

## Detection of Fraud in Financial Statements: French Companies as a Case Study

Ines AMARA<sup>1</sup>  
Anis BEN AMAR<sup>2</sup>  
Anis JARBOUI<sup>3</sup>

<sup>1</sup>Department Of Accounting, Faculty Of Economics and Management Of Sfax (FSEGS),  
University of Sfax (Tunisia), E-mail: [inesamara2010@yahoo.fr](mailto:inesamara2010@yahoo.fr), Corresponding author

<sup>2</sup>Department Of Accounting, Business School Of Sfax (ESCS), University of Sfax (Tunisia),  
E-mail: [anis\\_benamar@voila.fr](mailto:anis_benamar@voila.fr)

<sup>3</sup>Department Of Finance, Higher Institute of Business Administration (ISAAS),  
University of Sfax (Tunisia), E-mail: [anisjarbouy@yahoo.fr](mailto:anisjarbouy@yahoo.fr)

**Abstract** *The objective of this research is to test the impact of the "Fraud Triangle" elements on the detection of fraud in the financial statements. The data used in our empirical research are related to a sample of 80 French companies in the SBF 250 over the period 2001 to 2009. Using the method of logistic regression, this study shows that the performance issue exerted on the manager is a factor of pressure leading to commit fraud in the financial statements. However, factors related to financial difficulties (debt, liquidity) and the size of auditing firm are not associated with the detection of fraud.*

**Key words** Fraud, Fraud triangle, Pressure, Opportunity.

DOI: 10.6007/IJARAFMS/v3-i3/34

URL: <http://dx.doi.org/10.6007/IJARAFMS/v3-i3/34>

### 1. Introduction

Nowadays, the global economy considers a series of economic and financial crises caused a distrust of markets, investors and public opinion vis-à-vis the company accounts. Here, it suffices to highlight the fact that Enron corporation, a former United States energy commodity and service company, has caused a loss of 70 Trillion dollars for all its social partners. Thus, the aforementioned loon has brought about ensuing economic crisis which has spread to all globally emerging plans. As a case in point, scandals that were widely publicized were cases of Worldcom, Parmalat, Ahold etc. (Rezaee, 2005).

Certainly, the financial scandals listed above are not the sole causes of the crisis of confidence prevailing in the business world. The real scourge that affects the economy is undoubtedly "Fraud". All manipulations are inherently common to some extent: it consists of deceit committed in violation of the act and regulations causing damage to community. As Rouff (2003) cited "Fraud is an intentional act and its author is a real offender."

In this research, we will focus our attention on the topic of "Fraud in Financial Statements", which, as indicated by a range of researchers, seems growing internationally. This phenomenon has attracted the attention of several researchers in accounting who are striving to detect the underlying logic and reasons (Goode and Lacey 2011; Sitorus et al. 2010; Wuerges and Borba 2010; Okoye et al. 2009). Perols and Lougee (2011); Dechow and Skinner (2000) highlight the difference between the concept of fraud and earnings management. Some other authors seek the impact of audit quality on the detection of fraud in financial statements (Lennox and Pittman 2010; Dechow et al. 2011; Smaili et al. 2009; Choo and Tan 2007 etc.).

To become familiar with the phenomenon of "fraud in the financial statements" and situate it in its context, a realization and understands of the reasons that can cause a person to violate the rules of

accounting must be understood. To do so, we have chosen to build on the work of the American sociologist Donald Cressey (1953), who highlighted the notion of "Fraud Triangle». This concept strongly influences the development of techniques for detecting fraud in accounting. According to this model, financial frauds are based on three factors: Opportunity, Pressure and Rationalization (Perols and Lougee 2011; Dechow et al. 2011; Wuerges and Borba 2010; Okoye et al. 2009).

In addition, it is important to note that the analysis of fraud risk determinants involves agency theory, stewardship theory, and the theory of "broken trust" such theories helps to detect fraud in accounting which is an unethical behavior.

From this theoretical basis, we propose the following research question:

How can the elements of the "Fraud Triangle" facilitate the detection of fraud in the financial statements?

To answer our research question, we have set the following objectives:

- To have an idea about the theoretical foundations of fraud in the financial statements.
- To test the impact of the elements of "fraud triangle" on the detection of fraud in the financial statements.

In order to empirically validate hypotheses, we selected a sample of 80 French companies belonging to the SBF 250 index from 40 of there are considered fraudulent. The estimation of the empirical model proposed by means of logistic regression, demonstrated that the performance culture exerted pressure on the manager and this is a major factor in the detection of fraud in the financial statements.

This paper is organized as follows. In next section; we will present a brief review of the literature relevant to the current study. The hypotheses of this research will be the subject of the section3. Sections 4 and 5 will be devoted to the presentation of the methodological aspects and the main results of our empirical analysis. The last section will highlight conclusion and suggestion for future research.

## 2. Literature Review

To ensure the sustainability and the continuity of the business, it suffices to implement measures indicative of the risk of fraud. In this hence, it is important to try to handle and identify motivations for committing fraud (Dechow et al. 2011; Goode and Lacey 2011; Okoye et al. 2009). These motivations play an important role in that they help auditors detect fraud within an organization. It is for this reason that a number of studies focused on the identification of fraud risk factors as the most significant in accounting fraud detection.

Most studies in fraud literature are of based on the pioneering work of Sutherland (1949) was particularly interested in the study of the fraud committed by business leaders at the expense of shareholders. He coined the term "white collar crime" to signify the criminal acts of corporations and the capacity of individuals to act in their business. As a result, Cressey (1973) was particularly interested in the circumstances that lead to diversion; which he called "the offender trust." His hypothesis that was based on the psychology of diverter had become the concept of the "Fraud Triangle", which consists of three variables: pressure, opportunity and rationalization. In an attempt at explaining fraud in accounting, Cressey (1973) proposed the following function:

$$\text{FRAUD} = f(\text{Pressure, Opportunity, Rationalization}) \quad (1)$$

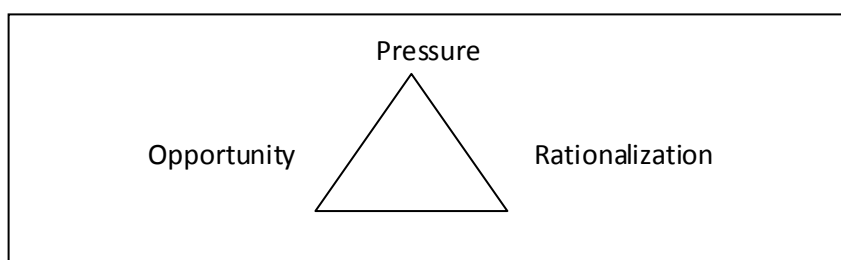


Figure 1. The triangle of fraud (Cressey 1973)

The credibility of the approach of the fraud triangle was clearly manifested in that its assumptions were incorporated into the American standard SAS 99 audit and the revised International Standard on Auditing ISA 240. It should be noted that several theories have been advanced to explain the fraud in the financial statements.

### **2.1. Agency Theory**

Jensen and Meckling (1976) define an agency relationship "as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent".

This theory is based on the economic perspective that the relationship "principal/agent" is characterized by a conflict of interest. This conflict is often referred to as the "agency problem" (Donaldson and Davis 1991). Thus, this relationship reflects a transfer of trust and obligation to the agent's opportunism.

The agency theory is based on two fundamental assumptions which are as follows:

- Leader's opportunism;
- Information asymmetry.

#### *Leader's opportunism*

The manager, like any individual, is inherently clever, creative to the point that he seeking to maximize his personal interest in a selfish way. He seeks profit as an agent and thus adopts an opportunistic behavior (Strong and Waterson, 1987). Opportunism occurs through decisions and actions taken by leaders. These are, in most cases surprisingly unobservable by shareholders and therefore, in cases where the financial situation is poor, the leader would be tempted to make accounting fraud to hide the truth of the situation. The opportunism of the leadership is reinforced through a fraud in accounting by information asymmetry, which is postulate of agency relationship.

#### *Information asymmetry*

Information asymmetry determines the opportunistic behavior of the leader. In fact, it uses all the information including earning managements using its discretion. By exploiting the flexibility of accounting principles, in order the leader would choose accounting methods that increase the result. Thus, he will make an irregular "Fraud" to cover poor performance and practice a policy of rooting translated into investment in activities where by officer has a comparative advantage in terms of personal or informational competence through accruals (Djama, 2008). The leader can thus be financially favorable without disclosing the management process behind.

The problem of information asymmetry is the basis of any problem of conflict of interest and consequently increases the risk of fraud. This is the case for example of leaders who hide information that may be useful to shareholders in decision-making or evaluation of their securities. In this case, there is an informational disadvantage, the principal cannot access company information and is in a situation where he does not know if the manager is able to apply the terms of the contract or not.

Moreover if the company is facing financial difficulties or deficiency in internal control, then the agency relationships in this case affect both shareholders and creditors while the leader carries out the fraud.

### **2.2. Stewardship Theory**

Stewardship theory considers that leaders are like "stewards" in their companies they promote the interests of shareholders their own interests, regardless of their personal motivations or incentives (Donaldson and Davis, 1991). So, the "stewardship" isn't a theory that rejects agency theory but rather goes hand with it in the sense that the head can choose to be either an agent or stewards. This choice depends on both principles and leadership perceptions depending on the situation.

The development of the theory of stewardship helps identify factors of opportunism (related to the person or the environment of the company) and understand the complexity of economic life. The theory states that thought the manager is opportunistic in nature. He can be a steward but for reasons related to the organization, he becomes opportunistic.

To conclude, this theory is an alternative vision of agency theory, in which leaders are expected to act in their own interests to the detriment of shareholders. Just like, the agency theory, Stewardship theory cannot explain the complex behavior of leaders, such as their willingness to commit fraud (Choo and Tan, 2007).

### **2.3. Broken Trust theory**

Bidault and Jarillo (1995, p.113) define trust as "the presumption that, under uncertainty, and in unforeseen circumstances, the person enjoying the confidence will be based on rules of behavior that we find acceptable». The diversity in defining the notion of trust and the absence of a common and simple definition should not surprise us. We are actually faced with a phenomenon that is not only treated by different social science disciplines (each with its specificity), but within each respective discipline there are different approaches, either because of discipline specialization or its basic assumptions.

Recent Reviews of trust considered that, in a market economy, where economic agents trust each other, there are many transactions, and contracts resulting in gains. As a result, there's no the risk of achievement fraud. In addition, the risks of modern society have become increasingly diverse since there is a lot of waiting structure unitary in a society. Besides, the action of each actor (a person, an organization or a functional system) is marked by certain insecurity, because of a fundamental uncertainty about the future and the unpredictable behavior of each actor which represent a risk reducing confidence.

So, trust does not produce certainty, security product but a reduction in the risk universe of selective action. Trust is a rational mechanism since it makes possible the continuation of an action, but it is not based on a decision based on knowledge and complete information.

This trust can be broken or altered by the re-implementation and/or the introduction of fraud in the world of management. Albrecht et al. (2008) put forward the idea that there is a positive relationship between trust and fraud. These authors combine the concept of fraud triangle with the "stewardship theory" and the agency theory to develop the theory of broken trust "Broken Trust" which helps explaining the detection of fraud.

## **3. Development of hypotheses**

Many researchers in accounting have identified fraud risk factors explaining the detection of fraud in accounting. Their main conclusion is that fraud risk factors (pressure, opportunity and rationalization) positively influence the detection of fraud in the financial statements. It should be noted that these researchers have suggested measures of fraud risk factors related to pressure (e.g. debt, liquidity, performance) to opportunity (board independence, quality external audit) and to rationalization (auditor's opinion, the rotation of auditors ...). In the context of our present research, we have not included in our analysis a hypothesis relating to the fraud risk factor of "rationalization" given the lack of data needed to measure variables such as opinions and rotation of auditors. In addition, Wuerges and Borba (2010) along with Skousen and Wright (2006) emphasize that "rationalization" is a necessary component of the fraud triangle but still is not accurate because the individual justification is difficult to observe.

### **3.1. Motivating/Pressure factors of fraud in financial statements**

Fraud is rarely a neutral act for the individual who commits it. Indeed it requires the author to break the common rules of life in society (laws, regulations, ethical principles). Defraud is taking a high risk and it implies a strong motivation. This motivation is most often considered in terms of multiple pressures on the subject in its environment (Ouaniche, 2009, p. 50). There are several pressures factors. We will try to squeeze in the next section. These are related to the characteristics of pressure in financial difficulties such as liquidity and debt and the factors related to prefixed financial goals (problem of performance).

#### **3.1.1. Debt**

Many researchers (Wuerges and Borba, 2010; Kirkos et al. 2007; Beneish, 1999) show that firms whose debt level is significantly high more likely to act illegally. Dechow et al. (2011) and Smaili et al. (2009) found a positive relationship between the level of debt and the likelihood to commit fraud. Taking into consideration these works, we propose our first hypothesis.

**H1: Highly indebted firms tend to be fraudulent in their financial statements**

### 3.1.2. Liquidity

Perols and Lougee (2011) and Kirkos et al. (2007) found that when the firm has low liquidity, it engages in fraud in the financial statements. Therefore, to give a good picture of the situation of the company, the leader overestimates the value of the assets or liabilities as well as evaluates other liabilities incurred by the company. This leads us to formulate our second hypothesis.

**H2: Low liquidity firms tend to be fraudulent in their financial statements.**

### 3.1.3. Performance

Dechow et al. (2011); Okoye et al. (2009); Brazel et al. (2006); Summers and Sweeney (1998) found a negative relationship between the probability of committing a fraud and the level of performance. This is reflected in the fact that a low level of performance incites managers to defraud for increasing their results, hide the problems and improve the overall performance of the company. Hence the following hypothesis:

**H3: Low performance firms tend to be fraudulent in their financial statements.**

## 3.2. Opportunities factors of fraud in financial statements

Ouaniche (2009, p. 50) defines opportunity as "circumstances that are likely to tempt people who are author acts dishonest. A fraudulent with impunity, it should be noted that the lack or inadequacy of internal controls, lack of supervision and lack of separation between the tasks are at the origin of such opportunities.

### 3.2.1. Independence of Board Members

Matoussi and Gharbi (2011); Peasnell et al. (2005) and Beasley and Carcello (2000) concluded that the inclusion of a maximum of external members in the Board of Directors reduces the frequency of committing fraud. Our fourth hypothesis can be formulated as follows:

**H4: An independent Board of directors reduces the possibility of fraud in their financial statements.**

### 3.2.2. The quality of the external audit

Lennox and Pittman (2010); Smaili et al. (2009) show that the external auditors belonging to the large audit firms "BIG" have more ability to detect fraud than non- "BIG". Our final hypothesis is as follows:

**H5: Companies audited by a firm belonging to the "Big" are less likely to commit fraud in their financial statements.**

## 4. Methodology of empirical research

To analyze our hypotheses, we selected two groups of companies including:

- Companies that have committed fraud in the financial statements
- Companies that have not committed fraud in the financial statements

We will present the approach adopted selecting each group.

### 4.1. The research sample

In the American context, most previous research refers to the body responsible for the financial market which is "The Securities and Exchange Commission" (SEC), in their data corpora. This body provides researchers, academicians, and accounting specialists a list of companies which have defrauded and those which have not. This record of companies is called an "Accounting and Auditing Enforcement Release" (AAER). In this research, we used the French stock market insiders SBF 250 relative to French companies as data corpora so as to validate our assumptions. We excluded banks, insurance companies and financial institutions in general because they are subject to specific regulations in accounting. We tried to read the financial statements of companies that are available in the website "Financial Markets Authority" (AMF). We have, then, retrieve accounting information 40 fraudulent companies over the period from 2001 to 2009. The choice of companies that haven't defrauded is based on the study of Beasley (1996) which states that non-fraudulent and fraudulent firms must:

- Belong to the same stock exchange: if the fraudulent company is listed its counterpart must be quoted as well.
- Be registered in the same year to be able to detect fraud.

▪ Have comparable size (In our present study, we used the turnover and total assets as selection criteria).

After verifying information provided by our data source, we selected a sample of 80 French companies in the SBF 250 over the period of 2001-2009.

#### 4.2. The measurement of variables

The phenomenon we seek to explain in this study is companies that perform fraud in their financial statements. The dependent variable is qualitative. This variable is dichotomous as it takes the value 1 if the firm is a victim of fraud in the financial statements while the value 0 if the firm is not as such.

FRAUD = 1 if the firm has defrauded in the financial statements

FRAUD = 0 if it has not.

The choice of the set of independent variables is deployed in recent studies (Albrecht et al., 2008, Skousen and Wright, 2006, Wuerges and Borba, 2010). These researchers show that the elements of the fraud triangle (pressure, opportunity and rationalization) influence the detection of fraud. As already pointed out, we have not introduced in our empirical model variables related to the rationalization factor.

Measures of the independent variables introduced in our empirical research are summarized in the table below.

Table 1. Measures of the independent variables

Title	Variables	Constructed	Measurement	Previous work
Pressure	END	Debt	: Report of total debt to total assets	Wuerges and Borba (2010)
	LIQ	Liquidity	: Report of current assets to current liabilities	Beneish (1999) Kirkos et al. (2007)
	ROA	Performance	: Report of income before extraordinary items to total assets	Beneish (1999) Fish et al. (2007) Brazel (2006)
Opportunity	INDEP	Independence of Board	: Report of the number of outside directors to the total number of directors.	Matoussi and Gharbi (2011) Beasley (1996)
	AUD	The quality of the external audit	: Binary variable coded 1 if the firm is audited by an auditor at least belonging to the "BIG", 0 otherwise.	Lennox et al. (2010)

#### 4.3. The empirical model

Our empirical model includes factors related to motivation and opportunities leading to perform fraud in the financial statements. It is as follows:

$$FRAUD_i = \beta_0 + \beta_1 END_i + \beta_2 LIQ_i + \beta_3 ROA_i + \beta_4 INDEP_i + \beta_5 AUD_i + \epsilon_i \quad (2)$$

With:

FRAUD : Binary variable coded 1 if there is fraud in the financial statements, and 0 otherwise.

END : Binary variable coded 1 if the firm is audited by an auditor at least belonging to the "BIG", 0 otherwise.

LIQ : Report of current assets to current liabilities

ROA : Report of income before extraordinary items to total assets

INDEP : Report the number of outside directors on the total number of directors.

AUD : Binary variable coded 1 if the firm is audited by an auditor at least belonging to the "BIG", 0 otherwise.

$\epsilon_i$  : The residual value

## 5. Empirical Results

### 5.1. Descriptive Analysis

Descriptive statistics allow us to have an idea about the characteristics of variables to consider. They depend on the nature of the variable to be studied. In the case where it is metric, we look at the average, minimum, maximum and standard deviation. If the variable is dichotomous, we are only interested in the average.

Table 2. Descriptive Statistics of Metric Variables

Variables	Fraudulent companies				Non-fraudulent companies			
	Minimum	Maximum	Average	Standard Deviation	Minimum	Maximum	Average	Standard Deviation
END	-0,011	3,365	0,435	0,564	0,001	2,429	0,343	0,392
LIQ	-0,180	8,359	1,248	1,299	-0,02	3,895	1,129	0,779
ROA	-0,119	0,251	0,020	0,065	-0,06	0,212	0,049	0,043
INDEP	0,070	0,875	0,470	0,208	0,000	1,000	0,470	0,227

- ▶ END: Debt = Total Debt/Total Assets
- ▶ LIQ: Liquidity = Current Assets/Current Liabilities
- ▶ ROA: Performance = Income before extraordinary items/Total Assets
- ▶ INDEP: Number of independent directors/Total number of directors

Reading this table, we can conclude that the average value of the debt "END" is 43.5% for fraudulent companies whereas it is of the order of 34.3% for companies that have not defrauded. This result suggests that fraudulent companies are more indebted than other companies. From the values relative to the other variables, we can conclude that the study of the effect of risk factors for fraud detection in the financial statements is interesting in the French context.

Table 3. Descriptive Statistics of the Dichotomous variable

Variables	Fraudulent companies	Non-fraudulent companies
	Average	
AUD	0.92	0.75

AUD: Binary variable coded 1 if the firm is audited by an auditor at least belonging to the "BIG", 0 otherwise.

The dichotomous variable "AUD" has an average of 92% for fraudulent companies and an average of 75% for non-fraudulent. As shown in Table 3, the majority of companies are audited by "BIG". It seems that this variable has no significant effect on the detection of fraud in financial statements.

### 5.2. Detection of multicollinearity problem

Before moving to multivariate analysis, it is essential to verify the absence of a multicollinearity problem. Gujarati (1988) notes a strong correlation can bias estimates of the logistic regression. To verify the presence or absence of multicollinearity between the explanatory variables, we calculate the "Variance Inflation Factors" (VIF), the Pearson correlation coefficients and the values of tolerance.

Table 4. Statistics of collinearity: tolerance values and VIF

	Tolérance	VIF
END	0,993	1.007
LIQ	0,991	1.009
ROA	0,981	1.020
INDEP	0,991	1.009
AUD	0,971	1.030

Tolérance	VIF
<ul style="list-style-type: none"> <li>▶ END: Debt = Total Debt/Total Assets</li> <li>▶ LIQ: Liquidity = Current Assets/Current Liabilities</li> <li>▶ ROA: Performance = Income before extraordinary items/Total Assets</li> <li>▶ INDEP: Number of independent directors/Total number of directors</li> <li>▶ AUD: Binary variable coded 1 if the firm is audited by an auditor at least belonging to the "BIG", 0 otherwise.</li> </ul>	

**Table 5: Pearson correlation coefficients between the independent variables in the regression**

	END	LIQ	ROA	INDEP	AUD
END	1,000				
LIQ	-,073	1,000			
ROA	-,036	,026	1,000		
INDEP	,015	-,026	-,018	1,000	
AUD	-,033	,059	,134	-,092	1,000

<ul style="list-style-type: none"> <li>▶ END: Debt = Total Debt/Total Assets</li> <li>▶ LIQ: Liquidity = Current Assets/Current Liabilities</li> <li>▶ ROA: Performance = Income before extraordinary items/Total Assets</li> <li>▶ INDEP: Number of independent directors/Total number of directors</li> <li>▶ AUD: Binary variable coded 1 if the firm is audited by an auditor at least belonging to the "BIG", 0 otherwise.</li> </ul>					
--	--	--	--	--	--

As shown in the tables above, all correlation coefficients are below 0.75 which is the boundary drawn by Kennedy (1985) and Neter et al. (1990), from which the phenomenon of collinearity becomes more significant. In addition, all VIF have a value less than 10 and all tolerance values surpass 0.25 (Myers, 1990).

### 5.3. Analysis and interpretation of results

The first step in interpreting the results of logistic regression is to check whether the model adopted in this study as a whole, contributes significantly to the prediction of the dependent variable. Second, we seek to know the specific contribution of each independent variable. In this regard, several statistical tests allow us to know the suitability of the model using the SPSS18.0 software.

#### 5.3.1. Validity of the empirical model

At this stage, it is necessary to verify the validity of our empirical models. Notably, the estimate of the logistic regression model is usually done by the method of maximum likelihood.

##### 5.3.1.1 Chi-squared test

*Table 6. Test of model specification*

	Khi-chi –deux	Df	Sig
Model	10.596	5	0,060

The chi-square test of maximum likelihood shows the presence or absence of compatibility between each model and the variables assigned and thus becomes a necessary test for the logistic regression analysis. Indeed, it helps test whether the results are significantly different or not from the predicted results. In this empirical analysis (Table 6), the chi-square test of specification of our model is around 10,596 (5 DEGES of freedom) and is significant at the 10% level. We note that the test is statistically significant at the level of our model, which reflects that the relationship observed is not due to chance and it actually exists in the population. Hence we can continue the analysis of our empirical model.



5.3.1.2. The Test of "Nagelkerke R<sup>2</sup>"

The second measure is the statistical "Nagelkerke R<sup>2</sup>". This measure is the coefficient which indicates the importance of the contribution of the independent variables in explaining the dependent variable. In our empirical model, the "Nagelkerke R<sup>2</sup>" is 0.165 stating that all variables in the model explained 16.5% of the factors involved to carry out fraud in the financial statements.

5.3.1.3. Overall test sensitivity

Table 7. Classification Table

Observed		Planned		
		0	1	Total
Fraud	0	20	20	40
	1	11	29	40
Total		31	49	80

To evaluate the predictive ability of the model introduced in the empirical approach, we can refer to the classification table as provided by the software of data processing SPSS 18.0. The analysis of Table 7 shows that 61.3% of companies are properly classified and, therefore, the error rate rises to 38.7%. This model correctly predicted twenty out of the forty companies that have not defrauded and twenty-nine out of the forty companies that have defrauded.

5.3.2. Results of the empirical model

Our model is a logistic regression that is presented in the methodology section of the research. Before detailing this step and moving to the main empirical findings, we present the model parameters as estimated by the maximum likelihood method (Table 8).

Assumptions of our research will be tested on the basis of the results of logistic regression's statistics discussed below. In what follows, we will test the research hypotheses and examines the influence of explanatory variables on the probability of detecting fraud in financial statements.

Table 8. Summary of statistics of the logistic regression

	Model		
	Coef	Wald	p-value
Constant	-0,962	1,136	0,287
END	0,565	0,901	0,343
LIQ	0,098	0,176	0,675
ROA	-9,514	3.872	0,049
INDEP	-0,375	0,109	0,741
AUD	1.348	3.503	0,061
R <sup>2</sup> de Nagelkerke	0,165		

- ▶ END: Debt = Total Debt/Total Assets
- ▶ LIQ: Liquidity = Current Assets/Current Liabilities
- ▶ ROA: Performance = Income before extraordinary items/Total Assets
- ▶ INDEP: Number of independent directors/Total number of directors
- ▶ AUD: Binary variable coded 1 if the firm is audited by an auditor at least belonging to the "BIG", 0 otherwise.

**Testing of H1 and H2: Effect of variables related to the financial characteristics of the firm (debt "END" and liquidity "LIQ") on the detection of fraud**

The coefficients associated with variables LIQ and END are not statistically significant. These results are not consistent with those of (Dechow et al., 2011; Wuerges and Borba, 2010; Gaganis, 2009; Kirkos et al., 2007; Beneish, 1999). These researchers found a positive relationship between leverage and liquidity with the

probability of committing fraud in the financial statements. We can explain this result by the fact that French companies can engage in earnings management and not in a fraud related to a case of pressure put by financial characteristics of the company. Our result is consistent with that found by (Smali, 2011) which is based on a sample of non-US companies (H1 and H2 are thus rejected).

#### **Testing of H3: Effect of variable "ROA" on the detection of fraud**

The results of the estimation of our empirical model indicate that the coefficient associated with the variable ROA reflects that the performance of the company is negative (-9,514) and is statistically significant at the 5% level. This result is consistent with that of Summers and Sweeney (1998), Brazel et al. (2006) who showed that the performance culture exerted on leaders is a major pressure factor is confirmed for the detection of fraud. Hence, H3 is stating that firms with low levels of performance tend to commit fraud.

#### **Testing of H4: Effect of variable "INDEP" on the detection of fraud**

The coefficient associated with the variable "INDEP" is negative (-0,375) but not statistically significant. This result corroborates that demonstrated by Smali et al. (2009) and Abbott et al. (2004). Yet, it is contrary to that found by Fich and Shivdasani (2007); Agrawal and Chadha (2004); Dechow et al. (2011).

Peasnell et al. (2005) and Matoussi and Gharbi (2011) found that a high percentage of outside directors on the board reduce the likelihood of fraud in the financial statements.

This result is contradictory to previous work and it can be explained by information gaps in our research for measuring the variable "INDEP". Most previous research has noted the possibility of assigning to the level of the empirical model other variables to calculate the percentage of independent directors as reputation, members belonging to the same family, duality, seniority members of the Board of Directors, etc.. Hence, H4 is rejected.

#### **Testing of H5: Effect of variable "AUD" on the detection of fraud**

The coefficient associated with the variable "BIG" is a positive sign (1.348) and is statistically significant at the 5% level. This result allows us to conclude that the variable "AUD" positively influences the fraud in the financial statements. This can be explained by the nature of our sample which consists of companies listed on the stock exchange in that most of them are audited by one of the firms "Big." This is underscored by studies of (Smali et al. 2009; Chen et al. 2006) which show that the role of audit firms is not significant in fraud detection. As a result H5 is rejected.

## **6. Conclusions**

Our study is in the line with works undertaken on the subject of fraud in accounting. A review of preceding works on this subject had led to the notification that there is a lack of similar research in France. Our research was set out with the objective of showing the importance and usefulness of risk factors for fraud detection in the financial statements.

To conclude, we note that the empirical verification of hypotheses did not confirm them all. Our results clearly show that the performance culture exerted on the head is a major pressure for the detection of fraud. Indeed, the stability of the company, the good image on the labor market, the reputation and the desire to increase its visibility in the market constitute pressures related to performance factors that lead the leader to commit fraud in the financial statements.

This study is subject to some limitations.

- In terms of sources of data: even if we tried to identify fraudulent companies based on the publications issued by the AMF, we cannot absolutely guarantee the absence of a healthy corporate free of fraud.

- Variables related to rationalization factors are missing from our model since they are related to the behavior of the individual person.

However, this study could have been enriched by including factors of rationalization. Empirically, we can improve our research by splitting the sample into three groups: Fraudulent companies that defraud, companies that are free of fraud, and companies that are tempted by fraud (Perols and Lougee, 2011; Dechow et al., 2011).

## References

1. Abbott, L., Parker, S. and G. F. Peters (2004). Audit committee characteristic and restatements auditing: A Journal of Practice and Theory 23(11): 69-87.
2. Agrawala, Chadha. (2005). corporate governance and accounting scandals. Journal of Law and Economics, 48(2).
3. Albrecht, G., Krancher, M., Albrecht, S. (2008). Asset Misappropriation Research White Paper for the Institute for Fraud Prevention.
4. Association of Certified Fraud Examiners (ACFE). (2012). Report to the Nation on Occupational Fraud and Abuse. Global Fraud Study.
5. Beasley, M. (1996). An Empirical Analysis of the Relation between the Board of director Composition and Financial Statement Fraud, American Accounting Association. The Accounting Review. Vol. 71. No4: 443-465.
6. Beasley, M., Carcello, J. (2000). Fraudulent financial reporting: consideration of industry traits and corporate governance mechanisms. Accounting Horizons. 14 (4):441-454.
7. Beneish, M. (1999). The detection of Earnings Manipulation. Accounting forum. Financial Analysts Journal: 24-36.
8. Brazel, J., Jones, K., Zimbelman, F. (2006). What Can Non financial Measures Tell Us about the Likelihood of Fraud? Accounting Research Symposium.
9. Choo, F., Tan, K. (2007). An “American Dream” theory of corporate executive Fraud. Accounting Forum 31, 203-205.
10. Cressey, D. (1953). Other people's money: a study in the social psychology of embezzlement. Glencoe, Illinois: The Free Press.
11. Cressey, D. (1973). Other people's money, Montclair: Patterson Smith.
12. Dechow, P., Larson and Sloan. (2011). Predicting Material Accounting Misstatements, Contemporary Accounting Research .Vol. 28 No 1.
13. Dechow, P., Skinner, D. (2000). Earnings Management: Reconciling the Views of Accounting Academics, Practitioners and Regulators.
14. Djama, C. (2008). Fraude a l'information comptable et financière : le rôle des autorités de régulation, <http://halshs.archives-ouvertes.fr/halshs-00522510>.
15. Donaldson, L., Davis, J. (1991). Stewardship theory, Australian Journal of Management, 16.
16. Fich, E., Shivdasani, A., (2007). Financial fraud, director reputation, and shareholder wealth, Journal of Financial Economics 86(2007), 306-336.
17. Gaganis, C. (2009). Classification techniques for the identification of falsified financial statements: a comparative analysis. Intelligent Systems in accounting, Finance and Management, 16(3).
18. Goode, S., Lacey, D. (2011). Detecting complex account fraud in the enterprise: The role of technical and on technical controls, Decision Support Systems 50, p 702-714.
19. Jensen, M., Meckling, W. (1976). Theory of the firm: managerial behavior, agency costs, and ownership structure, Journal of Financial Economics 3, p 305-360.
20. Kennedy, P., (1985). A Guide to Econometrics, Cambridge, MA: MIT Press, 1985.
21. Kirkos, E., Spathis, C., Manolopoulos, Y. (2007). Data mining techniques for the detection of fraudulent financial statements. Expert systems with applications, 32(4), p995-103.
22. Larson, C. (2008). Accounting Fraud and Institutional Investors, Working paper, Department of Accounting University of Michigan.
23. Lennox, C., Pittman, J. (2010). Big Five Audits and Accounting Fraud, Contemporary Accounting Research .Vol27, No1, pp 209-247.
24. Matoussi, H., Gharbi, I. (2011). Board Independence and Corporate Fraud: The Case of Tunisian Firms, Politics and Economic Development.
25. Myers, R. (1990). Classical and modern regression with applications. PWS-Kent Publishing Company.
26. Neter, J., Wasserman, W. (1990). Applied linear statistical models: regression, analysis of variance, and experimental designs, Homewood: Irwin.
27. Okoye, E., Okafor, T., Ijeoma, N. (2009). Impact of the fraud triangle on audit process: the Nigerian accountants' view, the university Advanced Research Journal, 1119-8125.

28. Ouaniche, M. (2009). La fraude en entreprise: Comment la prévenir, la détecter, la combattre.
29. Peasnell, K., Pope, P., Young, S. (2005). Board monitoring and earnings management: do outside director's influence abnormal accruals? , journal of business finance and accounting.
30. Perols, J., Lougee, B. (2011). The relation between earnings management and financial statement fraud, *Advances in Accounting, incorporating Advances in International Accounting* 27 (2011), 39-53.
31. Rezaee, Z. (2005). Causes, consequences and deterrence of financial statement fraud, *Perspectives on Accounting Critical* 16.pp 277-298.
32. Rouff, J. (2003). Les fraudes : causes, conséquences, remèdes. *Audit*, n° 164.
33. Sitorus, T., Scott, D. (2010). Fraud risk factors and auditing standards: A call for the replication of empirical research in an Islamic environment, *The Arab Journal of Accounting*, Volume 13, Number 1, pp. 116-140.
34. Skousen, C., Wright, C. (2006). Contemporaneous Risk Factors and the prediction of Financial Statement Fraud, Working paper, Department of Accounting University of Texas at Arlington.
35. Smaili, N. (2011). Fraudes corporatives: une brève synthèse, *la revue française de gouvernance d'entreprise*, RFGE N°9.
36. Smaili, N., Labelle, R., Stolowy, H. (2009). La publication d'une information financière non conforme à la loi et aux normes : Déterminants et conséquences. *Comptabilité - Contrôle - Audit*, n° 15 (1), 2009, p. 159-198.
37. Summers, S., Sweeney, J. (1998). Fraudulently Misstated Financial statements and insider trading: An empirical analysis, *The Accounting Review*, 73(1), pp. 131-146.
38. Wuerges, A., Borba, J. (2010). Accounting fraud detection: is it possible to quantify undiscovered cases?, Social Science Research Network, <http://ssrn.com/abstract=1718652>.