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Abnormal accounting accrual Management by internal and external Market Discipline: The case of Tunisian banks in the context of the ‘Arab Spring’

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Abstract

Problem/Relevance: This paper deals with such market disciplinary factors as shareholder ownership, audit committee composition and Basel III prudential regulation affecting accounting manipulation measured by abnormal accruals in Tunisian banks in the event of managerial deviation from regulatory requirements

Research Objective/Questions : The aim of this study is to estimate the abnormal accruals that measure the accounting manipulation, and to test the effect of disciplinary and regulatory factors accordingly to The spring Arab revolution, on accounting Manipulation.

Methodology: We propose to construct abnormal accruals as an endogenous variable, using the classic Kothari model (2005), in order to explain them by means of the “difference-in-difference” estimation approach (DID), understand the significance of the evolution of the manipulation, and explain these accruals using internal and external disciplinary factors. On the other hand, we use the credit risk portfolio manipulation theory advocated by Nessim (2003) and Repullo (2007), to understand the concept of actual venture capital of Tunisian banks after the Arab Revolution.

Major Findings : The results show that the situation of Tunisian banks has dramatically worsened since the Tunisian Revolution. The DID approach showed an exacerbation of abnormal accruals and a manipulation transfer from net income smoothing to credit portfolio value smoothing in order to reach a healthy financial situation. This aggravation is linked to the market discipline deterioration, the shareholders, the external auditors and the supervisory board.

Implications: Before the Revolution, accounting manipulation was mainly caused by banking undercapitalization that led managers to offer more risky credit in a diluted ownership market and in an informational asymmetry situation characterized by the absence of the audit committee. After the Revolution, accounting manipulation resulted from an overcapitalization situation, which led managers to grant more risky credit. To circumvent the shareholders’ supervisory power, managers manipulated credit portfolio values, offering a low level of credit risk, and circulating false beliefs for shareholders and depositors. This was done when prudential supervision was weak, leading to an information asymmetry and long-term conflict of interest between external auditors and managers through abnormal remuneration and a long relationship.

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Introduction

Transparency and disclosure of information in the banking sector are the main pillars of prudential regulation as is mentioned in Basel III (Pillar 3). The aim is to support market discipline through better accounting information disclosure, manipulation and abnormal accruals. At this stage, IFRS 7 contribute to identify credit risk and its hedging instruments as well as its impact on the accounting result. The banking accounting manipulation affects credit portfolio and its instruments. Such a market value manipulation of credit portfolio will have adverse effects on the net income as well as on the regulatory capital and systematically on the risk level.

The IFRS 7 standard, as recommended by the Basel III pillar, aims to publish accounting information by evaluating loans and hedging instruments, drawing on the fair value method, either by following the Mark-to-market approach or by adopting a specific internal model, the "Mark-to-model" approach. These evaluations give rise to unrealized gains and losses explaining the change in cash flow and opening a discretionary field to managers to manipulate. The third pillar has taken into account this factor, but several studies have shown its inefficiency in detecting the unexpected manipulation given by our study on abnormal accruals.

Accounting Manipulation is based on the agency and signal theory. In fact, the different players in the market do not have the same quality of information about the bank prospects. However, the signal theory related to information asymmetry assumes that the managers disclose only information that will help them to change the investors' minds by trying to show them the good side of the bank's financial situation. Thus, they earn their confidence and obtain funding with good conditions. (Ross et al, 1969). The accounting manipulation in this context has just signaled some information specific to users in general and investors in particular, on the future performance and future prospects of their bank.

The so-called agency theory of Jensen and Meckling (1976), under the assumption of information asymmetry is defined as a contract by which many use the services of another person to achieve on their behalf any task, resulting in the delegation of decision-making. This assumption states that this decision-making delegation may lead to shareholders' and managers' conflicts as well as to shareholders-creditors' conflicts.

However, Dye (1988) emphasizes that the accounting manipulation is the consequence of a situation where executives benefit from asymmetric information vis-à-vis shareholders. The managers manipulate the results in order to maximize their remuneration. Scipper (1989) defines the accounting accruals as the managers' deliberate intervention in the process of financial communication in order to appropriate personal income to the detriment of other parties. Degeorge et al (1999) show that the managerial direction in terms of accounting choice can influence the results issued to shareholders.

Theoretically, accounting manipulation is measured by abnormal accruals. The accruals are divided into two categories: normal accruals and abnormal accruals. Total accruals is the accounting adjustments to real cash flow. Accounting manipulation is the subject of the determination of abnormal accruals. This has been defined by several researchers: Jones (1991) showed that the abnormal accruals depend on physical capital and income variation. Dechow et al (1995) have developed the above-mentioned model that can negatively affect the net result and give more access to manipulation. Nevertheless, Jones's modified model (1995) does not take into account the performance factor, which is a key factor in the measurement of accounting manipulation. Kothari et al (2005) has raised this problem and added this factor reflecting performance to build a new model.

The accounting manipulation's key factor of credit portfolios and its instruments is the divergence between the regulatory capital ratio and the required standard. Any departure from the regulatory ratio of the required standard systematically opens a discretionary field to managers to manipulate the accounting net income through a manipulation on the regulatory capital and on the credit risk. This theory has been the subject of several studies: Nessim (2003); Warfield and Linsmeier (1992); Beatty et al (1995); Repullo (2007);

This discrepancy between regulatory capital and the required standard stems from two situations: under-capitalization showed by the concentration of ownership, and undercapitalization characterized by the diluted ownership of capital.

Our main objective in this paper is to explain the evolution of accounting manipulation after the Arab revolution in the Tunisian banking sector. The empirical approach followed is based on two main interlinked models: the first, describing the total abnormal accruals used to derive the accounting manipulation, from Kothari et al.'s model (2005). The second is to explain these abnormal accruals thus deducted according to disciplinary, regulatory and prudential factors.

In other words, we will calculate the residual term of the first model in order to use it as an endogenous variable in the second model: First, we will calculate the normal accruals describing the entire accounting manipulation. Second, this abnormal accrual variable thus calculated will be explained by accounting factors as described by Kothari et al (2005). The difference between the observed values and thus estimated, constitutes the residual term describing abnormal accruals. Once the abnormal accruals are calculated, we will try to see their evolution between two periods before and after the crisis brought about by the Revolution. We will use the DID approach, which allows us to give the direction of the change and the significance of accruals between the two periods. Third, to identify and explain the causes of this variation related to the crisis, we will explain it by a set of disciplinary factors. This choice of variables was based on Nessim's theory that theoretically tested the relationship between credit supply, risk and regulatory measures, and their relationship with accounting manipulation. In this sense, we will broaden our scope of study to incorporate more disciplinary factors, in order to better explain the manipulation after the Tunisian Revolution. Both models use the panel data, which will be regressed by the ordinary least square method, while testing its endogeneity using the Hausman test.

For this end, we proceed as follows: Section 1 is devoted to the main literature review of abnormal accruals accordingly to disciplinary and regulatory approach. Section 2 considers the methodology by attempting to pose empirically and theoretically the models of the accruals and the disciplinary factors reflecting the agency and signal theories. Section 3 describes the main empirical results. The last section addresses the main findings and contributions.

Methodology

Our purpose here is to pose the most complete methods that will be used to measure the abnormal accruals of Tunisian banks, based on the Kothari et al (2005) model. We apply the "Difference-in-Difference" approach in order to see the evolution of the accruals between two periods: before the Tunisian Revolution (2006-2010) and after (2011-2015). The Revolution was a critical and determining event; it was a profound social and political upheaval with financial and economic consequences. During this period, a whole battery of prudential and political regulations were set up to support the democratic process such as the restructuring of public institutions.

Our aim is to analyse the negative contributions of this social event and its harmful impacts that led to the inability to achieve accounting transparency and manipulation. In addition, we aim to test the two founding theories of accruals: disciplinary theory and regulatory theory.

We will take the output of the accruals as an endogenous variable and explain it in terms of exogenous variables reflecting the market discipline ensured by the banks and their partners, such as managers and shareholders, and the one exercised by public authorities in terms of regulation and risk management.

Our main objective in this section is to explain the evolution of accounting manipulation after the Arab Revolution in the Tunisian banking sector. Our empirical approach, followed throughout this paper, is based on two main interlinked models: the first model, established by Kothari et al (2005) and used to derive the accounting manipulation, describes the total abnormal accruals. The second explains these abnormal accruals in terms of disciplinary, regulatory and prudential factors.

In other words, we calculate the residual terms of the first model in order to use them as an endogenous variable in the second model following three stages: In the first stage, we calculate the normal accruals describing the entire accounting manipulation. In the second, this abnormal accrual variable thus calculated is expressed by accounting factors as described by Kothari et al (2005). The difference between the observed values and those estimated constitutes the residual terms describing abnormal accruals. Once the abnormal accruals are calculated, we will try to see their evolution between two periods: before and after the Revolution. We also use the DID approach, which generates the variation sign and statistical significance of accruals between the two periods. In the third stage, in order to explain the causes of the latter variation related to the crisis, we resort to a set of disciplinary factors. The choice of variables is based on Nessim's theory that theoretically tests the relationship between credit supply, credit risk, regulatory requirements, and accounting manipulation. In this sense, we broaden our scope of study to incorporate more disciplinary factors, in order to better explain the manipulation after the Tunisian revolution. Using the panel data, both models will be regressed by the ordinary least square method after testing their endogeneity by means of the Hausman test.

Data

The data adopted in this study is collected through surveys and investigations as well as through the annual reports and statistical journals of the Tunisian stock exchange, the Tunisian Financial Market Council, the professional association of banks, and the Tunisian Central Bank. The selected sample is composed of 10 main Tunisian Banks over 10 years from 2006 to 2015, the period before (2006-2010) and the period after the Revolution (2011-2015).

Measurement of accruals before and after Tunisian Revolution

The evaluation of the accounting manipulation of the net income is the difference between the total observed accruals and the normal or the anticipated accruals, which represents the discretionary part left to managers. However, the total accruals represent the difference between Net Income (*NI*) and the Operating Cash Flow (*OCF*). As far as normal accruals are concerned, the total accruals are represented through the modified model of Kothari et al (2005).

The result of the difference between the total observed accruals (*ACT*) and the total expected accruals (normal) (*ACN*) represents the residue term ε_i, t . This residue is the error term of the model, which can describe the unexpected accounting manipulation, expressed by the abnormal accruals (*ACAN*).

In the beginning we determine the total accruals observed for Tunisian banks during the years between 2006-2015:

$$ACT = NI - OCF \quad (1)$$

Table.1.2 Descriptive statistics of factor abnormal accruals model by years

Variable	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
ACT	-4415.9	14264	11756.5	36060.7	40269.4	41400.8	31330.1	41863	22973.5	61612.9
FA	54723	57788.3	65895.9	73461.6	79086.5	82824.8	82424.1	84964.7	87259.4	91539.8
NI	447.7	7636.8	35796.2	42400.2	41205.4	34283.1	41707.1	20707.1	61550.7	67611.9
TURNOVER	208490.5	235505.3	264082.8	268358.5	291842.7	311063.9	330575.2	384365.9	438636.6	466333.5
CUD	2136898	2246369	2591796	2829597	3364427	3771247	4028393	4189135	4498992	4674444

Table.1.1 Descriptive statistics of factor abnormal accruals model by Banks

	ATB	Amen Bank	ATT. Bank	BH	BIAT	BNA	BT	STB	UBCI	UIB
ACT	38470.7	62178.7	17715	15422.1	50153.1	30672	59355.8	8416	18351.8	-3620.2
FA	57510.8	102433	119749.4	60300.1	151969.9	57099.1	42697.6	80760.2	49324.7	38123.3
NI	42440.6	56787.6	29723.9	21047.1	68840.5	32648.1	65738.3	8601.9	22130.7	5387.5
TURNOVER	254052.7	374268.3	283237.5	340723.2	483847.3	449164.2	231052.6	414302.8	164239.7	204366.6
CUD	2172864	4011325	2719367	3999817	4386698	5398736	2521104	4972974	1680367	2468045

Moreover, we calculate the normal accruals, which are the total expected accruals according to the estimated model of Kothari et al (2005) as follows:

$$\frac{ACT_{i,t}}{TA_{i,t-1}} = \alpha_0 \times \frac{1}{TA_{i,t}} + \alpha_1 \times \frac{FA_{i,t}}{TA_{i,t}} + \alpha_2 \times \frac{(\Delta Turnover_{i,t} - \Delta CUD_{i,t})}{TA_{i,t}} + \alpha_3 \times \frac{NI_{i,t-1}}{TA_{i,t-1}} \quad (2)$$

This model represents the total accruals $ACT_{i,t}$ in terms of the physical capital given by the fixed asset ($FA_{i,t}$), the banking cash income given by the difference between the variation of the bank turnover (interest and commissions received) and the customer debt (CUD) and the previous net income. All these indicators are expressed as a part of the total previous assets $TA_{i,t-1}$.

We proceed to estimate the last model for the global period from 2006 to 2015, and break down these accruals into two periods to see their evolutions and their related factors. The model is estimated using the ordinary least square (OLS), after checking the Hausman test, which gives us the random effect.

The Hausman test gives us a random effect to apply on our model for a significance of 0.001. Thus, the Tunisian banks have different constant terms showing the different managerial strategies adopted by each bank. The constant estimated in table.2 is the means of all the constants for each bank. The global model is estimated as follows

Table.2 Model of accrual measures

$\frac{ACT_{i,t}}{TA_{i,t-1}}$	Coef.	Std. Err.	Z-statistic	P>z
$\frac{1}{TA_{i,t}}$	19711.93**	9082.287	2.17	0.030
$\frac{FA_{i,t}}{TA_{i,t}}$	-0.0206005**	0.0216572	-2.19	0.041
$\frac{(\Delta TURNOVER_{i,t} - \Delta CUD_{i,t})}{TA_{i,t}}$	0.0815735***	0.079283	2.43	0.001
Constant	0.0004554*	0.0029077	1.96	0.072

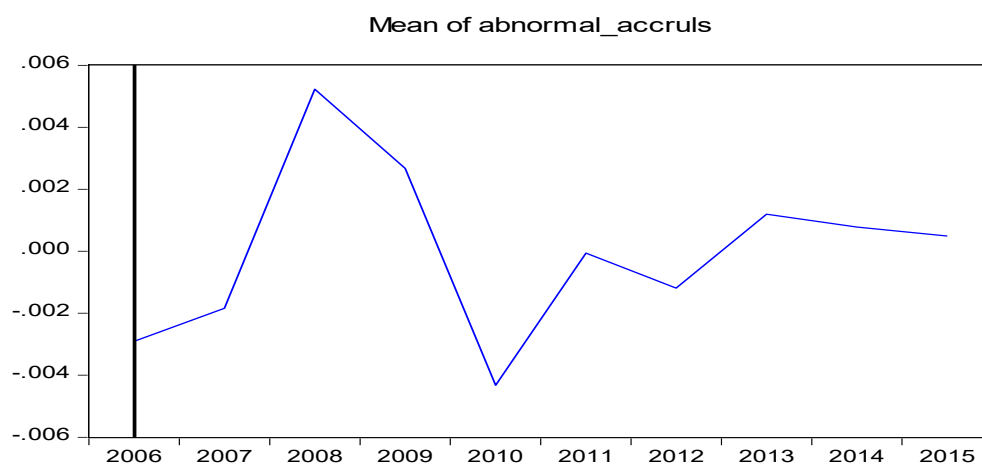
*** means that the variable is statistically significant at the 1% level.

** means that the variable is statistically significant at the 5% level.

* means that the variable is statistically significant at the 10% level.

The model is globally significant according to Fisher test at a rate of 0.005. The Durbin Watson test indicates the absence of residual autocorrelation (DW-test = 3.95) and the exogenous variables explain the endogenous ones for a rate of 75,23%.

Once the model has been estimated, we proceed to collect the residual terms of the model, which constitute the difference between the observed total accruals and the expected total accruals describing the normal accruals. This difference gives the adjusted abnormal accruals in relation to the total bank assets



Graph.1 Abnormal accruals

We notice that the abnormal accruals are volatile during this period and they have deteriorated after the revolution. The research shows that accounting manipulation in Tunisian banks has increased over the last period despite the disciplinary mechanisms that have been installed since the Revolution in order to restructure the interbank market as recommended in Pillar 3 of the Basel regulatory framework relating to transparency and financial communication.

We have used the difference-in-difference approach (DID), which consists of two groups for two periods: a 'control group' for banks that are not affected by the Revolution and a 'treatment group' affected by the Revolution before and after revolution.

The 'treatment group' is composed of 3 Tunisian public banks that are affected by the Revolution according to the Banque central of Tunisia. The 'control group' is composed of 7

banks. The total time period is divided into two periods, the first extending from 2006 to 2010 and the second from 2011 to 2015. As a result, we have generated, as demonstrated by Card and Krueger (1994), three variables: one dummy variable, noted by 'time', describing the Revolution and taking on 0 from 2006 to 2010, and 1 from 2011 to 2015; another dummy variable noted by 'treated', indicating 1 for banks concerned by the Revolution (3 banks) and 0 for banks not concerned (7 banks); and finally a combined variable noted by 'DID', which is the product between "time" and "treated". Through these three variables, we are able to capture the impact of the Revolution on the bank accruals after the Revolution. To avoid a multicollinearity problem, we have used only the variable DID.

Table 3. Outcome of the "Difference-In-Difference" Approach

Abnormal accruals			
Period	Before	After	Total
Control	35	35	70
Treated	15	15	30
Total	50	50	100

Outcome var.	Abnormal accruals
Control	-0.004
Treated	-0.000
	-0.004
Diff (T-C)	(-2.57)
Control	-0.006
Treated	0.005
	0.011***
Diff (T-C)	(3.39)
	0.015***
Diff-in-Diff	(3.21)

Source : Author's calculations (Stata.13)

R-square: 0.00* Means and Standard Errors are estimated by linear regression **Inference: *** p<0.01; ** p<0.05; * p<0.1

We conclude that the abnormal accruals significantly increased after the Revolution. This shows that auditors and regulators have reduced their power over bank accounting, which led to a worsening of accounting manipulation, contrary to what has been expected from the Revolution. The positive sign of Diff-in-Diff (+ 0.015) demonstrates this result with a significance at the level of 1%. This rise of abnormal accruals related to the Revolution can be explained by several disciplinary factors including the agency and signal theory.

Effect of market disciplinary factors on abnormal accruals

After estimating the abnormal accruals, we adopt a simple linear model, in which we regress the disciplinary factors contributing to the favorable development of abnormal accruals of Tunisian banks.

In the period of economic growth, the manipulation of the net accounting income increased through the manipulation of gains on loans, therefore raising the regulatory capital requirement. This action leads banks to take more risk in credit supply. On the other hand, in the recession period, the manipulation of losses does not lower the real operating result, making managers more risk-averse, and more willing to distribute less credit in order to meet the regulatory standards. Therefore, to have a best amplification of economic cycles, we have divided the

period into two sub-periods: a period before the 'Arab Spring' revolution (2000-2010) and a period after (2011-2015).

The divergence between the regulatory capital ratio and the threshold required by the prudential authorities leads to arbitrage opportunities in terms of credit supply and risk taking (Repullo, 2007), which gives managers a discretionary space to manipulate the value of regulatory capital and credit portfolio. (Nessim (2003), Warfield and Linsmeier (1992), Beatty et al (1995).

The latter factor is expressed by an indicator called Capital Requirement index (*CARINDEX*), which takes on value from 0 to 8, thus allowing us to determine whether the capital requirement level is respected to cover credit risk and satisfy the capital requirement threshold. The high values of the index reflect good capital rigor, indicating that the capital requirement is much higher than the required threshold, which should certainly have a negative effect on abnormal accruals.

Two research currents of accounting manipulation in terms of credit risk have been discussed: the first current directly affects the net income through the manipulation of unrealized capital gains / losses. The second is indirect; it involves the manipulation of the credit portfolio value and, consequently, affects the net income.

The first stream of research is characterized by a level of regulatory capital ratio lower than that required: Nessim (2003) showed that in American banks, the extent of the accounting manipulation increases when the banking performance decreases and the amount of its regulatory capital is below the required threshold. Based on the Repullo (2007) study, we conclude that this negative spread leads banks to increase their funds through their market shares and the issuance of subordinated debt, which increases the required profitability of shareholders. To avoid capital cost, such manipulation of capital gains / losses takes place, which is reflected in the annual net income and systematically in regulatory capital. Managers will overstate capital gains to boost the net income, which will have a positive effect on regulatory capital growth. This hidden capital increase leads banks to take more risks, generating more default loans.

In the same context, if banks have a regulatory capital that is higher than that required by the authorities, banks will increase their credit supply by taking risks. To escape prudential and market power control, reduce non-performing loans, and show a low level of credit risk, managers, in this respect, manipulate the real value of credit portfolio. (Warfield and Linsmeier, 1992); Beatty et al, 1995).

Xu et al (2017) showed that the credit-quality degradation is negatively associated with accruals. On the other hand, the underpricing of loans in the form of corporate bonds leads to the presence of grater collateral requirements and stricter covenants.

In order for us to validate the latter theory and simultaneously test the effect of credit risk and supply loans on abnormal accruals, we have adopted the share of non-performing loans as a measure of credit risk (*CRISK*), and the amount of credit supply (*CS*) adjusted by the natural logarithm.

The regulatory capital position in relation to the required capital indicates the capitalization degree of Tunisian banks. A large capitalization shows a high ownership concentration influencing the accounting net income. The relationship between the shareholder ownership and the abnormal accruals can be analyzed under the hypothesis of the shareholders' concentration. According to the entrenchment theory, the concentration of power within a family in SMEs can result in the allocation of private benefits to members of the family, to the detriment of the minority shareholders. The weakness of the governance mechanisms

implemented to protect minority shareholders, as well as the strong asymmetry of information, are likely, in this case, to facilitate the accounting manipulation. (Margaritis and Psillaki, 2010).

Using US Data for the period 2004/2012, Chowdhury et al (2018) have shown that the insider ownership minority shareholders can push managers to manipulate the net income in the asymmetric information environment and in growing firms rather than in firms in financial distress. On the other hand, they have also shown the necessity of authority regulation to mitigate the risk of opportunistic behavior of the insider shareholder.

The concentration of ownership (*CONC*) will be expressed in our model by the sum of the participation of the different shareholders who own more than 5% of a bank's capital.

Pillar 2 of the Basel III regulations requires prudential and supervision mechanisms to reduce credit risk and to avoid any possible slippage on the accounting information and financial results. We have taken this factor in our model as a variable detecting the official power of the supervisory authorities (*OPSA*) that takes on a value from 1 to 14 reflecting the action level of authorities against fiscal overtaking and accounting fraud, and by another variable (*JURID*) detecting the legal and juridical institution quality. It takes a value from 0 to 1 which a higher value indicates a bad legal quality of institution.

On the other hand, the departure of a firm's CEO can significantly influence his/her strategy regarding manipulation. Murphy and Zimmerman (1993); and Wells (2002) have shown that in the event of a firm's poor performance, the incentive for the upward manipulation of the net income is greater in the case of forced departure than in the case of planned departure. Similarly, the shareholders' expectations are more required in the case of forced departure than in planned departure. The degree of change of a CEO can give us an idea about managerial entrenchment. CEOs who want to remain in their positions would make specific investments that focus on their competences. Once they leave bank, investments fall. In this case, to keep their positions they would smooth the net income using this kind of investment. In our case, this factor (*ENR*) is expressed in terms of the seniority of the manager, using the natural logarithm of the number of years spent by the manager in each bank per year.

The board of directors gives the supreme example of the bank monitoring. For this end, it must operate independently of the power of the CEO. This independence could be expressed by the separation between two positions: Chief Executive and Chairman of the board of directors. Davidson et al (2004) and Dunn (2004) confirm that income smoothing increases when functions are provided by the same entrenched person. This diverges with the work of Pigé (1998) and El Aouadi (2001). However, the latter have found a negative and significant sign of duality. In this regard, we use a Dummy variable (*DUAL*), which takes on 0 in case of separation and 1 in case of duality of function.

On the other hand, Pillar 2 of the Basel III regulatory framework requires information transparency between managers, shareholders and the public in order to promote market discipline. The information is about the publication of capital requirement, non-performing loans, ownership structure and net income. All These factors have an important effect on accounting manipulation. Thus, asymmetric information leads managers to manipulate all these factors to show a healthy financial situation of banks. We have taken an index called Information Transparency (*INFO*) that takes on a value ranging between 0 and 8. The higher values of this index indicate a strong market discipline and a demanding private banking supervision regarding the disclosure of financial or other information.

The agency theory states that the presence of an audit committee within the board of directors is sufficient to ensure the reliability of the financial statements. Indeed, several research studies consider the independence of the members of the audit committee as a primordial quality

of a better monitoring. In addition, Keasey et al (1993) show that the independence of audit committee members is the most important criterion of the reliability of financial statements.

Alhadhab and Clacher (2018), within the framework of UK ipo firms, showed that a high quality of auditors can limit manipulation via the management of discretionary expenses, but at the end of each financial year, the auditors can manipulate the net income in order to manage earning upward to the benefit of shareholders.

This independence is expressed by the number of external members within the audit committee adjusted by the natural logarithm (*EXTA*). To better understand the role played by the auditors, we added three control variables: the fees of the external auditors (*HONA*), the duration in terms of years of the relationship between the external auditor and the bank (*RLAB*), and the number of annual audit committee meetings (*MA*).

Frankel et al. (2002) demonstrate that high audit fees (*HONA*) reduce accounting manipulation. In contrast, Antle et al. (2006) show an inverse relationship: high fees lead to an increase in the accounting manipulation. The overpayment of auditors leads to a conflict of interest with the managers and therefore a decrease in their independence.

On the other hand, as far as the second factor of audit committee (*RLAB*) is concerned, Frankel et al (2002) and Chang (2005) have shown that the long relationship between the auditors and the bank gives rise to a conflict of interest, which facilitates manipulation through the flexibility of accounting practices. Unlike Vanstraelen (2000), Gosh and Moon (2005) have demonstrated that a long-term relationship favors business continuity and the informative content of financial statements, which reduces accounting manipulations.

Table.4 Descriptive statistics of explanatory variables

Variables	Means	
	Before Revolution	After Revolution
Abnormal accruals	0.0007	-0.0007
CRISK	0.01033	0.0099
CS	13.7541	14.9581
CARINDEX	5	4.4800
CONC	0.3962	0.4130
OPSA	12.7272	14.3333
INFO	5	5.12
EXTA	0	0.0533
HONA	11.8556	12.2367
RLAB	2.5	2.71
MA	3.16	3.28
DUAL	0.3	0.3
ENR	0.14	0.44
JURID	0.5744	0.5787

$$\text{Abnormal accruals}_{i,t} = \alpha_0 + \alpha_1 \text{CRISK}_{i,t} + \alpha_2 \text{CS}_{i,t} + \alpha_3 \text{CARINDEX}_{i,t} + \alpha_4 \text{CONC}_{i,t} + \alpha_5 \text{OPSA}_{i,t} + \alpha_6 \text{INFO}_{i,t} + \alpha_7 \text{EXTA}_{i,t} + \alpha_8 \text{HONA}_{i,t} + \alpha_9 \text{RLAB}_{i,t} + \alpha_{10} \text{MA}_{i,t} + \alpha_{11} \text{DUAL}_{i,t} + \alpha_{12} \text{ENR}_{i,t} + \alpha_{13} \text{JURID}_{i,t} + \varepsilon_{i,t} \quad (3)$$

Table.5 Estimation Governance factors effect on abnormal accruals

Abnormal_accruals	Before Revolution			After Revolution		
	Coef.	z	P>z	Coef.	z	P>z
CRISK	0.9103*	1.79	0.096	-0.5496*	-1.89	0.081
CS	0.0007**	2.27	0.040	0.0016**	2.09	0.056
CARINDEX	-0.7412***	-2.74	0.016	0.6514**	2.16	0.050
CONC	-0.04270*	-1.77	0.101	0.0067**	2.31	0.037
OPSA	-0.4985**	-2.41	0.030	0.0181***	3.02	0.009
INFO	-0.0782**	-2.35	0.035	-0.5641***	-2.77	0.015
EXTA	0.0124	1.56	0.142	0.0007**	2.23	0.044
HONA	2.59e-09*	1.79	0.096	3.4e-08*	1.78	0.098
RLAB	-0.007**	-2.10	0.055	0.0022***	3.46	0.004
MA	-0.0005***	-2.77	0.015	0.0014**	2.06	0.060
DUAL	-0.0018**	-2.29	0.039	0.0003***	3.07	0.008
ENR	-0.013**	-2.40	0.032	0.0019**	2.56	0.023
JURID	-0.1407**	1.98	0.069	-0.1062	-1.28	0.219
const	-0.0633*	-1.74	0.105	-0.0334**	-2.64	0.020

*** means that the variable is statistically significant at the 1% level.

** means that the variable is statistically significant at the 5% level.

* means that the variable is statistically significant at the 10% level.

Statically the model is globally significant according to Fisher Test, which gave us a probability of 0.001. On the other hand, the fixed effect has been maintained for this model in accordance with Hausman Test. The coefficient of determination indicates a rate of 95.02%.

Discussion

After the “Arab Spring Revolution”, the effect of regulatory capital requirement (CARINDEX) on accruals in Tunisian banks has changed, becoming positive. This shows that before the Revolution, accounting manipulation was the consequence of banking undercapitalization (when the regulatory capital ratio is below the required standard). However, in the post-Revolution period banking overcapitalization has led to manipulation (when the regulatory ratio is above the required standard).

During the pre-Revolutionary period, the regulatory capital was below the requirement standard, leading bank managers to opt for risk taking through recapitalization, by the issuance of subordinated debt that can enrich regulatory capital. (Dermians.T and Portait.R, 1989). Another similar situation related to recapitalization had to do with minimizing risky credits to save regulatory capital and to meet regulatory standards.

After the Revolution, the situation has been reversed; the excess of capital compared with the regulatory standard, raises accruals. Two different situations can result from this: either a risk mitigation or a credit risk excess reflecting managers’ risk taking. In the latter situation, security would allow them to grant more risky loans with high profitability or to recompose the credit portfolio. (Kim and Santomero, 1988; Lindquist, 2004).

To find out where the banks stand in relation to our approach, we have tested the risk-taking effect on accruals.

Moreover, the credit risk (*CRISK*) has two significant adverse effects before and after the Arab Revolution. Beginning positively, it took a negative turn. Before the Revolution,

manipulation was the result of excess risk, whereas during the post-revolutionary period, manipulation is the result of lower credit risk.

Before the Arab Spring, credit supply increase caused a raise in credit risk. After this social crisis, credit supply led to a mitigated risk taking by managers. This result seems perfectly logical since banks offer more credit to the economy when they are undercapitalized rather than overcapitalized, as shown below regarding the ownership concentration effect.

According to the previous result, we conclude that before the Revolution, accruals can be detected when the capital requirement is below the requirement standard. When Tunisian banks are undercapitalized, bank managers take more risk by issuing subordinated debt or granting more risky credit to the economy that attracts more profitability. Referring to Nessim's approach (2003), we have tested also the effect of credit supply (CS) on accruals. We found the same sign in the pre and post-revolutionary periods. Therefore, when the credit risk is on the rise reflecting a bad quality of loans granted to the economy, the net income manipulation can go up. This situation is accompanied by underpriced credit in real economy, showing investors a false bank profitability.

However, after the Revolution, when Tunisian banks became overcapitalized, and their capital requirement exceeds the standard requirement, they opt to reduce credit risk without reducing the credit granted to the economy. Bank managers will increase their credit supply, leading to an accounting manipulation on the credit portfolio value that can show a false value of credit risk as has been demonstrated by Xu et al (2017).

Before the Tunisian Revolution, the shareholder ownership concentration (*CONC*) reached 39.62% consequently mitigating the abnormal accruals. This shows that the majority shareholders had less control over managers and auditors. Therefore, they gave greater asymmetric informational banking, which might have aggravated the accounting manipulation. The minor concentration and the diluted ownership might have led shareholders to put pressure on managers to adopt risky strategies for granting loans, which put them in a situation of net income smoothing. Gorten and Rosen (1995) have shown the same result according to which insider majority shareholders contribute to aggravating credit risk. On the other hand, Ianotta et al (2007) explain this result by the fact that the lower the concentration, the higher the agency costs shareholders will have to bear. This is reflected in credit quality that can aggravate accruals. Our result is the same as that which Chowdhury, et al (2018) arrived at; indeed they showed that minor concentration aggravates manipulation.

After the Revolution, concentration rose slightly to 41.3%. The rise in shareholder ownership after the Revolution has given more accounting manipulation. In this situation, concentration ownership has led to the aggravation of manipulation unlike in the pre-revolutionary period. Ownership concentration has led shareholders to exercise more power control over managers to grant a better quality of credit to the economy. Once the banks became overcapitalized, managers may grant risky credit and smooth the credit portfolio in order to show a low false value of credit risk to satisfy managers and investors.

Before the Spring Arab revolution, in the case of banking under-capitalization, Tunisian banks considered overcapitalizing in order to reach the regulatory capital required by the authorities (8% for banks adopting Basel I and Basel II, and 10.5% for banks adopting Basel III). This capitalization could be to the detriment of the unrealized gains and losses manipulation. Such a probable manipulation has a direct impact on the equity. These false beliefs about banking capitalization and diluted ownership push managers to take more risks and grant more credits to the economy in order to convince the financial community such as investors and shareholders of the healthy financial situation of the banks.

After the Revolution, Tunisian banks changed their behavior towards manipulation in terms of capitalization and credit risk. The bank's undercapitalization no longer encourages managers to manipulate the accounting net income; it only reduces the credit supply. Consequently, the bank recapitalizes itself by taking more risks. In contrast, when banks overcapitalize by exceeding the capital required by the authorities, there is more chance that they adjust their credit portfolios by manipulating their real values while making them appear less failing, in order to retain shareholders and investors who want less risk taking. This manipulation increase in credit value shows a false low credit risk. Subsequently this can have an impact on the net income without affecting the equity value. This hypothesis has been validated as in the case of Warfield and Linsmeier (1992), and Beatty et al (1995) for Japanese banks.

After the Revolution, the leaders' entrenchment (*ENR*) has had a very remarkable rise; it went from 0.14 to 0.44. Tunisian banks have maintained better CEOs in their positions, which caused an entrenchment oriented towards specific investments focused on their human capital, resulting in a manipulation discretionary space in order to camouflage the real financial health of the banks, unlike what happened before the Revolution when CEOs' entrenchment offered more financial stability contributing to the decline of the accounting accruals.

Another determining factor that could aggravate the accounting manipulation is the forced departure of managers. Murphy and Zimmerman (1993), and Wells (2002) showed that planned departure is better than forced departure, which led the departed CEO to manipulate the accounting so that the successor could not notice the real anomalies that occurred during his mandate. This situation was observed just at the beginning of the Revolution, when managers suddenly received their dismissal notification.

The control exerted by the Board of directors, mainly by the Chairman of the Board before the Revolution, can mitigate the accounting manipulation. After the Revolution, the dual position (*DUAL*) has contributed to an increase in manipulation. This can be accounted for by the power abuse of the CEOs. In this sense, the centralization of decisional power has caused an information asymmetry between shareholders and managers, which does not allow them to exercise control through their presence within the Board.

In addition, we note that, after the Revolution, the duality is maintained at its initial level, which does not allow the control of the accounting manipulation. Based on the approach of Davidson et al (2004) and Dunn (2004), we infer that the turnover of a leader who is both chairman and chief executive officer only exacerbates manipulation after the revolution. On the other hand, as shown by Timme (1993) and Garry and Gleason (1999), duality deepens the financial banking distress, causing the majority shareholders to control managers so that they can reduce credit risk by smoothing it in the situation of overcapitalization in order to retain shareholders and deceive them into believing in the good reputation of the bank.

This concentration increase has helped managers to escape the control of authorities and divert the shareholders' interests toward their benefit by making private profits and encouraging managers to hide information from external auditors. These results suggest that beyond a certain level, the concentration of shareholders is unfavorable, in accordance with the assumption of entrenchment and shareholders' monitoring that has been validated by Margaritis and Psillaki (2010).

Before the Revolution, the external auditors did not figure in the audit committee (*EXTA*); they had therefore no effect on the accounting manipulation. After the Revolution, their presence was slightly significant, tending towards one external auditor per bank on average. We note that despite the intervention of the banking authorities to integrate these external auditors

into the committee, manipulation has worsened, given the alliances between these representatives with Tunisian banks. Our results differ from those of Keasey et al (1993) who showed that the independence of audit committee members was the most important criterion affecting the reliability of the financial statements.

On the other hand, according to Ghosh and Moon (2005), the excess of accounting manipulation can be the result of the external auditors' weak presence due to the loss of the audit's informational content by enforcing strict rules rather than basic control principles. These auditors may lack the prudent attitude that can limit managerial opportunism regarding banking overcapitalization that leads them to manipulate the credit portfolio. This has been shown by Kim et al (2003).

The meetings held by the audit committee (*MA*) provide more compromise between the members, which makes it easier for the auditors to better control the managers in order to avoid any possible slippage with respect to the results. This was not the case before the Revolution. The meetings only exacerbated the tensions among auditors, which gives rise to interest conflicts, and opens the door for accounting manipulation and a strong relationship (*RLAB*) between banks and auditors as shown by the positive effect on accruals. The result we have arrived at is similar to that of Frankel et al (2002), who showed that the relationship between auditors and banks could increase auditors' laxness.

To expand our result, we have tested the remuneration of these external auditors (*HONA*). After the Revolution, the external auditors' remuneration has gone up leading to more discretionary space for managers to smooth their net income. Antle et al. (2006) found this same result; they considered that the high remuneration of auditors deprives them of their independence, which facilitates the coalition of interests; this high remuneration can occur at the end of each financial year, as shown by Alhadab and Clacher (2018). It can be temporary for one year, specifically for new external auditors after the Revolution, and is called abnormal remuneration. Abnormal remuneration can depreciate the audit quality and systematically increase accruals as Choi et al (2006) have shown in "Low Bulling theory".

As regards the impact of institutional quality on accruals, the results of our estimations suggest that a good legal institutional quality (*JURID*) is likely to have a negative and significant impact on the overall accruals of banks – a situation that occurred before the Revolution. In other words, developed legal institutional quality contributed to accounting manipulation. This may indicate that legal development is based on strict rules rather than on basic control principles, which gives a discretionary space to managers for manipulation in the absence of market discipline. After the Revolution, institutional development has no longer an impact on accruals despite the light appreciation of institutional quality compared with the pre-revolutionary period.

Thus, legal institutional quality in Tunisia (laws, regulation, judges, financial market authority...) is more effective after the Revolution to protect the investors' interests. As shown by La Porta et al (2006), the legal institutional quality is based neither on tradition customary law (common law) nor on civil law (code law), which reinforces the power of the State.

However, according to our results, we note that certain banking regulations and supervision variables such as official supervisory power of public authorities (*OPSA*) have a significant and negative impact on the accruals before the Revolution. After the Revolution, the power of public authorities has become positive, showing that the prudential rules do not allow managers to reduce manipulation; they can however change the value of risks as discussed above.

With reference to results, we note that after the Revolution, and despite the high degree of implementation of the regulatory dimension by financial authorities, there was still a deterioration of accounting information.

As far as informational transparency (INFO) is concerned, we have found a significant and a negative effect on accruals before and after the Revolution, although the majority of the banking market players consider private control as an essential and vital complement to official regulatory discipline.

The information asymmetry between the different Tunisian banking operators has been checked, showing that managers hide information from shareholders and depositors in order to smooth the results and show that banks are in good financial condition.

Before the Revolution, information transparency did not contribute to mitigating accounting manipulation in the case of a diluted banking ownership market and banking undercapitalization, because of the undercapitalization situation that led managers to manipulate the net income. Information asymmetry may exist between shareholders and managers when the latter hide the real information about the net income.

After the Revolution, the informational transparency remained constant in the case of a concentrated market as shareholders exercised control over managers to reduce risks. At this stage, informational asymmetry may occur, allowing managers to manipulate information on risks as discussed above.

The informational asymmetry that may exist between managers, shareholders and depositors can be the result of the diversification of activities of Tunisian banks (stock exchange, credit market, exchange market...). This diversification creates the agency conflict and managerial opportunism. This result has been shown by Lamont and Polk (2001), and Berger and Ofek (1995). Other suggestions, such as the pyramid ownership structure (Bianchi et al (1997), the cross-ownership (Biebuyck et al (2005), and the stock exchange share differentiation can increase asymmetric information.

The deterioration of these disciplinary factors encourages managers to have more discretion to hide information from both the public and the shareholders. After the Arab Spring revolution, legal reforms have intensified, preventing accounting manipulation.

Conclusion

Through this study, we have identified the abnormal accruals of Tunisian banks based on the most complete model of Kothari et al (2005). The "DID" approach of Laeven & Valencia (2012), frequently used in a time of crisis, has shown that the abnormal accruals, as a measure of managerial accounting manipulation, have increased significantly since the revolution.

The Tunisian revolution has enabled Tunisian banks to capitalize themselves and to increase the risky credit supply for the economy. Such manipulation of credit portfolios led to a decline in the credit risk. The market discipline power of the supervisory authorities has been successful but to no effect, since the market discipline exercised by the banks themselves has not been verified despite their appreciation.

The increase of abnormal accruals in Tunisian banks after the Revolution is mainly due to the ownership concentration, which has increased slightly, contributing to a possibility of accounting manipulation by managers. Thus, the shareholders induce banking managers to reduce risks in order to preserve their share capital and to guarantee their earning. In such context of informational asymmetry characterized by a weak control by legal institutional and

financial authorities, managers offered more risky credits to the economy and manipulated the credit risk value by giving it a weak value, in order to retain shareholders and depositors.

Conversely, before the Revolution Tunisian banks were undercapitalized. To satisfy the regulatory standard in the context of informational asymmetry, accounting manipulation was mainly due to the absence of shareholders' power of control over managers in the context of diluted ownership. In this sense, managers granted a risky credit, thus contributing to a high risk. To retain shareholders and depositors and to show that banks enjoyed a good reputation, managers manipulated the net income.

On the other hand, the integration of external auditors into the audit committee of Tunisian banks failed, since their presence increased manipulation due to the coalition that might have been formed between auditors and managers at the instigation of the majority shareholders in terms of reward, remuneration and relationship.

In conclusion, the Tunisian Revolution has reinforced market discipline, especially the presence of the external auditors in the audit committee as well as the increase in the number of meetings, but it has not given any informational transparency due to the ownership concentration.

Tunisian banks must dilute their capital in order to lower the level of delegation of shareholders' power and exercise more control over the managers for a better management of the accounting result through the establishment of reciprocal control between them and the external auditors, in order to prevent them from avoiding any accounting manipulation of net income or of regulatory capital either in the case of banking under- or over-capitalization.

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