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From a sample of 50 companies listed on the stock exchange of Tunis (Tunis Stock Exchange) during the period 2006-2010. We have developed an explanatory model of earnings management practices based on logistic regression. Our results show that the use of debt companies, calling the companies audited by a firm of "big six" provides a smoothing of results high.

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Analysis of the Determinants of Earnings Smoothing: The Case of Tunisian Companies

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Abstract - The objective of this paper is to analyze the impact of the determinants of income smoothing in Tunis, which is to reduce the volatility of results.

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I. Introduction

It is commonly accepted that leaders seek to change the perception of stakeholders on the financial situation of the company managing the results according to their objectives. Managers results "down" to reduce the amount of taxes, manage "upward" to meet the expectations of financial analysts or the smooth (Dechow and Skinner, 2000). Indeed, in a context of asymmetric information and bounded rationality stakeholders, smoothing results may provide various gains, reducing the volatility of results.

Our contribution is to highlight the importance of some specific incentives smoothing results in the context of the Tunisian economic environment. We analyze the impact of specific factors that potentially influence the policy of smoothing results.

Smoothing is done in order to achieve the forecasts made by financial analysts or announced by the leaders. Indeed, Bartov, Givoly and Hayn (2002) noted that leaders are forced to manage the results according to these forecasts prove to shareholders and much of their information.

The approach adopted by the authors to study the impact of earnings management is essentially based on a quantitative approach. However, Durtschi and Easton (2005) have questioned the appropriateness of the models used because of the researchers' ability to measure reliably the observed phenomenon. Ramana and Watts (2007) admit that the motivation to manage different results from one society to another and that the expected gains from smoothing are more important for the most indebted companies, smaller and operate in sectors business more competitive.

In the end, this paper adds to the literature in two ways, in one hand, it analyzes the high sensitivity of smoothing to methodological choices. In this sense, it leads to very carefully reinterpret the results highlighted by Leuz, Nanda and Wysocki (2003), who retained a measure of specific smoothing. On the other hand, our study complements the international literature by providing current results on the determinants of income smoothing by Tunisian companies such as debt, the size of the company, the industry, the leaders in capital and audit quality.

This paper is organized as follows. In second section, we describe our methodology. The third section is devoted to the analysis of the determinants of smoothing. A final section summarizes our results and concludes.

II. Methodology

a) Sample

In a baseline study of smoothing results at international level, Leuz, Nanda and Wysocki (2003) find that companies located in countries where shareholders protection is better protected, tend to be more smooth earnings, compared to companies located in countries where shareholders protection is weaker. Our study of Tunisian data, is part of this current research which aims to deepen the results of three main ways.

First, we check if the findings are contingent on the extent of smoothing measure used. These authors proposed a specific measure that focuses on operating profit corporations. However, it is possible that different measures of smoothing significantly alter these conclusions.

Second, we analyze the smoothness of Tunisian companies, traded, during a more recent period (2006-2010), six years, to verify whether the conclusions are contingent on the study period. Third, we observe the impact of smoothing on the determinants of riskier companies.

Finally, this study expands the literature in two main ways. On one hand, it leads to reinterpret carefully the results highlighted by Leuz, Nanda and Wysocki (2003), who retained a measure of specific smoothing. On the other hand, our study complements the international literature by providing current results on the smoothing results by Tunisian companies.

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b) The Smoothing Measures

Various measures have been proposed smoothing in the literature, one of them seems to be particularly interesting. The measure used by Leuz, Nanda and Wysocki (2003), which retains the variability of operating cash flows to assess the smoothing. It consists of comparing the variability of the results with the variability of cash flows, therefore, the variability results lower than cash flow which will lead to smooth results.

$$\text{Liss} = \frac{\partial BN / \partial TA}{\partial FTO / \partial TA}$$

With:

∂: Standard deviation of changes

BN: Net profit of the company

TA: Total assets of the company

FTO: Operating cash flow of the company.

III. The Determinants of Income Smoothing

If previous results tell us about the behavior of companies smoothing, however they do not provide any information about the reasons for smoothing which is considered as more or less important between the companies.

This section aims to introduce the factors that motivate companies to smooth their results more strongly, apprehended using the following five factors: debt, size, and sector of companies' activities, the leaders in capital and audit quality.

a) The Debt

Debt increases the risk borne by shareholders and the risk perceived by other partners. Smoothing is supposed to reduce the risk, to expect gains in terms of financing's cost.

Truemann and Titman (1988) find that information asymmetry between managers and an external user of information is an incentive for earnings management practices. Empirically, Carlson and Bathala (1997) found a positive relationship between smoothing and debt levels.

i. *Hypothesis 1a*

The debt should positively influence the smoothing results.

b) The Size

Size presents another variable to explain the smoothing. Indeed, large companies are more diversified and less risky. Moreover, leaders are encouraged to naturally smooth results due to the pressure of financial analysts. The empirical results provide conflicting results, Fern, Brown and Dickey (1994) confirm the importance of the size, against the research and Chenail Breton (1997) cannot connect to the smoothing size of the company.

i. *Hypothesis1b*

The larger companies should have more influence on smoothing results.

ii. *Hypothesis1b*

Larger companies do not smooth results.

c) Sector

Also, Sector is a variable that can explain the smoothing. Companies operating in less competitive sectors are less risky. Belkaoui and Picur (1984) confirm that companies belonging to the sector competitive smooth their results more than other companies in order to neutralize the uncertainty of the environment. These findings are contradicted by Breton and Chenail (1997) who find that there is no difference between the behaviors of firms in both sectors.

i. *Hypothesis1c*

The sector is expected to positively influence. the smoothing

ii. *Hypothesis1c*

The area has no influence on the smoothing.

d) The Proportion of Leaders in the Capital

Smoothing results preserved human capital management, it has a better picture that can help to protect against the risk. Holthausen, Larker and Sloan (1995) find that increasing the leaders in the capital to align the interests of executives with those of shareholders. Also, Mork, Shleifer and Vishney (1998) find a positive influence of the concentration of capital in the hands of the leader on the level of smoothing.

i. *Hypothesis1d*

Leaders are encouraged to smooth earnings when their shares in the capital of the company are high.

e) The Quality Audit

Listeners can constrain the smoothing results. Previous studies of Becker, Defond, Jiambalvo and Subramanyam (1998) and those of Francis, Maydew and Sparks (1999) suggest that audit quality is often reflected in a lower income smoothing. Listeners "big six" are presumed to be more competent and therefore provide a better quality of service than auditors' non big six. "

i. *Hypothesis1e*

Managers have less incentive to perform smoothing accounting results when the company is audited by a firm of "big six."

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Table 1 : Summary table presenting an overview of empirical studies and hypotheses on the determinants of income smoothing

Variables	Authors	Sample	Period	Assumptions Authors
Debt: (H1a)	Truemann et Titman (1988)	Qualitative	1987	There is a positive relationship between smoothing and debt levels.
	Carlson et Bathala (1997)	100 companies	1990 to 1995	
Size: (H1b)	Fern, Brown et Dickey (1994)	26 companies	1971 to 1989	Larger companies more heavily smooth results.
	Defon M et Park C (1997)	20 companies	1994	Larger companies do not smooth results.
Sector: (H1c)	Watts et Zimmerman (1990)	26 companies	1988	The sector should positively influence the smoothing.
	Defon M et Park C (1997)	20 companies	1994	Sector has no influence on the smoothing.
Percentage-retention leaders: (H1d)	Mork, Shleifer et Vishney (1989)	500 companies	1980	Leaders are encouraged to smooth earnings when their shares in the capital of the company are high.
	Holthausen, Larker et Sloan (1995)	Three groups of manager A,B et C	1980 to 1990	
Quality Audit: (H1e)	Becker, Defond, Jiambalvo et Subramanyam (1998)	10,379 big six 2,179 non big six	1995	Leaders have fewer incentives to exercise accounting income smoothing when the company is audited by a firm of "big six."
	Francis, Maydew et Sparks (1999)	100 companies that use big 6 auditors	1975 to 1994	

f) The Measures of the Determinants of Smoothing Tunisian Companies

To assess the importance of the five factors discussed in the smoothing results, we define the following five variables:

– Debt: The debt ratio (total debt / total assets) median of the study period considered (2006-2010);
– Size: the median of the natural logarithm of total assets over the study period fixed;
– Sector: the sector of society. This variable is used to assess the level of competition in the sector. If the company belongs to a competitive industry, the variable takes the value 1, otherwise it equals 0;
– Percentage-retention leaders: This variable is used to test the influence of the concentration of capital in the hands of the leaders on the level of earnings management;
– Quality Audit: This variable can capture audit quality. If the company is audited by a firm of "big six", the variable takes the value 1 if it is equal to 0.

Table 2 : Definition of variables smoothing results

Hypotheses tested	operational definition	operational name	Sign	Data source
H1a	$\frac{Total\ debt}{Total\ assets}$	Indebt	+	Annual Report
H1b	Ln (total assets)	Size	+	Annual Report
H1b'			-	
H1c	dichotomous variable High technology: 1 Other: 0	Sect	+	Annual Report
H1c'			-	
H1d	% Retention of managers	DIR	+	Annual Report
H1e	0 : agency « non big six » 1 : agency « big six » (binary variable)	Audit	-	Annual Report

IV. Empirical Results

a) Methodology

To reflect the level of smoothing Tunisian companies and the impact of the various measures used on the results, we analyze the relationship between the level and determinants of smoothing contained in the financial records, through the logistic regression model.

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To assess the determinants of earnings management, we use the following model:

$$Liss = \alpha_0 + \alpha_1 Endett + \alpha_2 Taille + \alpha_3 Sect + \alpha_4 DIR + \alpha_5 Audit + \varepsilon_{i,j} \quad (1)$$

i. *Correlation Matrix*

It is appropriate to examine the correlations of the explanatory variables may bias the conclusions of this analysis to detect collinearity between them.

Variables	Dettes	Taille	Secteur	Dir	Audit
Dettes	1	0.5216981	-0.07712473	-0.1282415	-0.103064
Taille	0.5216981	1	-0.11845	-0.0711245	0.0242464
Secteur	-0.0771247	-0.11845	1	0.225473	-0.030009
Dir	-0.128241	-0.071124	0.225473	1	-0.103064
Audit	0.155129	0.024246	-0.0300099	-0.103064	1

An examination of the correlation matrix shows that there is no problem of collinearity between the explanatory variables because they have a low correlation, consequently, we are not obliged to take corrective action.

Correlation coefficients range from a minimum equal to -0030 to a maximum equal to 0225, with the exception of the relationship between the size and the debt, the correlation coefficient is equal to 0.521 respectively.

According to Kennedy (1992), these two values do not reveal the presence of a serious collinearity problem, as it confirms that this problem exists when the correlation coefficient exceeds the threshold of 0.8. So we will use all the variables in our model.

In addition, our model explained 18% of the Durbin-Watson statistics are almost equal to 2, hence no problem of autocorrelation.

ii. *Model Estimation*

Variable	Coefficient	Prob.
C	0.006754	0.9924
AUDIT	**-0.298197	0.0454
DETTE	***-1.40E-09	0.0891
DIR	0.114747	0.7632
SECT	0.139653	0.6173
TAILLE	0.128592	0.1647

R-squared	0.181461	Mean dependent var	0.748637
Adjusted R-squared	0.088445	S.D. dependent var	0.472864
S.E. of regression	0.451469	Durbin-Watson	2.417478

iii. *Interpretation of the Significance of the Signs of the Estimated Coefficients*

We note that the explanatory variables completely different depending on the extent of smoothing. More specifically, the debt variable has a negative sign (-1.40E-09), which implies that when the company is leveraged, the smoothing is more important. However, the debt variable is significant at a level of risk equal to 10%. These results allow us to conclude that the debt is a factor smoothing. This conclusion can accept the first hypothesis (H1a), that the debt should positively influence the smoothing results. Thus, the most indebted companies strongly smooth the result because they find it more difficult to raise new funds.

Regarding the Audit variable, although the coefficient on this variable is negative (-0.298197), this supports the companies audited by a firm of "big six" smooth stronger result. Variable is significant at a level of risk equal to 5%. This conclusion can accept the fifth hypothesis (H1e). This result in Tunisian companies, auditors "big six" can not compel leaders against a high smoothing.

With regard to the variable size, the sign is positive (0.128592), which means that corporations smooth less strongly than smaller. Certainly, large corporations, subject to closer monitoring by financial analysts are better diversified and should show results more smoothed. Despite its positive sign, the coefficient on the size variable is not significant. The size of Tunisian companies does not seem to have a major impact on income smoothing.

Also, the sector variable admits a positive coefficient (0.139653), implying that the sector has a positive effect on smoothing. By cons, this coefficient is not significant, reflecting the idea that smoothing is not different in more competitive areas.

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Finally, the coefficient on the variable measuring the percentage of Dir ownership concentration in the hands of leaders is positive (0.114747), however, is not significant, hence the leaders in the capital n 'is not a determinant of smoothing, this result allows us to reject the fifth hypothesis. We conclude that a high concentration of capital in the hands of management cannot overcome the conflicts of interest between managers and shareholders.

V. Conclusion

This work devoted to Tunisian data smoothing results by Tunisian companies' which aims to verify the importance of the five factors that assess the behavior of smoothing companies.

The main results are as follows. First, the use of debt companies provides high performance smoothing because they find it more difficult to raise new funds. More specifically, it appears that the debt positively influences the smoothing results.

Second, the use of audited companies with a firm "big six" influences the quality of the explanatory model smoothing. This is true because the companies audited by a firm of "big six" smooth stronger result. More specifically, it appears that in Tunisian firms, auditors "big six" cannot compel leaders against a high smoothing.

These results lead us to conclude that the results of previous studies conducted around the world, should be explained with some caution, since the choice of measures used differs from one country to another that may cause an impact on the results set evidence.

To conclude, we assume that the smoothing is far from being exhausted, since many events can affect companies such as changes in management, changes in accounting standards, which are likely to significantly influence the smoothing. Hence further studies will be necessary to determine whether these events affect the smoothing result and will help us to identify it correctly.

The classical limits for this type of study, the choice of variables or measures of these variables can be highlighted. Also, we encourage researchers to conduct further research on this topic and on other samples with various methodological refinements to complete these initial results.

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