings management as a good solution (Linen et al., 2006; Rees and Sivaramakrishnan, 2007; Chevis et al., 2007). The failure to meet analysts' forecasts and the expectations of investors can be catastrophic for firms in terms of access to funds and growth opportunities (Graham et al., 2005; Bergstresser and Philippon, 2006). Firms in countries with higher disclosure have a stronger propensity to manage earnings to meet financial analysts' forecasts. That makes disclosure not to be credible. Degeorge et al. (2005) found in their survey on a sample of 51401 observations for 10866 non-financial firms in 26 countries from 1994 to 2002 that firms in transparent countries use short-term earnings' management techniques to reach the consensus analyst forecast. In opaque countries, analyst follow-up neither act as a curb on total earnings management, nor create any short-term pressure to manage earnings.

Degeorge et al. (1999) indicate that analysts can exert pressure on managers to handle earnings. They indicate that firms do not have analysts' forecasts undergo a fall in the prices of its shares. Yu (2008) found in his survey on a sample of French firms that firms with analysts following have lower levels of the discretionary accruals than those firms without cover. Similarly, Allayannis and Simko (2009) indicate that financial analysts play an important role in limitation of earnings' management. They are more efficient controllers in transparent environments than in opaque environments. Besides, the more the country is transparent, the more the reduction of earnings management is bound by analysts following.

Baber et al. (2006) analyzed the reaction of share prices to the practice of accounting manipulation, when some supplementary information are disclosed voluntarily. Their results show that investors penalize the practice of accounting manipulation, when supplementary information is disclosed. The credibility of disclosures can be checked by comparison forecast earnings to real earnings, the market react positively to the forecast if the earnings achieved increase, but react negatively to the forecast if the earnings achieved decreased (Iatridis and Kadorinis, 2009).

MATERIALS AND METHODS

This study's empirical approach is based on the model of Jo and Kim (2007) that consists of studying the impact of information disclosure on earnings' management. We begin in a first time, by putting forward some hypotheses. On the basis of these hypotheses, we shall present the model and measures of the variables used. Then, we shall display descriptive statistics. Eventually, we will show and interpret our findings.

Hypotheses development

Schipper (1989) puts forward that information asymmetry and the

lack of full communication allow managers to deal with earnings. It implies that earnings management is more unlikely for firms that disclose more information, because transparency lowers information asymmetry and helps investors to detect earnings management. Inversely, incentives of earnings' management are likely to increase for firms where there is information asymmetry and limited disclosure. The hypothesis that is tested is as follows:

H_1: Earnings' management is a decreasing function for the level of disclosure.

Iatridis and Kadorinis (2009) indicated that the main objective for providing voluntary disclosure of accounting information is to give explanations to agents interested in the financial picture and performance of the firms and to remove the scepticism that can hinder the growth of firms. The availability of an informative accounting and the transmission of a good accounting quality of information reduce the extent of earnings' management (Lobo and Zhou, 2001; Jo and Kim, 2007).

The disclosure of financial information is tremendous and essential for protecting investors against fraud and for the good financial market operation. Indeed, the free access to the news relative to the situation of firms and their incorporation into decision-making constitutes the underpinnings of the financial markets' management. In accordance with these works, we presume:

H_2: The disclosure of financial information decreases the extent of earnings' management.

Data sources and sample

This study's survey is conducted on a sample of 19 non-financial firms that are listed on the Tunisian Stock market (BVMT) over the 10-year period (1999 to 2008). The selection of the sample was achieved on a two-criterion basis:

1. The financial institutions are excluded because the nature of these firms' accruals differs from that of other firms.
2. A set of financial data such as the accounts of result and balance sheets, the leaflets, the annual reports of these firms are available in the data base that was collected.

The data were collected by BVMT Financial Market Council and from the following website: www.tustex.com.

Model specification

The model used to examine the effect of information disclosure (PR) on earnings' management (AD) was inspired by the survey of Jo and Kim (2007). A regression that has relation discretionary accruals with other explanatory variables and controls was led by this study. The dependent variable in this regression is discretionary accruals calculated from the model of Kothari et al. (2005), as long as the explanatory variable is the disclosure frequency (PR). Moreover, the financial performance, the institutional investment, the external auditing, the size, the liabilities, the managerial ownership as well as block ownership were kept as control variables.

In a second stage, this study's analysis was further deepened to know what type of information (strategic information, financial information and non-financial information) had an impact on earnings' management. That is why we measured the quality of disclosure by the score disclosure of Eng and Mak (2003) in a first step. Then, we proceeded to subdivision of the total score of disclosure between the three types of scores: the score relative to the financial information (FI), the score relative to the non financial information (NFI) and finally, the score relative to the strategic information (SI).

To answer the objectives set and to test the formulated hypotheses, the following two panel models were used:

$$AD_{i,t} = a + b1\ PR_{i,t} + b2\ PPE_{i,t} + b3\ ROA_{i,t} + b4\ IINST_{i,t} + b5\ AUD_{i,t} + b6\ CF_{i,t} + b7\ SIZE_{,t} + b8\ LEV_{i,t} + b9\ INSD_{i,t} + b10\ BLOCK_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$AD_{i,t} = a + b1\ FI_{i,t} + b2\ NFI_{i,t} + b3\ SI_{i,t} + b4\ PPE_{i,t} + b5\ ROA_{i,t} + b6\ IINST_{i,t} + b7\ AUD_{i,t} + b8\ CF_{i,t} + b9\ SIZE_{,t} + b10\ LEV_{i,t} + b11\ INSD_{i,t} + b12\ BLOCK_{i,t} + \varepsilon_{i,t} \quad (2)$$

With:

$AD_{i,t}$: Discretionary accruals for firm i in year t; $PR_{i,t}$: press releases for firm i in year t; $FI_{i,t}$: Score relative to financial information for firm i in year t; $NFI_{i,t}$: Score relative to non financial information for firm i in year t; $SI_{i,t}$: Score relative to strategic information for firm i in year t; $PPE_{i,t}$: Net property, plant and equipment for firm i in year t; $ROA_{i,t}$: Return on assets for firm i in year t; $IINST_{i,t}$: Institutional ownership in firm i in year t; $AUD_{i,t}$: Quality of auditors for firm i in year t; $CF_{i,t}$: Operating cash flows for firm i in year t; $SIZE_{,t}$: Size of firm i in year t; Lev: Level of debt for firm i in year t; $INSD_{i,t}$: Insider ownership for firm i in year t; and $BLOCK_{i,t}$: Percent of equity held by those owning more than 5% of a class of the company's equity securities.

Variables' measures

Discretionary accruals (AD)

We adopt the definition of discretionary accruals of Kothari et al. (2005) to measure earnings management. So Kothari et al. (2005) add the variable ROA to Jones model (1991). We used this model, because it showed its robustness to detect earnings management, especially in performance firms and we found that on average the Tunisian firms are successful. However, this model proved to be more adaptable to the Tunisian context:

$$(TAcc_{i,\,t} / AT_{i,\,t-1}) = w_0 + w_1\ (1/ AT_{i,\,t-1}) + w_2\ (\Delta\ REV_{i,\,t} / AT_{i,\,t-1}) + w_3\ (PPE_{i,\,t} / ATi,_{\,t-1}) + w_4\ ROA_{i,\,t-1} + \varepsilon_{i,\,t} \quad (3)$$

where: $TAcc_{i,\,t}$: Total accruals[2] for firm i in year t; $AT_{i,\,t-1}$: Total assets for firm i in year t-1; $\Delta\ REV_{i,\,t}$: Revenues for firm i in year t with less revenues for year t-1; $PPE_{i,\,t}$: Net property, plant and equipment for firm i in year t; $ROA_{i,t}$: Return on assets for firm i in

[2] Estimation of total accruals:
$TAcc_{i,\,t} = \Delta\ CA_{i,\,t} - \Delta\ cash_{i,\,t} - \Delta\ CL_{i,\,t} - \Delta\ DEPN_{i,t}$ where:
$\Delta\ CA_{i,\,t}$: firm i's change in current assets;
$\Delta\ cash_{i,\,t}$: firm i's change in cash;
$\Delta\ CL_{i,\,t}$: firm i's change in current liabilities;
$\Delta\ DEPN_{i,t}$: firm j's depreciation and amortization expense;

year t; and $\varepsilon_{i,t}$: A residual term that captures discretionary accruals.

Thus, the parameters obtained for the estimation of regression (3) are used in determination of non discretionary accruals (AND) scaled by lagged total asset:

$$AND_{it} = \hat{w}_0 + \hat{w}_1 (1/ AT_{i,t-1}) + \hat{w}_2 (\Delta SA_{i,t} / AT_{i,t-1}) + \hat{w}_3 (PPE_{i,t} / ATi,_{t-1}) + \hat{w}_4 \quad ROA_{i,t-1} \tag{4}$$

Therefore, discretionary accruals (ADi, t) are determined by the difference between TAcci, t / ATi,t-1 and ANDi,t.

Press releases (PR)

Press releases (it is the variable proxy of disclosure frequency) are the mandatory and voluntary publications communicated by the firm about a one year-business activity. It is necessary to indicate that in calculating this variable, we resorted to the review of the empirical and theoretical literature. Thus, we identified the number of press releases while looking into the information disclosure by firms on www.tustex.com, www.bvmt.com and www.cmf.com, and expected a negative relationship between disclosure frequency and earnings management.

The disclosure score

At the time of development or adoption of a disclosure score, it is necessary to take account of the features of the market and firms operating on this market and also the specificities of the sectors. Indeed, the industrial sector does not have the same features as the financial sector. So, for the industrial sector, we are compelled to foresee items that have a relation with the effort provided concerning research and development and the protection of the environment. These types of communication are not indeed very applicable for the financial sector because the latter provides services. In our investigation, we opted for the same methodology of determining the disclosure score of Eng and Mak (2003) as it includes the different types of information disclosed by firms and it proved to be that this method is more adaptable in the Tunisian context.

The disclosure score is measured by the report between the total number of points assigned to the firm and the number of possible maximum points. However, the two authors took into consideration three categories of information that appear in the annual reports:

1. Strategic information: Brief history of the company, organizational structure, general description of business, principal products, principal markets, current and future strategy and its future perspectives.
2. Non financial information: Number of employees, compensation per employee, value-added per employee and productivity indicator.
3. Financial information: Performance indicators (not from financial statements), financial ratios and useful projected information.

A point is assigned to every firm for any information disclosed by each category. A supplementary point is granted if the information disclosed includes a non recoverable quantitative data from the basis of the financial statements. The firm that does not present any disclosure for these different categories will have 0. Then we proceeded with the subdivision of the disclosure score between the three types of scores: the score relative to the financial information (FI), the score relative to the non financial information (NFI) and the score relative to the strategic information (SI).

As regards the choice and measures of the variables of control (Net property, plant and equipment, performance, institutional investment, audit quality, cash flows, size, lev, INSD and block), we based on the review of the empirical and theoretical literature and more exactly on the study of Jo and Kim (2007).

Net property, plant and equipment

Net property, plant and equipment are scaled by lagged total asset. Firms use the amortization like a means to manage earnings, then firms that invest more in net property, plant and equipment have more flexibility to manage earnings. A positive relationship is considered between discretionary accruals and net property, plant and equipment.

Performance

Managers of profitable firms have several methods to manage earnings. So a positive relationship is anticipated between ROA and discretionary accruals. Performance was measured by return on assets ratio (ROA):

ROA = earnings / total assets.

Institutional investment

The role of an institutional investor in controlling managers has been stated in the financial literature. Rajgopal et al. (1999) showed the efficiency of institutional investment to discipline managers and to avoid their manipulation for numbers of accountants. According to this argument, we expect a negative relationship between the part of shares held by institutional and earnings management. The retained institutional investors are banks, societies of investments and the companies of insurances.

IINST = Number of shares detained by institutional investors / total number of shares.

Audit quality

A better quality of audit services would be able to restrict the tendency of managers to manipulate their earnings (Kim et al., 2003). This quality of audit is feared by the adherence of external auditors to BIG[3]. In order to measure the control performed by auditors, we use an indicator variable that equals one if the firm's auditor is one of the BIG accounting firms, and zero if otherwise. Thus, we expect a negative relationship between earnings' management and the quality of external auditors.

Cash flows

Cash flows can be defined as being the difference between returns of operation and operation expenses, scaled by lagged total asset.

[3] Evolution of the big international accounting firms passage of the "BIG8" in the "BIG4". End of the years 1970: BIG8; 1989: BIG6; 1998: BIG5; 2002: BIG4.

Table 1. Definition and measurement of variables.

Variable	Abbreviation	Measurement
Dependent variable		
Discretionary accruals	AD	Discretionary accruals calculated from the model of Kothari et al. (2005).
Independent variables		
Disclosure frequency	PR	Mandatory and voluntary publications communicated by firms for about one year.
Quality of disclosure	FI	Score relative to financial information.
	NFI	Score relative to non financial information.
	SI	Score relative to strategic information.
Control variables		
Net property, plant and equipment	PPE	Level of net property, plant and equipment in firm.
Performance	ROA	Earnings / total assets.
Institutional investment	IINST	Number of shares detained by institutional investors / total number of shares.
Audit quality	AUD	Indicator variable that equals one if the firm's auditor is one of the BIG accounting firms, and zero if otherwise.
Cash flows	CF	CF = R – E
Size	Size	Logarithm (assets).
Debt	Leverage ratio	Total Debt /Total assets.
Managerial ownership	INSD	Number of shares detained by insiders / total number of shares of firm.
Block	Block ownership	The percent of equity held by those who own more than 5% of a class of the company's equity securities.

No prediction is considered between discretionary accruals and cash flows.

Size

In general, the big firms cause the public interest. They are followed minutely by financial analysts, as well as the economic and financial press. Indeed, the large-size firms are, by definition, committed in several activities rather than those of small size. Following this volume and this diversity of activities, firms of large size will have a need of credible information. Then we expect a negative relationship between the size variable and discretionary accruals.
Size = logarithm (assets).

Lev

Firms that are greatly indebted operate earnings' management in order to negotiate contracts of loans in more advantageous conditions. Proximity to contractual terms' limits that are generally based on accountants' figures incite managers to select accountants' procedures which increase profit (Watts and Zimmerman, 1986). Then a positive relationship is anticipated between these two variables.

Lev = total Debt /Total equity.

INSD

The insider ownership is measured by the percentage of shares detained by insiders. These shareholders are those that detain some shares in the capital of firms while participating in decisions and management. In the setting of this survey, we considered insiders, administrators, the president general (director) and the general manager of the firm.
INSD = Number of shares detained by insiders / total number of shares of the firm.

Block

Lennox (2005) indicates that block ownership could give some incentives to the main shareholders to direct decisions of managers and also expropriate the minority shareholders while hiding the true performance of the firm. No prediction is considered between the discretionary accruals and block ownership. This variable is measured as follows (Table 1): BLOCK = the percentage of equity held by those who own more than 5% of a class of the company's equity securities.

Descriptive statistics

Table 2 provides the descriptive statistics (mean, standard deviation, minimum and maximum) of every variable used in the

Table 2. Descriptive statistics.

Variable	Mean	Std dev	Min	Max
AD	0.0191	0.1137	-0.3877	0.5639
PR	8.1315	4.7093	1.0000	26.0000
FI	0.1626	0.0947	0.0234	0.9342
NFI	0 .0885	0.0809	0.0134	0.2962
SI	0.1202	0.0575	0.0123	0.3498
PPE	0.3714	0.1768	0.0528	0.8412
ROA	0.0446	0.0682	-0.2160	0.2670
IINST	0.1345	0.1983	0.0000	0.8165
AUD	0.2631	0.4415	0.0000	1.0000
CF	0.0687	0.2605	-3.1282	0.6044
Size	7.6019	0.4670	6.4483	8.9190
Lev	0.4343	0.2346	0.013	0.951
INSD	0.0314	0.0560	0.0000	0.2000
Block	0.7272	0.1301	0.4621	0.9613

This table presents descriptive statistics of variable studied (dependent, independent and control). The sample covers 19 Tunisians firms during the period of 1999 to 2008. Ad: Discretionary accruals calculated from model Kothari et al. (2005), PR = Mandatory and voluntary publications communicated by firm about one year, FI : Score relative to financial information, NFI : Score relative to non financial information, SI : Score relative to strategic information, PPE : Level of net property, plant and equipment in firm, ROA = Earnings / total assets, IINST = Number of shares detained by institutional investors / total number of shares, AUD : Indicator variable that equals one if the firm's auditor is one of the BIG accounting firms, and zero otherwise, CF = R-D, Size = logarithm (assets), Debt = Total Debt /Total assets, INSD = Number of shares detained by insiders / total number of shares of firm, Block = The percent of equity held by those owning more than 5% of a class of the company's equity securities.

study's analysis. According to Table 2, the mean value of (AD) is 0.0191. This enables us to notice that the level of earnings' management in the firms which constitute our sample is not raised; otherwise, the managers of these firms show evidence of a weak intensity of earnings management. The positive sign indicates that on average, the earnings management of the sample's firms tentatively increased.

The mean value of press releases is 8.1315, which permits the conclusion that firms of our sample do not disclose a lot of information. It can be accounted for on the one hand, by blockholder ownership (investors who hold a high percentage of shares and who can get information directly from the firms) and on the other hand, by the weakness of institutional ownership, since according to the literature, the presence of institutional investors can urge managers to do frequent disclosures. Its standard deviation (4.7093) permits the study to notice that this indicator varies between the different firms that compose its sample.

The profitability of assets varies between a negative performance of 21.6% and an extreme value positive of 26.7%, with an average of 4.4%. The mean value of the variable net property, plant and equipment is 0. 3714. This shows that firms that constitute the study's sample dedicate a tremendous part of their funds to investment in assets, plant and equipment. Institutional investment is weak in American firms (13.45%) as compared to 35.86% in the survey of Rajgopal et al. (1999) and 53.1% in the survey of Hartzell and Starks (2008); but standard deviation (19.83%) shows that this indicator varies in a considerable manner between the different firms that compose the sample of the study. More than 50% of the sample's firms are not audited by BIG accounting firms, since the mean value is 0.2631.

The value of cash flows is on average with a positive value of 0.0687. This variable has a standard deviation of 0.2605, which shows that cash flows vary considerably for firms that constitute our sample. The mean size of the sample's firms is 7.6019; and it varies between 6.4483 and 8.9190. It permits us to conclude that the Tunisian firms are of average mean size. However, we notice that the volatility of this variable is not very elevated (0.4670). This value implies that the size of firms measured as logarithm of total assets does not vary in a significant manner inside the sample.

According to the mean value of leverage ratio (43.43%), we can say that the debt constitutes a very important financing source for Tunisians firms. This value is nearly the duplicate of that found by Kumar (2004), which returned a mean leverage ratio of 24.09% for the case of India. The mean value of managerial ownership is 3.14%, which is weaker than institutional ownership (13.45%), American managerial ownership [20% in the survey of Dennis and Kruse (1999); 12.2% in the study of Holderness et al. (1999) and 12.4% in the survey of Cho (1998)], British and Australian firms [16.7% reported in the survey of Faccio and Lasfer (1999) and 10.65% in the survey of Braislford et al. (1999)] and even of Indian businesses [17.29% according to Kumar (2004)].

Finally, the ownership structure is very concentrated (since the mean value is 72.72%).

Tests on panel data

It is necessary however, to note that the estimations of our model are made on panel data since the regressions that enable us to check for some tests are in about two dimensions: one temporal and the other individual. These tests are essentially Pearson test and vifs of independent variables, to detect the multicollinearity between these variables, test of the presence of individual effect, Hausman test and heteroscedasticity test.

Test of the presence of the individual effect

Since the study's data are penalized, it is worth to identify the effect

Table 3. Result of test presence individual effect.

Chi test (2)	28.97 (0.0013)

Table 4. Result of Hausman test.

Chi test (2)	7.67 (0.6610)

associated to every individual, otherwise it would be an effect that does not vary with time, but varies with one individual to the other. This effect can be within or in random effect. The test of existence of the individual effect rejects the hypothesis of the individual effects absence (Table 3). Therefore, we are going to test hypothesis H0 against hypothesis H1.

H_0: Absence of individual effect.
H_1: There is individual effect.

Results of the test individual effect indicated that individual effects exist.

Hausman test

Since our model is of the effect, it is necessary to choose what modelling is best suitable for our data: within or random modelling of these effects, that is, these effects can be either within or random. Thus, we resort to Hausman test (Table 4).

The results of Hausman test indicate that we must turn towards a random modelling of effects. In other words, the consideration of individual specificity of firms is under the shape of an uncertain effect which provides significant statistically better results in comparison to a model that is within individual effect.

Pearson correlation matrix and vifs

Before moving to the regression, it is essential to establish the correlation matrix between the variables in order to test the possible relationship between the independent variables and to avoid the problems of multicollinearity.

The multivariate analysis helps to carry out the simultaneous treatment of a set of variables. In our survey, the linear regression requires the absence of multicollinearity problem between the independent variables introduced in the same model. We verify this condition while resorting to Pearson correlation matrix and vifs. Table 5 shows the results yielded by this test. The positive coefficients (negative) indicate positive relationships (negative) between the explanatory variables. According to these results, although Pearson's correlation coefficients are not raised[4], we can put forward that a certain interdependence exists between the different independent variables kept in our survey. Consequently, the absence of autocorrelation between the explanatory variables is shown. The absence of the multicollinearity problem between the variables is also justified by Vifs test in which all the variables have a value lower than 3 with a global mean equal to 1.49.

[4] Kervin (1992) foresees an r = 0.7 to be pronounced on a problem serious of colinearity between two independent variables included in a model of regression.

Heteroscedasticity test

Besides, we took care to verify the hypotheses of homoscedasticity[5] while using Breush-Pagan test (Table 6). The rationale behind these tests is to verify if the square of the residues can be explained by explanatory variables of the model. In other words, the variance of the residual term is bound then to the values of the explanatory variable, if it is the case when we have a problem of heteroscedasticity.

H_0: Homoscedasticity.
H_1: Heteroscedasticity.

The results of Breush-Pagan test verify the absence of heteroscedasticity problem.

RESULTS

After carrying out the econometrics tests: Pearson test and vifs of the independent variables test of individual effect presence, Hausman test and the heteroscedasticity test were discriminated to present the results of our models. Table 7 presents the results of the equation's estimation, in which the relationship between the disclosure frequency and earnings management was tested, the variables' coefficients, the expected sign as well as the associated probabilities. The findings show that the relationship between the disclosure frequency and earnings management is negative and significant. This confirms the study's hypothesis which shows that earnings management is a decreasing function for the disclosure level. Indeed, disclosure decreases asymmetry information and increases transparency, and thereafter firms have less incentive to manage their earnings. This result is coherent with the one of Jo and Kim (2007) in the American context, which shows that a bigger disclosure frequency exposes earnings' management, and that of Ambrose and Bian (2009), which assert that the availability of a great deal of information on the financial market can contradict the phenomenon of earnings management. This result is also coherent with the one of Li (2010) which shows that the biggest disclosure helps the investors to detect earnings management by the real activities.

Unlike the positive theory and the results of Iatridis and Kadorinises (2009), in our survey, the level of debt (LEV) is influenced negatively and significantly at 10% level of discretionary accruals. This result shows that the level of debt constitutes a constraint to the managerial discretion and thus represents a means to fight against the growth of earnings' management. As advanced by Jensen and Meckling (1976), one can say then that the debt is a

[5] The homoscedasticity qualifies a constant variance of the residues of data composing the sample. To the inverse, one says that there is homoscedasticity when the variance of the residues of the model is not constant, that is to say that the value predicted by the estimator doesn't converge toward the value in the population.

Table 5. Pearson correlation matrix and vifs.

	AD	PR	FI	NFI	SI	PP	ROA	IINST	AUD	CF	Siz	Lev	INSD	Block	Vif
AD	1.00														
PR	0.01	1.00													1.07
FI	-0.20	0.11	1.00												1.67
NFI	0.08	0.02	-0.34	1.00											1.46
SI	-0.01	0.07	0.40	0.21	1.00										1.55
PP	-0.05	-0.01	-0.07	-0.01	-0.04	1.00									1.66
ROA	0.19	0.05	-0.09	-0.07	-0.10	-0.30	1.00								1.93
IINST	-0.07	-0.05	-0.03	0.01	-0.12	0.32	-0.45	1.00							1.49
AUD	-0.17	0.03	0.02	0.03	0.03	0.21	0.07	0.02	1.00						1.20
CF	-0.10	0.09	0.03	0.03	-0.07	-0.09	0.27	-0.10	0.09	1.00					1.17
Siz	0.03	0.16	0.02	-0.17	-0.10	0.09	0.27	-0.11	0.31	0.08	1.00				1.36
Lev	-0.19	-0.04	0.08	-0.06	-0.07	0.43	-0.54	0.38	-0.03	-0.18	-0.02	1.00			1.80
INSD	0.10	0.05	-0.01	0.20	0.14	-0.46	0.09	-0.21	-0.09	0.10	-0.24	-0.29	1.00		1.52
Block	-0.04	0.02	0.14	-0.15	-0.03	-0.02	-0.01	-0.15	-0.03	0.14	0.06	0.12	-0.15	1.00	1.18

Ad : Discretionary accruals calculated from model Kothari et al. (2005), PR = mandatory and voluntary publications communicated by firm about one year, FI : score relative to financial information, NFI : score relative to non financial information, SI : score relative to strategic information, PPE : Level of net property, plant and equipment in firm, ROA = earnings / total assets, IINST = number of shares detained by institutional investors / total number of shares, AUD : indicator variable that equals one if the firm's auditor is one of the BIG accounting firms, and zero otherwise, CF = R-D, Size = logarithm (assets), Debt = total debt /total assets, INSD = number of shares detained by insiders / total number of shares of firm, Block = the percent of equity held by those owning more than 5% of a class of the company's equity securities.

Table 6. Result of Breush-Pagan test.

Chi test (2)	0.8 (0.3696)

means that permits the alleviation of agency conflicts between the shareholders and managers and the reduction of the costs of asymmetry information.

As for the profitability of assets (ROA) which is positive and statistically significant at a 5% level, this result is consistent with the predictions of several researchers who affirm that earnings' management is operated in the case where an extreme performance is achieved. In other words, profitable firms arrange several methods to manipulate earnings (Dechow et al., 1995). Regarding the quality of auditor, the relation with (AD) is negative and statistically significant at a 1% level; in other words, the level of earnings management is bigger in firms not audited by BIG accounting firms. This result is compatible with the results of other studies, like Chtourou et al. (2001), Francis et al. (1999) and Becker et al. (1998), which show that firms audited by BIG accounting firms, that is, Big6[6] type (or Big5 according to the time) have relatively less elevated discretionary accruals than firms audited by non Big accounting firms. This shows that for the Tunisian firms, while providing services of better quality, the BIG reduce the discretionary latitude of managers.

The relative coefficient to managerial ownership (INSD) for its part is positive and significant at a 10% level. Such a result is in favor of the thesis of managerial entrenchment, suggesting that the more the managerial ownership is raised, the more it has divergence of interests and the more the managers will be driven to manage earnings in order to generate private advantages. We corroborate this result with that of the studies of Jo and Kim (2007), Bowmen et al. (2005), Klein (2000) and Peasnell et al. (1998). The estimation of the coefficient relative to the variable size of (Size) gives a positive and significant relation at a 10% level. This result is also coherent with the idea of Watts and Zimmerman (1990) according to

[6] These are very well-known accounting firms to USA: Ernst &Young, Arthur Andersen, Deloitte Touch, Price Waterhouse, KPMG and Coopers & Lybrand.

Table 7. Results of regression.

Variable	Expected sign	Coefficient	Probability
PR	-	-0.0035***	0.052
PPE	+	-0.18***	0.093
ROA	+	0.3877**	0.023
IINST	-	-.00436	0.362
AUD	-	-0 .0502*	0.008
CF	?	-0.0756**	0.020
Size	-	0.0222***	0.065
LEV	+	-0.0568***	0.071
INSD	+	0.1558***	0.085
BLOCK	?	-0.0002	0.997

$AD_{i,t} = a + b1\ PR_{i,t} + b2\ PPE_{i,t} + b3\ ROA_{i,t} + b4\ IINST_{i,t} + b5\ AUD_{i,t} + b6\ CF_{i,t} + b7\ SIZE_{,t} + b8\ LEV_{i,t} + b9\ INSD_{i,t} + b10\ BLOCK_{i,t} + \varepsilon_{i,t}$. With: Ad : Discretionary accruals calculated from Kothari et al. (2005) model, PR = mandatory and voluntary publications communicated by firm about one year, PPE : level of net property, plant and equipment in firm, ROA = earnings / total assets, IINST = number of shares detained by institutional investors / total number of shares, AUD : Indicator variable that equals one if the firm's auditor is one of the BIG accounting firms, and zero otherwise, CF = R-D, Size = logarithm (assets), Debt = Total Debt /Total assets, INSD = number of shares detained by insiders / total number of shares of firm, Block = percent of equity held by those owning more than 5% of a class of the company's equity securities. Wald chi (2) = 28.97; prob = 0.0013; within = 0.0581; between = 0.5943; overall = 0.1393; *, **, *** Significant at 1, 5 and 10% level, respectively.

which the biggest firms are incited to exercise practices of earnings management[7] in order to reduce their political visibility. The relationship between discretionary accruals and cash flows is negative and significant at a 5% level. This result corroborates with the results of Jo and Kim (2007), Becker et al. (1998) and Burgstahler and Dichev (1997), and it permits us to conclude that the results are managed in order to avoid losses and negative changes.

As far as the variable net property, plant and equipment in the firm are concerned, the outcomes show that it has a positive and significant impact at a 10% level on the level of earnings management. In other words, firms that invest more in net property, plant and equipment better manage their earnings. Since firms that constitute our sample are on average profit, we can say that these firms use amortization to inflate loads and thereafter minimize political costs. In fact, public authorities can interpret the results raised of firms as an indicator of performance and of the existence of monopolistic practice. Hence, they are going to implement regimentation under the shape of price control or increased taxes. It was found that institutional investment does not have an effect on earnings' management in the firms that constitute our sample, since the relationship between these two variables is non-significant. This result is compatible with the survey of Dey (2004) that found a non-significant relationship between artificial smoothing and institutional investment. Eventually, the results show that a non-significant relationship exists between block ownership and earnings' management. This result is compatible with that of Park and Shin (2004), in which it was found that block ownership did not affect earnings management. In fact, our survey highlights that block ownership in Tunisia does not have an effect on the practices of earnings' management. Subsequently, we found that the biggest disclosure exposes earnings' management and helps the investors to detect this phenomenon; thus, we tested accurately in a second stage what type of information has an impact on earnings' management.

Table 8 presents the results of the equation's estimation, in which the relationship between earnings management and the scores ofdisclosure was tested: that is, the coefficients of variables, the expected sign as well as the probabilities associated. The results show that the score relative to the financial information affects negatively the level of discretionary accruals, considering a negative and statistically significant coefficient at a 5% level. In other words, the disclosure of financial information exposes the practices of earnings' management by firms, but the other information, which is either strategic or has a non-financial characteristic do not have an effect on earnings management since their coefficients are non significant.

DISCUSSION

About the relationship between the disclosure information and earnings management, the study's result is in favor of the signalling theory and the agency theory, because the signalling theory stipulates that the disclosure of voluntary information aims at the reduction of informational asymmetry between the managers of firms (insiders) and external investors (outsiders). The agency theory foresees the voluntary disclosure not only as an important and efficient means to protect shareholders

[7] Enron that was classified recently among the ten big American firms, made bankruptcy December 2, 2001, being a matter for an extreme practice of earnings management.

Table 8. Results of regression.

Variable	Expected sign	Coefficient	Probability
FI	-	-0.2146**	0.043
NFI	?	0.0461	0.692
SI	?	0.1314	0.437
PPE	+	0.7957***	0.083
ROA	+	0.3195**	0.045
IINST	-	0.0413	0.390
AUD	-	-0.0595*	0.002
CF	?	-0.0712**	0.028
Size	-	0.9248***	0.096
LEV	+	-0.0746***	0.094
INSD	+	0.2381***	0.065
BLOCK	?	0.0470	0.471

$AD_{i,t} = a + b1\ FI_{i,t} + b2\ NFI_{i,t} + b3\ SI_{i,t} + b4\ PPE_{i,t} + b5\ ROA_{i,t} + b6\ IINST_{i,t} + b7\ AUD_{i,t} + b8\ CF_{i,t} + b9\ SIZE_{,t} + b10\ LEV_{i,t} + b11\ INSD_{i,t} + b12\ BLOCK_{i,t} + \varepsilon_{i,t}$. With: Ad : Discretionary accruals calculated from model Kothari et al. (2005), FI : Score relative to financial information, NFI : score relative to non financial information, SI : score relative to strategic information, PPE : level of net property, plant and equipment in firm, ROA = earnings / total assets, IINST = Number of shares detained by institutional investors / total number of shares, AUD : Indicator variable that equals one if the firm's auditor is one of the BIG accounting firms, and zero otherwise, CF = R-D, Size = logarithm (assets), Debt = total debt /total assets, INSD = number of shares detained by insiders / total number of shares of firm, Block= The percent of equity held by those owning more than 5% of a class of the company's equity securities.

from managerial latitude, but also to protect the minority shareholders from the risk of expropriations on behalf of the majority shareholders.

The results of this study are consistent with the theoretical predictions and empirical findings of the preceding research. They provide evidence on how management may use the flexibility provided to exercise discretion in reporting earnings. This has implications for the interpretation of the information conveyed by reported accounting earnings. However, the result of this study is consistent with the results of Arthur Levitt (1998), which show that financial analysts and investors use better financial information in their decisions.

Conclusion

In this article, we studied on the one hand the type of relation that exist between the disclosure frequency and earnings management, and on the other hand, the relationship between the different scores of disclosures and earnings' management, after which a literature review was presented on disclosure information, transparency and earnings management. This literature allowed the empirical validation of 19 firms quoted in the B.V.M.T and earnings management in the setting of disclosure information in the Tunisian context (Appendix 1). The findings of the study's survey show that earnings' management is a decreasing function of the disclosure level; in other words, if the level of disclosure increases, earnings' management decreases. Our survey shows that disclosure of information about the financial decisions and performances constitute a constraint to the proliferation of earnings' management. In conclusion, the results of this study's survey suggest that information disclosure reduces incentives of earnings' management since it increases transparency and helps investors to detect this phenomenon.

REFERENCES

Allayannis G, Simko PJ (2009). Earnings Smoothing, Analyst Following, and Firm Value. www.ssrn.com.

Ambrose BW, Bian X (2009). Stock Market Information and REIT Earnings Management. www.ssrn.com.

Baber W, Chen S, Kang SH (2006). Stock Price Reaction To Evidence Of Earnings Management: Implications For Supplementary Financial Disclosure. Rev. Account. Stud., 11: 5-9.

Bergstresser D, Philippon T (2006). CEO Incentives And Earnings Management. J. Fin. Econ., 80: 511–529.

Beyer A (2008). Financial Analysts' Forecast Revisions And Managers' Reporting Behavior. J. Acct. Econ. 46: 334–348.

Burgstahler D, Dichev I (1997). Earnings Management To Avoid Earnings Decreases And Losses. J. Account. Econ., 24: 99–126.

Chevis GM, Das S, Sivaramakrishnan K (2007). Does It Pay To Consistently Meet Analysts' Earnings Expectations. www.ssrn.com.

Chtourou SM, Bédard J, Courteau L (2001). Corporate Governance And Earning Management. www.ssrn.com.

Cormier D, Martinez I (2006). The Association Between Management Earnings Forecasts, Earnings Management, And Stock Market Management. Account. Rev., 70: 193-226.

Dechow PM, Sloan RG, Sweeney AP (1995). Detecting Earnings Valuation: Evidence From French IPOs. Int. J. Account., 41: 209-236.

Degeorge F, Patel J, Zeckhauser RJ (1999). Earnings Management To Exceed Thresholds. J. Bus., 72: 1–33.

Degeorge F, Ding Y, Jeanjean T, Stolowy H (2005). Does Analyst Following Curb Earnings Management? International Evidence. www.ssrn.com.
Dey A, (2004). Income Smoothing and Sophisticated Investor Preferences. www.ssrn.com.
Faccio M, Lazfer MA (1999). Managerial Ownership, Board Structure And Firm Value: The UK Evidence . www.ssrn.com.
Eng LL, Mak YT (2003). Corporate governance and voluntary disclosure. J. Account. Pub. Pol., 22: 325–345.
Graham JR, Harvey CR, Rajgpal S (2005). The Economic Implications Of Corporate Financial Reporting. J. Account. Econ., 40: 3-73.
Hartzel JC, Starks LT (2008). Institutional Investors And Executive Compensation. www.ssrn.com.
Hunton JE, Libby R, Mazza CR (2006). Financial Reporting Transparency And Earnings Management. Account. Rev., 8: 135–158.
Iatridis G, Kadorinis G (2009). Earnings Management And Firm Financial Motives: A Financial Investigation Of UK Listed Firms. I. Rev. F. Anal., 18: 164–173.
Jensen MC, Meckling WH (1976). Theory Of The Firm: Managerial Behaviour Agency costs And Ownerships Structure. J. F. Econ., 3: 305-360.
Jo H, Kim Y (2007). Disclosure Frequency And Earnings Management. J. F. Econ., 84: 561-590.
Jones J (1991).Earnings Management During Import Relief Investigations.J. Account. Res., 29: 193–228.
Kim JB, Chung R, Firth M (2003). Auditor Conservatism, Asymmetric Monitoring And Earnings Management. Cont. Account. Res., 20: 323–359.
Klein A (2000). CEO power, board independence and CEO compensation: An empirical investigation. www.ssrn.com.
Kothari SP, Leone AJ, Wasley CE (2005). Performance Matched Discretionary Accrual Measures. J. Account. Econ., 39: 163–197.
Lennox CS (2005). Management Ownership And Audit Firm Size. www.ssrn.com.
Li X (2010). Accounting conservatism and the cost of capital: An international analysis. www.ssrn.com.
Linen S, Radhakrishnan S, Su L (2006). Earnings Management And Guidance For Meeting Or Beating Analysts' Earnings Forecasts. www.ssrn.com.
Lobo GJ, Zhou J (2001). Disclosure Quality And Earnings Management. As. Pa. J. Account. Econ., 8: 1-20.
Park YW, Shin HH (2004). Board Composition And Earnings Management In Canada. J. Corp. Fin., 10: 431-451.
Peasnell KV, Pope PF, Young S (1998). Outside Directors, Board Effectiveness, And Earnings Management. www.ssrn.com.
Rahman AR, Tay TM, Ong BT, Cai S (2007). Quarterly Reporting In A Voluntary Disclosure Environment: Its Benefits, Drawbacks And Determinants. Int. J. Account., 42: 416–442.
Rajgopal S, Venkatachalam M, Jiambalvo J (1999). Is Institutional Ownership Associated With Earnings Management And The Extent To Which Stock Prices Reflect Future Earnings. www.ssrn.com.
Rees L, Sivaramakrishnan K. (2007).The Effect Of Meeting Or Beating Revenue Forecasts On The Association Between Quarterly Returns And Earnings Forecast Errors. Cont. Account. Res., 24: 259–290.
Schipper K (1989) .Commentary On Earnings Management. Account. Horizons, 3: 91–102.
Watts R, Zimmerman J (1986).Positive Accounting Theory. Prentice-Hall, Englewood Cliffs, NJ (Chapter 8).
Watts RL, Zimmerman JL (1990). Positive Accounting Theory: A Ten Year Perspective. Account. Rev., 65: 131-156.
Yu F (2008). Analyst Coverage And Earnings Management. J. Fin. Econ., 88: 245–271.

Appendix 1. Disclosure index.

(SS) Score relative to strategic information	Score	
(S-1) General corporate information:		
Brief history of company	1	
Organizational structure/chart	1	
General description of business/activities	1	
Principal products	1	
Principal markets	1	
(S-2) Corporate strategy:		
Statement of corporate goals or objectives	1	
Current strategy	1	2
Impact of strategy on current results	1	2
Future strategy	1	2
Impact of strategy on future results	1	2
(S-3) Management discussion and analysis:		
Review of operations	1	2
Competitive environment	1	2
Significant events of the year	1	2
Change in sales/profits	1	2
Change in cost of goods sold	1	2
Change in expenses	1	2
Change in inventory level	1	2
Change in market share	1	2
(S-4) Future prospects:		
New developments	1	2
Forecast of sales/profit	1	2
Assumptions underlying the forecast	1	2
Order book or backlog information	1	
(S-5) Other useful strategic information:		
----------	1	2
----------	1	2
----------	1	2
Sub total (A)	43	
(SNF) Score relative to non financial information		
(N-1) Employee information:		
Number of employees	1	
Compensation per employee	2	
Value-added per employee	2	
Productivity indicator	2	
(N-2) Other useful non-financial disclosure :	Score	
----------	1	2
----------	1	2
----------	1	2
Sub total (B)	13	
(SF) Score relative to financial information		

Appendix 1. Contd.

(F-1) Performance indicators (not from financial		
Historical figures for last five years or more	2	
Turnover	1	
Profit	1	
Shareholders funds	1	
Total assets	1	
Earnings per share	1	
(F-2) Financial ratios:	Score	
ROE	1	
ROA	1	
Gearing ratio	1	
Liquidity ratio	1	
Other useful ratios:	Score	
----------	1	
----------	1	
----------	1	
(F-3) Projected information:	Score	
Cash flow forecast	2	
Capital expenditures and/or R&D expenditures forecast	2	
Earnings forecast	2	
(F-4) Foreign currency information:	Score	
Impact of foreign exchange fluctuations on current results	1	2
Foreign currency exposure management description	1	2
Major exchange rates used in the accounts	1	
(F-5) Other useful financial information :	Score	
----------	1	2
----------	1	2
----------	1	2
Sub total (C)	31	
Total (Company DScore)	87	