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How to Understand Earnings Management Across Identification of Discretionary Accounting and Financial Variables: The Case of Tunisian Companies

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Abstract- This research work is part of the investigation of the determinants that taint the quality of accounting information disclosed on the Tunisian financial center and the incentives that enact Accounting policies conducted by managers and which are related to financial failure. To better understand this dilemma (manipulation of accounting data - financial failure) we have adopted an econometric approach allowing us to distinguish the discretionary accruals characterizing companies with high financial profitability from those specific to companies with low financial profitability and this, based on the postulate of the positive theory of accounting which considers that managers of companies experiencing difficulties make accounting choices to artificially embellish the published net result.

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GJMBR-D Classification: *JEL Code: H20*

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I. Introduction

Based on the postulate of the positive theory (Watts and Zimmermann, 1986-1990), which considers that the directors of financially distressed companies, exploit the accounting information in their interests, we adopted an econometric approach to detect accounting manipulations by the income management method and by estimating, under ordinary least squares, the Modified Generalized Jones model, it was possible to confirm the existence of discretionary accounting manipulations in the accounting results published by the companies forming the sample studied throughout listing from 1999 - 2014, on the Tunis Stock Exchange. The analysis of the significance and relevance of the model used allowed us to validate empirically this hypothesis concerning the management of the result. Other significant returns relating to the residual of the estimate were revealed by the regression that was conducted on the econometric model used. Indeed, the terms of the residual of the estimate, which summarize all the discretionary accruals or all the other exogenous variables not taken into account in the modeling, do indeed satisfy the stochastic and structural assumptions (relating to the bias and the convergence), in other words, these terms are governed by a normal centered, reduced law, and therefore, the sample studied perfectly induces the characteristics of the population it represents in terms of mean and variance. What led us in this article to push the analysis of the residual by distinguishing the companies that handle discretionary accruals upward from those that manage it downward, this approach is interesting, in the sense that it allowed us to divide the sample into two groups and to reveal the characteristics of the defensive strategy through exogenous explanatory variables of the adjustments of the accounting items of total regularization (total accruals). This process allowed us to verify the correlation between financial failure and the upward management of the result (defensive strategy).

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II. Research Approach

For the specification of the characteristics of the discretionary adjustments by the econometric Model

$$\frac{AVCRT_{it}}{TA_{it-1}} = \lambda_0 + \lambda_1\left(\frac{Var_{t-1}^{t}CA_i - Var_{t-1}^{t}Cr_i}{TA_{it-1}}\right) + \lambda_2\left(\frac{IMMO_{it}}{TA_{it-1}}\right) + \lambda_3\left(\frac{\Delta FMO_{it-1}}{TA_{it-1}}\right) + \varepsilon_{it} \qquad (1),$$

our approach must take into account the constraint relating to the unavailability of information (lack of database relating to companies in financial difficulty) at the level of the TMB or the CMF concerning companies that have not complied with the NPCGA (managing their results outside the limits of generally accepted accounting principles and standards). Indeed, the provision by the directors of discretionary accounting and financial information would make it possible to identify difficulties and thus to resort to an informal reorganization. This is why one of the privileged fields of research on the accounting/business failure interface is that of prediction models of financial failure vs. fraud through the accounting and financial variables characterizing the incentives to the management of the result. In this respect, the predictions of the positive theory (Dechow, Kothari, Watts, 1998) announce that executives of companies experiencing difficulties make

accounting choices to improve the result by carrying out discretionary accounting manipulations that tend to artificially increase the published net result. To highlight this assumption of the positive theory of accounting at the Tunisian context level, we have borrowed an approach that focused on a selection of a sample of 18 companies for a listing at the BVMT over the period 1999 - 2014. This choice is thus set to have two subsamples of the same overall size and size at the level of the selected activity sectors (industry, trade, and service delivery - Table 1). This led us to dismiss the E21 company from the global sample as it is the only one in its sector that of air transport.

III. Discussion - Interpretations and Results

The relative variation (see Table 6) of the exogenous variation in cash flow generated by the operation is on the average negative of -0.30% for the group that managed its earnings upwards (+4 % on average of discretionary accruals) versus a positive variation of 1.94% in the other group (-4% on average of discretionary accruals). This failure was found again at the level of the performance indicator variable, namely that of the change in turnover adjusted for any abnormal increase at the level of the receivables item, where there was a clear difference (7.73% for the sample F versus 8.76% in sample C). This finding is corroborated by research work such as that conducted by Kothari, Leone, and Wasley, (2001) or Dechow, (2011). Finally, in this chapter we managed to make an important step in the exploratory study of the financial statement fraud's phenomenon by specifying the determining variables of the companies' financial failure that manages the result upwards and identifies at the same time the two samples (F and C). This approach can be used to perform a logistic regression of a fraud prediction model at the level of a new econometric Fraud Detection process research perspective at published financial statement levels.

The model (see Table 2) is relevant in its entirety, even though the observations concerning company E21 have been removed. Indeed, the adjusted R2 has improved (76.2568% instead of 75.9369%), and the coefficients of the regression are very significant at the 1% threshold, therefore, the exogenous variables are relevant.

The residual of the estimate corresponds to the discretionary accruals thus to all the other exogenous variables not taken into account in the modeling. As shown in Figure 3 - 4, the residual of the estimate is highly dispersed between both positive and negative directions, so it is important to distinguish the two meanings of variation of the residual to identify the firms that manage discreetly their results upward (financially failing companies) of those who manage their results downwards (companies not financially failing). This approach is interesting insofar as it makes it possible to better understand the accounting and financial variables characteristic of the home of discretionary accruals. The generation of the two directions of variation is carried out by E Views software 9 as indicated in the table (3) with identification of the companies according to these meanings of variation of the average of the discretionary accruals (residuals of the estimate of the model (1).

Table 1: Characteristics of the Sample (19 companies observed over the period 1999 - 2014)

Sample	Firm Ei	Activity sector		Distribution by sector of activity	
	COMPANY CODE	DETAIL OF THE SECTOR	% IN THE SECTOR	SECTOR	% IN RELATION TO ALL SECTORS
Industrial	E1	CHEMICAL INDUSTRY	10.00%	I	5.26%
	E2	CHEMICAL INDUSTRY	10.00%	I	5.26%
	E3	MECHANICAL INDUSTRY	10.00%	I	5.26%
	E4	CHEMICAL INDUSTRY	10.00%	I	5.26%
	E5	HOUSEHOLD INDUSTRY	10.00%	I	5.26%
	E8	ELECTRIC INDUSTRY	10.00%	I	5.26%
	E9	PHARMACEUTICAL INDUSTRY	10.00%	I	5.26%
	E10	GLASS INDUSTRY	10.00%	I	5.26%
	E13	PNEUMATIC INDUSTRY	10.00%	I	5.26%
	E14	MILK INDUSTRY	10.00%	I	5.26%
subtotal 1		**10**	**100%**	**10**	**52.63%**

Commercial	E6	AGRO-FOOD TRADE	16.66%	C	5.26%
	E7	DISTRIBUTION TRADE	16.66%	C	5.26%
	E12	WHOLESALE	16.66%	C	5.26%
	E15	DISTRIBUTION TRADE	16.66%	C	5.26%
	E16	COMMERCE DE GROS	16.66%	C	5.26%
	E17	DISTRIBUTION TRADE	16.66%	C	5.26%
subtotal 2	**6**		**100%**	**6**	**31.59%**
Service provider	E18	TELECOMMUNICATION SERVICES	33.33%	S	5.26%
	E20	REAL ESTATE PROMOTION	33.33%	S	5.26%
	E21	AIR TRANSPORT	33.33%	S	5.26%
subtotal 3		**3**	**100%**	**S**	**15.78%**
Total		**19**	**100%**	**3**	**100,00%**

Table 2: Regression coefficients and model significance tests

Dependent Variable : $\frac{AVCRT_{it}}{TA_{it-1}}$

Method: Panel Least Squares

Sample: 1999 2014

Periods included: 16

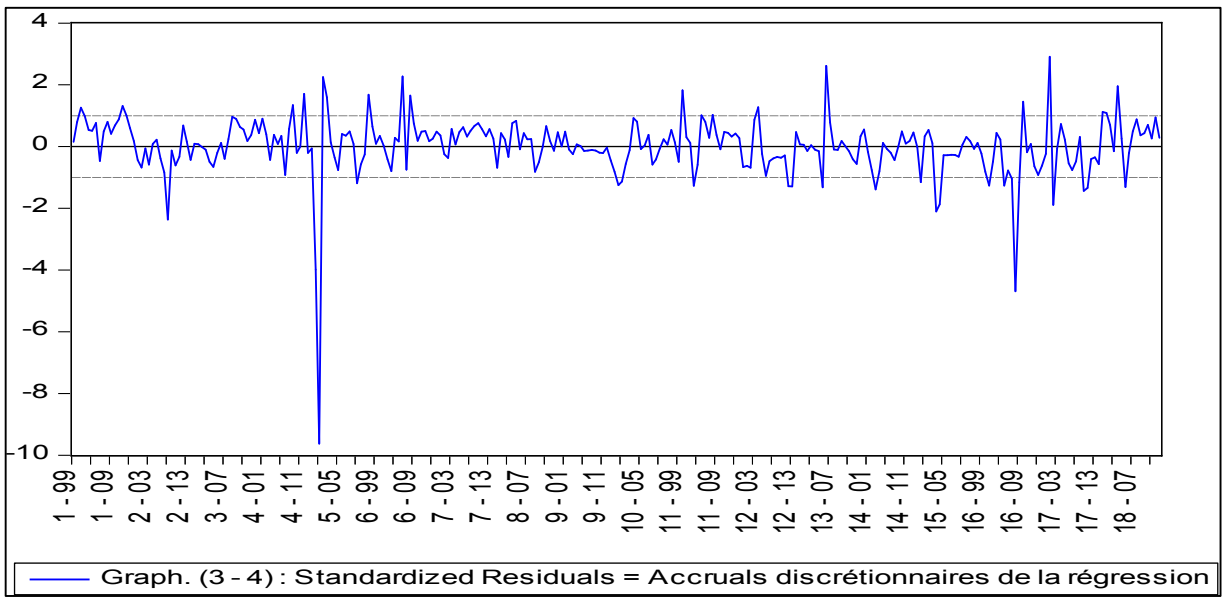
Cross-sections included: 18

Total panel (balanced) observations: 288

$$\frac{AVCRT_{it}}{TA_{it-1}} = \lambda_0 + \lambda_1\left(\frac{Var_{t-1}^{t}CA_i - Var_{t-1}^{t}Cr_i}{TA_{it-1}}\right) + \lambda_2\left(\frac{IMMO_{it}}{TA_{it-1}}\right) + \lambda_3\left(\frac{\Delta FMO_{it-1}}{TA_{it-1}}\right) + \varepsilon_{it}$$

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$\frac{Var_{t-1}^{t}CA_i - Var_{t-1}^{t}Cr_i}{TA_{it-1}}$	0.071039	0.027486	2.584562	0.0102
$\frac{IMMO_{it}}{TA_{it-1}}$	-0.144015	0.034789	-4.139696	0.0000
$\frac{\Delta FMO_{it-1}}{TA_{it-1}}$	-0.402415	0.013882	-28.98886	0.0000
Constante C	0.019451	0.017437	1.115548	0.2656

R-squared	0.765050	Mean dependent var	-0.048375
Adjusted R-squared	0.762568	S.D. dependent var	0.264849
S.E. of regression	0.129053	Akaike info criterion	-1.243399
Sum squared resid	4.729912	Schwarz criterion	-1.192525
Log likelihood	183.0495	Hannan-Quinn criter.	-1.223012
F-statistic	308.2557	Durbin-Watson stat	1.536564
Prob(F-statistic)	0.000000		



Graph 3-4: Classification of firms in the sample according to the direction of variation of the residual

Following the econometric analysis carried out previously, which proved the effectiveness and relevance of the model tested (equation 1), to detect the management of the result, we were able to push its exploitation towards the distinction and the identification of the companies that manage the upward result (defensive strategy) of those who adopt a completely divergent strategy (offensive strategy). This procedure is justified in the work on the topic of accounting data management. Indeed, Kothari, Leone and Wasley (2001) were able to verify that firms manipulating their results take into account the past and current performance of their economic activities. In other words, profitable firms use discretionary increments (offensive strategy) differently than unprofitable businesses (defensive strategy). This finding, confirmed in the research work on results management (Dechow, 2010), was found in our empirical work. Indeed, the results (Tables 4, 5 and 6) of our study conducted on the sample of Tunisian companies listed in the BVMT, reveals that the companies that manage their results upwards (sample F) manipulate towards the increase in discretionary accruals up to (on average) + 4% of total assets delayed versus -4% for companies that manage their results downwards (sample C). Another revealing result of the characteristic of financial failure among the companies that manage the result upward, is that they display an average negative cash flow variation of about -0.30% of the total assets delayed against a positive variation of + 1.94% of total assets delayed among those who manage their results downward. This failure is also reflected in the variable change in turnover adjusted for any abnormal increase at the level of the receivables item (7.73% in the sample F versus 8.76% in the sample C).

Table 3: Classification of firms in the sample according to the direction of variation of the residue of the estimate of equation (1)

Descriptive Statistics for RESID
Categorized by values of RESID and Firm_EiI
Sample: 1999 2014
Included observations: 288

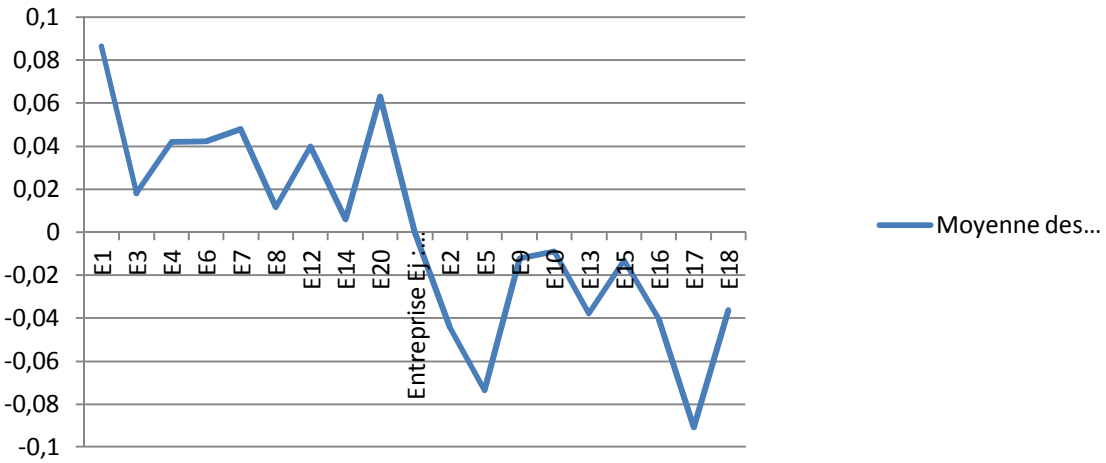
Mean Quant.* Std. Dev.		Firm_Ei								
		E1	E10	E12	E13	E14	E15	E16	E17	E18
	[-1.5, -1)	NA	NA	NA	NA	NA	NA	NA	NA	NA
		NA	NA	NA	NA	NA	NA	NA	NA	NA
		NA	NA	NA	NA	NA	NA	NA	NA	NA
	[-1, -0.5)	NA	NA	NA	NA	NA	NA	NA	-0.604743	NA
		NA	NA	NA	NA	NA	NA	NA	-0.604743	NA
		NA	NA	NA	NA	NA	NA	NA	NA	NA
RESID	[-0.5, 0)	-0.060408	-0.067909	-0.079038	-0.081514	-0.043532	-0.062079	-0.095070	-0.102984	-0.093419
		-0.060408	-0.063265	-0.070156	-0.070792	-0.019374	-0.041107	-0.036388	-0.105518	-0.071920
		NA	0.059457	0.063499	0.047459	0.051926	0.060736	0.099528	0.049393	0.070552
	[0, 0.5)	0.096286	0.050359	0.079609	0.093000	0.069289	0.035930	0.030334	0.071326	0.134873
		0.098280	0.039649	0.055722	0.086214	0.008623	0.033052	0.022224	0.043514	0.067295
		0.040615	0.043545	0.061573	0.057115	0.122974	0.026386	0.021554	0.079790	0.162944
	All	**0,086492**	**-0,008775**	**0,039947**	**-0,037885**	**0,005827**	**-0,013075**	**-0,040206**	**-0,090767**	**-0,036346**
		0.093233	-0.001876	0.045024	-0.048465	-0.012687	-0.000741	-0.022056	-0.091230	-0.057040
		0.055445	0.079149	0.092847	0.091625	0.104059	0.067882	0.097964	0.166214	0.139226

Continued Table 3: Classification of firms in the sample according to the direction of variation of the residue of the estimate (1)

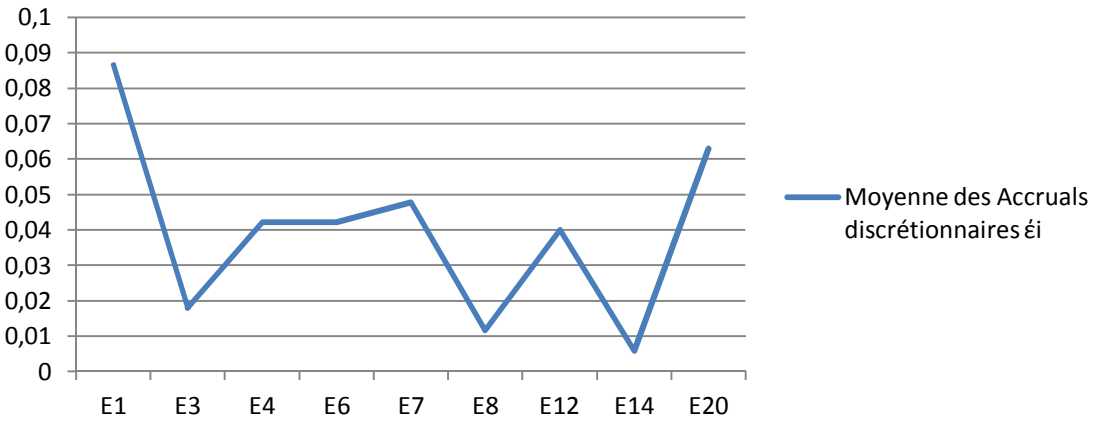
Mean Quant.* Std. Dev.		ENTREPRISE__Ei									
		E2	E20	E3	E4	E5	E6	E7	E8	E9	All
	[-1.5, -1)	NA	NA	NA	NA	-1.241818	NA	NA	NA	NA	-1.241818
		NA	NA	NA	NA	-1.241818	NA	NA	NA	NA	-1.241818
		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	[-1, -0.5)	NA	NA	NA	NA	-0.514177	NA	NA	NA	NA	-0.559460
		NA	NA	NA	NA	-0.514177	NA	NA	NA	NA	-0.559460
		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.064040
RESID	[-0.5, 0)	-0.080356	-0.072174	-0.040538	-0.046976	-0.080962	-0.084364	-0.039818	-0.047255	-0.030018	-0.069866
		-0.056199	-0.027254	-0.038985	-0.026548	-0.074488	-0.096637	-0.039818	-0.042940	-0.018252	-0.053919
		0.080225	0.084458	0.031634	0.043456	0.047880	0.027129	0.011231	0.040319	0.028549	0.060001
	[0, 0.5)	0.034512	0.094227	0.053180	0.082633	0.109637	0.071477	0.060398	0.057396	0.026662	0.071099
		0.022967	0.090263	0.039713	0.056189	0.063005	0.036928	0.064104	0.055872	0.008960	0.055988
		0.030680	0.061926	0.042772	0.067424	0.101260	0.086027	0.023770	0.032120	0.031211	0.066076
	All	**-0,04446**	**0,063027**	**0,018036**	**0,04213**	**-0,07338**	**0,042257**	**0,047871**	**0,011611**	**-0,012306**	1.35E-18
		-0.045885	0.059618	0.013205	0.047051	0.014241	0.028733	0.061165	0.026558	-0.015562	0.009615
		0.086980	0.092295	0.060224	0.085930	0.360785	0.099825	0.040863	0.063838	0.039235	0.128377

This procedure allowed us to identify two sub-samples "F" and "C" of the same size ("F": 9 companies that manage the result upward and "C": 9 other companies that manage the result towards the decline), which features the manipulations of discretionary accruals summarized by, respectively, the graphs (3 - 5), (3 - 6) and (3 - 7).

Graph. (3 - 5) : Sens de variation des Accruals discrétionnaire ɛi - ɛj de l'échantillon globale (18 entreprises / 1999 - 2014)



Graph. (3 - 6) Gestion du Résultat Défensive = Accruals discrétionnaires positifs - ɛi > 0



Graph. (3 - 7) : Gestion du Résultat Offensive = Accruals discrétionnaires négatifs - ɛj < 0

Table 4: Statistics of the Discretionary Accruals of the "F" sample

Company Ei Sample "F"	Average of discretionary Accruals $\hat{\varepsilon}_i$	Median of the discretionary Accruals $\hat{\varepsilon}_i$	Standard deviation of discretionary Accruals $\hat{\varepsilon}_i$
E1	9%	9%	6%
E3	2%	1%	6%
E4	4%	5%	9%
E6	4%	3%	10%
E7	5%	6%	4%
E8	1%	3%	6%
E12	4%	5%	9%
E14	1%	-1%	10%
E20	6%	6%	9%
Average	**4%**	**4%**	**8%**

Table 5 1: Statistics of the Discretionary Accruals of the « C » sample

Company Ej Sample « C »	Average of discretionary Accruals $\hat{\varepsilon}_j$	Median of the discretionary Accruals $\hat{\varepsilon}_j$	Standard deviation of discretionary Accruals $\hat{\varepsilon}_j$
E2	-4%	-5%	9%
E5	-7%	1%	36%
E9	-1%	-2%	4%
E10	-1%	0%	8%
E13	-4%	-5%	9%
E15	-1%	0%	7%
E16	-4%	-2%	10%
E17	-9%	-9%	17%
E18	-4%	-6%	14%
Average	**-4%**	**-3%**	**13%**

Table 6: Statistics of the Normal and Discretionary Accruals of the two subsamples « F » & « C »

Statistics	Sample Type	$\frac{AVCRT_{it}}{TA_{it-1}}$	Normal Accruals : $\left(\frac{AVCRND_{it}}{TA_{it-1}}\right)$			Discretionary accruals $\hat{\varepsilon}_j$ $\left(\frac{AVCRD_{it}}{TA_{it-1}}\right)$
			$\frac{Var_{t-1}^{t}CA_i - Var_{t-1}^{t}Cr_i}{TA_{it-1}}$	$\frac{IMMO_{it}}{TA_{it-1}}$	$\frac{\Delta FMO_{it-1}}{TA_{it-1}}$	
Average	F (9 firmss)	-0,73%	7,73%	50,77%	-0,30%	3,97%
Median		-0,65%	3,00%	47,90%	0,83%	4,02%
Standard deviation		10,22%	27,71%	14,71%	15,13%	7,73%
Average	C (9 firms)	-8,95%	8,76%	47,00%	1,94%	-3,97%
Median		-6,29%	8,17%	42,94%	0,33%	-2,98%
Standard deviation		24,01%	15,41%	17,45%	47,15%	12,55%

The total accruals are obtained by the following estimation model (2):

$$\mathrm{AVCRD_{it}} = \mathrm{AVCRT_{it}} - 0.019451\ \mathrm{TA_{it}} - 0.071039\left(\Delta \mathrm{CA_{it-1}^{t}} - \Delta \mathrm{Cr_{it-1}^{t}}\right) + 0.144015\ \mathrm{IMMO_{it}} + 0.402415\ \Delta \mathrm{FMO_{it}}$$

And the discretionary accruals then correspond to the difference between the observed value of the total adjustments $\left(AVCRT_{it}\right)$ and the calculated value of so-called normal adjustments

$\left(AVCRND_{it}\right)$, avec $\quad AVCRT_{it} = RN_{it} - CF_{it}$

We therefore measure earnings management from accruals explaining the difference between net income and cash flow from operations (equation 1). Total accruals are based on normal accruals and abnormal or discretionary accruals. Previous literature (Dechow, 2013) has shown that three key variables are determinants of normal accruals ie, the performance captured by the turnover through its corrected variation $\left(\frac{Var_{t-1}^{t}CA_i - Var_{t-1}^{t}Cr_i}{TA_{it-1}}\right)$, investments $\left(\frac{IMMO_{it}}{TA_{it-1}}\right)$, and the change in operating cash flow $\left(\frac{\Delta FMO_{it-1}}{TA_{it-1}}\right)$ always in continuity with the equation (1) basic model.

IV. Conclusion

In Accounting Theory Literature, Operating cash flow is considered as a determinant of the level of non discretionary accounting adjustment variables. Indeed, the relevance of this variable is justified by its negative correlation (-0.402415) that is to say between the variation of the operating cash flow of two consecutive periods (t -1 and t) and the level of current accruals. The small variation (-0.30%) of the flows in the sample F, explains that a large part of the accruals level seems predetermined by the operating cash flow of the previous year, it is logical to think that it is a non discretionary portion. We also note (Table 6) that the level of net fixed assets in the F sample represents approximately 51% of the net assets delayed versus 47% in the C sample, which suggests the sample F tends to minimize the calculated costs (low depreciation allowances or taken from large provisions) or to an under-exploitation of the economic assets and consequently a low economic and financial profitability. This work is part of an early preparation of a future research track on the interface accounting/failure of companies and the modeling of prediction of financial failure vs. fraud through the accounting and financial variables characterizing the incentives for manipulation of Accounting data.

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