Macrothink Institute™

International Journal of Accounting and Financial Reporting
ISSN 2162-3082
2019, Vol. 9, No. 3

Impact of the External Audit Quality and Corporate Governance on the Tunisian Company' Financial Performance of Before and After the 2011 Revolution

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Received: May 31, 2019 Accepted: June 14, 2019 Published: July 15, 2019

doi:10.5296/ijafr.v9i3.14873 URL: https://doi.org/10.5296/ijafr.v9i3.14873

Abstract

The latest financial scandals have challenged the accounting systems adopted and the quality of external audit and corporate governance.

The purpose of the study is to analyze the impact of the determinants of the external audit quality and corporate governance on the Tunisian company's financial performance before and after the 2011 revolution.

Using a sample of 31 companies listed on the Tunis Stock Exchange this impact is tested for a period of eight years, divided into two periods. The first period spans from 2007 to 2010, before the revolution, and the second period spans from 2013 to 2016, after the revolution.

The results show that after the revolution, a significant relationship exists between the financial performance of the companies and their size and indebtedness, whereas before the revolution, the relationship was significant between financial performance of the companies and the existence of an audit committee and managerial property. The behavior of Tunisian companies changed after the revolution and the 2011 revolution allowed the various parties who were against good governance to negatively affect investor confidence in auditors and the performance of the company. It's a crisis of the crisis.

Keywords: Performance, Board of directors, Audit quality

1. Introduction

The proliferation of financial scandals experienced by some companies such as Enron and Xerox in the United States, Crédit Lyonnais in France or Batam in Tunisia have led to a crisis of investor confidence in the financial markets, a loss of credibility of accounting information as well as an increased need for transparency in the management of companies and the urgency of putting in place governance mechanisms that ensure better protection for shareholders.

Thus, these spectacular bankruptcies and the questioning of auditors' responsibility in these accounting scandals have resulted in the reinforcement of regulations in many countries around the world.

These actions aim to create greater transparency in financial reporting and strengthen management control through the implementation of corporate governance mechanisms designed to better protect the interests of shareholders and other stakeholders (Black et al. 2005, Vintila and al 2015).

In Tunisia, the laws n°2005-96 of 18 October 2005 on strengthening the security of financial relations and n° 2005-65 of 27 July 2005 amending and supplementing the Commercial Companies Code have introduced several rules aimed at ensuring transparency in the companies. Thus, the regulations evolve the notions of transparency of the financial information, independence of the statutory auditors and the permanent committees of internal audit and obligation of disclosure at the expense of the companies making public appeal to the savings, their shareholders and publicly traded companies. Several circumstances may be reasons that may push managers to adopt an opportunistic approach that weakens the credibility of accounting figures in the eyes of investors.

The auditor plays a mediating role between shareholders and managers in order to solve agency problems and mitigate the impact of asymmetric information (Al-Ajmi 2009).

According to Titman and Trueman (1986), a good auditor needs to certify the reliability and relevance of the disclosed information about the value of the business. Palmrose (1988) defined the quality of the audit as the probability that the financial statements do not contain material misstatements.

By certifying the published information, the external auditors assume their responsibility and there by contribute to the trust of their users.

On the basis of this observation, many academic studies, notably Anglo-Saxon ones, have tried in recent years to determine the impact of the quality of external audit and the composition of the board of directors on the company's performance. (Yang and Krishnan, (2005), Zhang et al. (2007), Lin et al. (2006), Brown et al. (2010), Dimitropoulos and Asteriou. (2010), Lisa et al. (2016), Sarah et al. (2018)).

This research makes two contributions to the literature. Firstly, to our knowledge, few studies have dealt with this issue in a context related to a developing country like Tunisia and during a critical period such as the 2011 revolution. The Tunisian context provides a favorable framework for analysis of the relationship between financial performance, audit quality and corporate governance. Indeed, the Tunisian accounting standards offer a certain flexibility to the managers in the choice of accounting practices. Second, the Tunisian case constitutes an interesting field of investigation because of its socio-cultural specificities (Arabo-Muslim civilization) and its emergent character (Fatma Zehri 2010).

It is in this framework of analysis that the present research work will be written, it is objective is to analyse the relationship that highlights the impact of the determinants of the external audit quality and corporate governance on the financial performance of Tunisian companies before and after the revolution of 2011.

2. Literature Review and Hypothesis Development

The work of Berle and Means (1932) is the starting point for the development of positive agency theory and then the politico-contractual theory. Their study has highlighted the divergence between the property that interests shareholders and the control that aspires managers. According to Dimitropoulos and Asteriou (2010) the governance structure has an impact on the quality of the reported accounting information.

In addition, the research of Moore and Ronen (1990) prouves that auditing has an important role in the acquisition of new capital, it gives an idea on the quality of the information provided by the company. It also helps the company to improve its financial performance through the arrival of new capital invested by shareholders (Benjamin and al, 2018; Chou and al, 2014).

2.1 External Audit Quality and Financial Performance

The audit quality, usually, consists of two essential elements namely the competence that determines the probability of discovery of possible accounting anomalies and the independence that determines the probability of revealing these anomalies.

The aim of the study of Lisa Milici Gaynor and al (2016) is to define both, the quality of financial reporting and the audit quality, using a person / task / environment framework to summarize the determinants of each quality and highlight the recursive relationship between the quality of financial information and the audit quality.

2.1.1 The Competence and Independence of the Auditor

Competence is related to the auditor's knowledge, which implies sufficient training, qualification and experience. The competence of the auditor could be an important factor that increases the auditor's ability to withstand the pressure of the client. It could be appreciated through his specialization and his degree of experience.

According to John (Xuefeng) Jiang and al (2019) the companies audit quality improves after the transition to the audit big 4, the mergers and acquisitions done between non big 4 does not have an impact on the quality of audit. In addition, their analysis shows that the improvement of audit quality is due to the general competence of big 4 auditors more than to their specific expertise in the sector.

Thus, competence is the level of expertise sufficient to achieve the explicit audit objectives. This expertise is a continuum that evolves through a Gunn and Michas (2018) learning process. Commerford and al (2016) and Zhang and al (2007) note that the more competent auditor is, the lower risks of compromising him. In other words, the higher level of experience of the auditor, the more he is able to appreciate the complexity of any situation. He is therefore more likely to be perceived as more independent than an auditor with a lower level of experience.

Rasha Kassem and Andrew W. Higson (2016) conducted a review of the previous literature and of the international and US audit standards, arguing that the role of the external auditors was not clearly defined by the audit control authorities of external audits. They then offer recommendations to regulatory auditors, external auditors, audit firms and researchers in such a controversial area.

Guarantor of the accounting and financial information quality disseminated and intended for the stakeholders, the auditor plays a central role in corporate governance (Eshleman and Guo (2014)). In order for the agency relationship to be relevant, it appears that the auditor must be independent of the company management (Simnett and Ken (2018)). Users of accounting and financial information may legitimately fear that the auditor will, during a mission, privilege his personal interest or that of the firm with which he is associated Greiner et al (2017). The independence of the auditor is often defined as the probability that the auditor will report a breach discovered in the financial statements (Watts and Zimmermann 1986, Sarowar Hossain, et al (2017)). This suggests that auditor independence is synonymous with objectivity and the auditor's ability to withstand customer pressure (DeAngelo 1981, Gunn and Michas (2018), Commerford and al (2016))

Independence is an important component of the quality of the audit, as it ensures that the work and conclusions made by the auditors are not tainted by subjective, deliberate or deliberate one of the contracting parties within Brown and al (2010).

The independence of the auditor therefore depends, in the end, on his level of probity in the face of pressures imposed by his clients or relating to his activity (Ross D. Fuerman and Michael Kraten (2009))

The auditor is indeed at the center of an unusual agency relationship. It is appointed by the shareholders on the proposal of the company's management that it will have to control in order to guarantee the interests of all the users of the financial information (Bin Ke and al (2014)). The relationship between managers and shareholders can lead to conflicting pressures on auditor independence (Bin Ke, et al (2015).

2.1.2 Measurement Indicators of Audit Quality

For DeAngelo (1981), the audit firm size serves as an implicit assurance of the quality of the audits carried out. Auditors with a larger number of clients are less likely to cheat to retain a single client.

The results of the study by Becker and al (1998) and Francis and al (1999) advanced that the presence of "big4" is always associated with a very high credibility of the information disclosed.

According to Francis and al (1999), the causes of companies' reliance on big 4 services are: first, they have better technology to detect risk areas. Second, they provide a better interpretation of accounting principles that may limit the opportunistic management of results. Finally, they have significant bargaining power with clients in terms of the required adjustment of financial statements (Ross D. Fuerman and Michael Kraten (2009)).

For Bin Ke and al (2014), Big 4's auditors' clients are less likely to publish accounting restatements than those of the mid-level auditors. Taken together, the collected and reprocessed evidence shows that Big 4 auditors perform top quality audits. In addition, Bin Ke and Clive S. Lennox (2015) examine in their study the impact of the poor quality of the institutional environment in China on the quality of audits provided by the Big 4. They find that the Big 4 affect their less experienced partners to companies listed only in China compared to cross-listed clients in Hong Kong. Big 4 companies are less likely to publish modified audit reports and they charge lower audit fees for customers listed only in China. Finally, companies listed only in China have abnormal accrual accounts signed larger than companies listed in Hong Kong. Overall, they argue that the weak institutional environment in China results in big 4 providing lower quality audits to companies listed only in China.

Contrary to the American context, Piot and Janin (2008) found that the level of discretionary accruals of firms audited by a big 4 is similar to that of firms audited by a non-big 4. They therefore concluded that in France, there is no difference in audit quality between big 4 and non big 4.

Sarah A. Garven and al (2018) examine the effects of several audit-related factors on the financial repoting quality (FRQ) not-for-profit. Using four different FRQ measures, they find that specialized auditors and unexplained audit fees have a significant positive effect on the FRQ in non-profit organizations. What is even more interesting in the results of this study is that the application of the 2002 Sarbanes-Oxley Act, which does not apply to non-profit audits, has led to a change in the behavior of non-profit organizations since these organizations have chosen less obvious methods for managing post-SOX ratios, compared to prior SOX methods. They also argued that the use of a Big 4 auditor gives a very different result in non-profit studies since their choice does not affect the quality of the information provided.

Hence our first hypothesis:

H1: There is a relationship between the size of the audit firm and the financial performance of the company.

H1-1: There is a relationship between the size of the audit firm and the financial performance of the company before the revolution.

H1-2: There is a relationship between the size of the audit firm and the financial performance of the company after the revolution.

2.2 Corporate Governance Mechanisms and Financial Performance

By evoking the notion of corporate governance, several authors stress its crucial role in value creation. Indeed, Rogier Deumes and al (2012) and Bauer and al (2008) have shown that corporate governance has a significant impact on the financial performance of the company. In this respect, corporate governance aims at controlling the manager and reducing his discretionary power and his opportunistic behavior insofar as the decisions of the managers have a decisive influence on the performance of the company (Bin N. Srinidhiand al (2014), García Martín and Begoña Herrero (2018)).

For their part, Dimitropoulos and Asteriou (2010) note that corporate governance mechanisms do not affect the financial performance of firms.

From the perspective of understanding the risk of the financial system, Beerbaum and Puaschunder (2019) argue that the global crisis has revealed shortcomings in the strategy of the global financial system and argues that the growth and development of good governance can combat the slowing down of the system.

2.2.1 Managerial Property and Financial Performance

Managerial property exists when the managers hold a significant share of the company's capital, which can lead to a certain convergence between the interests and objectives of the managers with those of the external shareholders and thus mitigate the problems of agencies that may arise between the direction and property.

This participation in the capital of the company makes the managers more motivated to act in the interest of the company and not in their personal interests to the detriment of the external shareholders. In this sense, Jensen and Meckling (1976) argue that the higher the share of the capital held by the directors, the lower the divergence between their interests and those of the shareholders. In other words, the manager holding a high portion of the shares has little interest in maximizing his personal wealth through opportunistic behaviors that are detrimental to the company's assets, since he suffers the repercussions (decrease in the value of his shares). Contrary to the hypothesis of convergence of interests, Charreaux (1994) shows that a significant participation of the managers in the firm capital allows them to increase their decision-making power to manage in a way contrary to the maximization of value. As a result, the manager who has privileged financial information is not supposed to entrust it to the shareholders.

The divergence between the interests of the shareholders and those of the managers makes it possible to accentuate the agency costs within the firm (Beasley 2001, Yermack, 1996).

Hence our second hypothesis:

H2: There is a relationship between managerial property and financial performance.

H2-1: there is a relationship between managerial property and financial performance before the revolution.

H2-2: There is a relationship between managerial property and financial performance after the revolution.

2.2.2 Concentration of Ownership and Financial Performance

Concentration of ownership refers to a fraction of ownership or an interest in a business owned by shareholders with significant control or participation. Concentration of ownership gives shareholders the motivation and ability to monitor and control management decisions. As a result, majority shareholders are using their great interest to reduce conflict between management and the organization by being more proactive in monitoring and protecting their investments.

In this context, Hill and Snell (1988) find that concentration of ownership affects financial performance through strategic choices. Indeed, it discourages diversification and encourages innovation. For their part, Agrawal and Mandelker (1990) show that the existence of majority shareholders leads to better financial performance. More specifically when the property is concentrated by institutional investors. In the case of Germany, Gorton and Schmid (2000) argue that when the concentration of property increases the value of German companies improves. In China, Chen's results (2000) show a strong positive relationship between ownership concentration and the company's financial performance as measured by Tobin's Q. Thus, for (Caixe & Krauter, 2013) a high concentration of ownership allows a majority shareholder to dominate the decision-making process of a company, which could lead to the expropriation of wealth of minority shareholders. Recently, Mokaya and Jagongo (2015) found that the concentration of ownership improves the financial performance of companies listed on the Nairobi Stock Exchange.

In addition, Aymen (2016) emphasized the importance of ownership structure to improve financial performance. He explored the relationship between financial performance (ROA) and concentration of ownership, using a sample of 19 banks in Tunisia during the period 2000-2010, he found no impact of the concentration of ownership on the financial performance of banks. Similarly, Demestz and Villalonga (2001) found a lack of relationship between these two concepts.

All these arguments lead us to state the following hypothesis:

H3: There is a relationship between ownership concentration and financial performance.

H3-1: There is a relationship between ownership concentration and financial performance before the revolution.

H3-2: There is a relationship between ownership concentration and financial performance after the revolution.

2.2.3 Institutional Ownership and Financial Performance

Institutional investors are large companies operating in the financial markets, such as insurance companies, banks, pension funds and mutual funds. These investors play an active role in the corporate company governance. They are powerful partners with influence for the company, they have significant financial means to become active shareholders in the good control of the management of firms (Mtanios and Paquerot, 1999).

Cornett and al. (2008) show that institutional investors actively monitor companies, minimize information asymmetry and agency problems, and subsequently improve business performance in two ways. On the one hand, they apply their skills, professional knowledge and voting rights in order to encourage managers to improve their governance within the company. On the other hand, when the business needs financing to grow, these institutional investors can provide financing or use their relationships to help the company financing itself. (Brian Bratten and Yanfeng Xue (2017).

The results of the study by Gerlando Augusto Sampaio Franco of Lima and al (2018) show that the effect of institutional investor participation on the quality of income is market-specific. In the civil law and low-index rights of managers, institutional investors have an informational advantage over individual investors, and the participation of institutional investors is associated with an improvement in the quality of the results (Jiambalvo, Rajgopal and Venkatachalam (2002) and Dechow and Dichev (2002), Keith and others (2008).

Omri (2002) concludes that the presence of institutional investors has a positive impact on the financial performance of Tunisian companies (Zehri Fatma, 2010). In Tunisia, institutional investors are involved in the control and management of the company. The changes affecting mainly the insurance sector and the banking sector probably affect the degree of interest of institutional investors in the companies of which they are shareholders. The author also finds that institutional investors can influence organizational modes by giving companies the benefit of their skills in various fields. This could improve the financial performance of firms.

In their research paper, Graves and Waddock (1994) found that an increase in the number of institutional investors led to a decline in the financial performance of US firms. they argued that this negative result is due to the fact that the holders of institutions should show a steady improvement in terms of results. Other studies, such as, Agrawal and Knoeber (1996) and Faccio and Lasfer (2000) concluded that there is no significant relationship between the financial performance of firms and the presence of institutional investors

This leads us to formulate the following hypothesis:

H4: There is a relationship between institutional ownership and financial performance.

H4-1: There is a relationship between institutional ownership and financial performance before the revolution.

H4-2: There is a relationship between institutional ownership and financial performance after the revolution.

2.2.4 The Audit Committee and the Financial Performance

An audit committee is a corporate governance mechanism that has begun to appear in a meaningful way (Porter B and al (2014)). It is a corporate governance tool that uses non-executive directors as a means of control and oversight for multiple management roles such as internal audit, risk management, compliance, and financial reporting (Lin and al (2006), Arens and al (2011), Varcholova and al (2013)).

The work of the audit committee members is generally related to risk management (Tao and Hutchinson 2013); the relationship between the directors (Liao and Hsu 2013); the quality of the reports (Ruzaidah and Takiah (2004)); the quality of the audit (Agrawal 1990); and the selection of external auditors (Mohd Iskandar and Wan Abdullah (2004)).

Zabri and al. (2016) suggest that the relevant audit committees contribute to improving the financial performance of the company and therefore the good characteristics of the audit committees are associated with good financial performance of the company (Bansal and Sharma 2016).

For Bhardwaj and Rao, (2015), setting up an audit committee helps to develop effective strategies to increase the firm's performance.

In addition, Munisi and Randøy (2013) find that an audit committee is positively and significantly associated with the financial performance of the company. This means that companies with an audit committee can expect to achieve higher financial performance. Chan and Li's research (2008) reveals that the existence of an audit committee has a positive impact on the value of the company because their knowledge and experience can be shared at board meetings. In addition, the information provided by a committee can improve the overall understanding of the board of directors within the company.

Anna Gold and al (2018) argued that after the global financial crisis of 2007-2008, regulators proposed alternative auditor selection processes to enhance auditors' independence, such as the mandatory rotation of audit firms or mandatory calls for tender. However, these alternative selection processes may not be effective if management exercises significant influence over the appointment decisions of the auditors. They noted that the appointment authority of the Audit Committee affects investment recommendations only when a possible change of auditor is anticipated (rotation or tendering), but not when the selection of the auditor is voluntary. In addition, rotation and tendering increase the recommended investment likelihoods relative to voluntary selection, but only when the audit committee has a high level of appointment authority. Overall, the results highlight that investors do not view audit selection processes separately from internal corporate governance mechanisms.

Hence the following hypothesis:

H5: There is relationship between the audit committee and financial performance.

H5-1: There is relationship between the audit committee and the financial performance before the revolution.

H5-2: There is relationship between the audit committee and financial performance after the revolution.

2.3 Debt and Financial Performance

Agency theory shows that the use of indebtedness appears as an effective solution to resolve conflicts of interest between shareholders and managers. Unlike, Myers (1977) finds that because of the divergent interests of shareholders and executives, indebtedness leads to high agency costs. This result is similar to the study of Bouaziz and Mohamed (2012) who found that recourse to debt is considered as an obstacle to financial performance but in a more or less significant way.

In general, reliance on debt keeps profits within the business, allowing homeowners to increase return on equity and realize tax savings (Majumdar and Sen, 2010). Debt is a financing strategy designed to increase the rate of return on investments by generating a return on borrowed funds in excess of the cost of using the funds.

According to Jay (2015), companies often incorporate debt into their capital structure to reduce the average financing cost. The use of debt can increase the pressure on the ongoing operations of a company because it has to pay interest, it also allows to keep more profits than to use equity, which requires the sharing of profits with shareholders. To take advantage of such debt financing functionality, companies often resort to borrowing to finance stable transactions in which they can more easily make outstanding interest payments and retain the remaining profits for themselves.

However, in their research on the dynamics of capital structure and equity returns, Cai and Zhang (2006) found that highly leveraged firms had low profitability. High long-term debt has a negative impact on the financial performance of the company as measured by the ROA.

Similarly, the study of Cecchetti and Schoenholtz (2011) shows that high interest rates make transactions more expensive for companies that borrow money and discourage consumers from buying because of the expenses incurred. This ultimately affects the overall financial performance of the company by reducing its profitability. For their part, Caballero and Gourinchas (2008) found that low interest rates represent a lot of money in the business, which resulted in a low cost of borrowed funds. Businesses can go into debt at lower cost, which translates into lower interest payments, allowing them to use a larger amount to finance their growth, resulting in higher profitability and higher return on equity.

For Sana, Heman and Sara (2015) corporate debt in India has a negative impact on the financial performance of the company because of the high interest it aroused and agency costs.

Since debt financing is the main element of external financing for companies raising additional funds after creation. So there is an association between the level of indebtedness and the financial performance of the company (Baltacı and Ayaydın, 2014).

Hence the following hypothesis:

H6: there is a relationship between the level of indebtedness and financial performance.

H6-1: There is a relationship between the level of debt and financial performance before the revolution.

H6-2: There is a relationship between the level of debt and the financial performance after the revolution.

3. Methodological Aspects

3.1 Sample

The empirical part of the study is tested on a sample of 31 companies listed on the Tunis Stock Exchange and observed for eight years divided into two periods. The first period spans from 2007 to 2010, before the revolution, and the second period spans from 2013 to 2016, after the revolution.

Of all companies listed on the Tunis Stock Exchange, banks, insurance companies and financial institutions are excluded as they are governed by specific sectoral standards.

Financial data and data on corporate governance variables are extracted from the official gazettes of the Tunisian Financial Market Council (CMF), bond issue prospectuses or capital increase prospectuses, as well as their financial statements published on the website of the Stock Exchange of Tunisian Securities (bvmt.com.tn).

3.2 The Variables of the Study

3.2.1 The Independent Variables

Referring to the literature presented above, we have chosen the following independent variables to study the degree of influence of external audit quality and corporate governance mechanisms on the financial performance of listed Tunisian companies.

Table 1. The independent variables of the model

Nature	**Studies**	**Measures**
The auditor's affiliation "big 4"	Francis and al (1999), Gopal and al (2003). Bin Ke, and al (2014)	1 if the auditor is affiliated with the "big oven" 0 if no
Managerial property «pman»	Warfield, Wild and Wild (1995), Beasley 2001, Yermack (1997), Morck and al. (1988)	Percentage of capital held by the manager
The concentration of property "pcon"	Caixe and Krauter (2013), Mokaya and Jagongo (2016), Aymen (2016)	Share of capital held by external shareholders with more than 5% of the

		capital
Institutional property "pinst"	Cornett and .al (2005), Shleifer and Vishny (1997), Omri (2002)	Percentage of capital held by institutional shareholders
The audit committee "com"	Walker (2004) Barri Litt, and al (2014).	1 if the audit committee is active 0 if no.
The level of indebtedness "ende"	Defon and Jiambalvo (1991), Warfield and al (1995)	Total Debt / Total Assets
The size of the company "tail"	Cromier and al (1995), Becker and al. (1998),	Natural logarithm of total assets: control variable

3.2.2 The Dependent Variable

The ROA provides information on the rate of return on invested assets. This means that it indicates if the resources of the company are correctly used. The ROA is based on the net margin (final profitability of the company) and the turnover of the assets (ratio obtained by dividing the total turnover by the number of assets, to calculate the profitability of each asset).

It is insensitive to leverage, which generates a profit through debt. Indeed, the data used to calculate the ROA do not take into account the notion of indebtedness.

Although the ROA is a relatively insensitive indicator of company size but it varies by business line:

• Thus, the heavy industry mobilizes a lot of assets to generate profits.

• Conversely, a service company, publisher or designer will need less equipment to produce a high ROA.

The problem does not arise for Tunisian SMEs since they have more or less close sizes. (Aymen (2016)).

To calculate the ROA (return on assets), the most frequently used method is:

$$\textbf{ROA} = \textbf{Net income} \div \textbf{net assets}$$

3.3 Study Models

The study consists in analyzing the following model before and after the revolution:

$$\textbf{Performance (ROA)} = \beta 0 + \beta 1\, \mathrm{big4}_{it} + \beta 2\, \mathrm{pman}_{it} + \beta 3\, \mathrm{pcon}_{it} + \beta 4\, \mathrm{pinst}_{it} + \beta 5\, \mathrm{com}_{it} + \beta 6\, \mathrm{ende}_{it} + \beta 7\, \mathrm{tail}_{it} + \varepsilon_{it}$$

With

- ROA: Performance
- big4: Mute variable.
- pman: Managerial property level.
- pcon: Concentration of ownership
- pinst: Institutional Property
- com: The audit committee
- ende: Level of indebtedness of firm i to year t
- tail: Size of firm i to year t it is a control variable.
- εit: An error term

4. Data Panel Results

4.1 Matrix of Multicollinearity

The results of the Pearson correlation matrix are presented in the following table:

Table 2. Correlation matrix of variables (2007-2010: before revolution)

	big_4	**com**	**pman**	**pinst**	**pcon**	**ende**	**tail**	**ROA**
big_4	1							
com	0,45	1						
pman	-0,18	-0,10	1					
pinst	0,04	0,32	-0,06	1				
pcon	-0,05	-0,27	-0,19	-0,09	1			
ende	0,33	0,31	-0,05	0,02	0,01	1		
tail	0,37	0,30	-0,02	0,01	-0,005	0,34	1	
ROA	-0,12	-0,23	0,2	0,007	-0,13	0,16	-0,2	1

Table 3. Matrix of correlation of variables (2013-2016: after the revolution)

	big_4	com	pman	pinst	pcon	ende	tail	ROA
big_4	1							
com	0,40	1						
pman	0,10	0,001	1					
pinst	-0,03	0,001	0,13	1				
pcon	0,001	-0,27	0,001	0,05	1			
ende	0,21	0,03	0,11	0,04	0,01	1		
tail	0,14	0,02	0,15	-0,16	-0,005	0,17	1	
ROA	-0,04	0,001	0,14	0,09	0,001	-0,53	0,29	1

Examination of the two correlation matrices presented in the tables above does not reveal any extremely high correlation levels that could prompt us to take corrective action to address this problem. Indeed, the correlation coefficients vary in absolute value between a minimum of 0.01 and a maximum of 0.53. This leaves no room for serious problems of multicollinearity, indeed the alarming thresholds for the problem of mlticolinearity have been set at a level of 0.8 (Kenedy 1992) and 0.9 (Bohrstedt and Kohatsu 1994).

At the end of this multicollinearity diagnosis, we will proceed to multivariate analyzes using the regression model which will be presented in the following paragraph.

4.2 Choosing the Appropriate Estimation Method

This research is conducted on a sample of companies observed over a period spanning from 2007 to 2010 and from 2013 to 2016.

The processing of these panel data presents a problem of heterogeneity due to the existence of individual effects and specific effects in this type of data. Since the Ordinary Least Squares estimation method is not applicable in this case, it is necessary to use the fixed effect model or the random effect model that allow to take into account this problem of heterogeneity.

To choose one of these models, we use Hausman's specification test to test which of these two models is more suitable for regression.

When the probability of the test is below the 10% threshold, the fixed effect model is preferable to the random effect model.

Table 4. The Hausman specification test

	Model before revolution (2007-2010)		Modele after revolution (2013-2016)	
	Value	**Probability**	**Value**	**Probability**
Hausman Test	1.15	0.76	10	0.04

This table records:

- A probability of 10% for the model after revolution. This result allows us to opt for the variable effects model rather than the fixed effects model.

- A probability of 76% for the model before revolution. This result allows us to opt for the fixed effects model rather than the random effects model.

To approve our choice of the random effects model, we will test the existence of the effect of heteroscedasticity in the residue of our model.

The result obtained from the application of the Breush and Pagan heteroscedasticity test on both models is presented in the following table:

Table 5. Residue heteroscedasticity test

	Model before revolution (2007-2010)		Model after revolution (2013-2016)	
	Value	significance	Value	significance
Breush and Pagan Test	8.64	0.0033	51.47	0.0000

From this table, we find a significance of the test below the 1% threshold (p = 0.0000 <0.01). The Breush and Pagan test shows that the random effects of the model are very significant after the revolution.

After having identified the appropriate estimation method for the regression of the model, we will present in the following paragraph the estimation results obtained.

4.3 Regression Results

It is a question of estimating the coefficients of the variables of the following regression:

$$\textbf{Performance (ROA)} = \beta 0 + \beta 1\ \mathbf{big4}_{it} + \beta 2\ \mathbf{pman}_{it} + \beta 3\ \mathbf{pcon}_{it} + \beta 4\ \mathbf{pinst}_{it} + \beta 5\ \mathbf{com}_{it} + \beta 6\ \mathbf{ende}_{it} + \beta 7\ \mathbf{tail}_{it} + \varepsilon_{it}$$

ISSN 2162-3082
2019, Vol. 9, No. 3

The statistical results from the estimation of the parameters of our study are summarized in the following table:

Table 6. Results of the regression estimates

ROA	Model before revolution (2007-2010)			Model after revolution (2013-2016)		
	Coefficients	**Z**	**significance**	**Coefficients**	**Z**	**significance**
Constant	-0,256	**-2.40**	**(0.016)**	-0,256	**-2.40**	**0.016**
big_4	0,014	0,87	0,38	0,014	0.87	0.386
com	-0,08	**-2,34**	**0,019*****	-0,06	0,5	0,62
pman	0,02	**1,89**	**0,058****	0,019	1,26	0,208
pinst	0,03	0,6	0,55	0,13	**1,38**	**0,16***
conp	-0,01	-0,72	0,46	-0,02	0,33	0,25
ende	0,005	0,06	0,9	-0,34	**-4.52**	**0.000*****
tail	0,001	0,13	0,8	0,032	**2,89**	**0,004*****
R^2 30%;					**R^2 51%**	

* Significant at the 10% threshold, ** Significant at the 5% threshold, *** Significant at the 1% threshold

From the results of the following table:

• We have selected two indicators to inform us about the relationship between audit quality and governance in relation to the company's performance.

Indeed, the coefficient relative to the variable "com" is significant and negative (-0.08). Thus, it appears that in the Tunisian context the audit committee performs its functions correctly and it is more active before the revolution since the coefficient of this same variable is not significant in the period following the revolution and using the same sample of companies (Khosa 2017). Except that its role goes against the financial performance of the company. This can be explained by two reasons: on the one hand, the fees paid to the auditors are high compared to the service provided, on the other hand the disciplinary legal system of the auditors in Tunisia is characterized by its fragility especially after the revolution of 2011 (Anna Gold et al 2018 and Fatma Zehri 2010).

• In the same logic, we find that the coefficient of the variable "pman: managerial property" is significant and positive (0.02). The coefficient of this same variable is not significant after the revolution.

These conclusions lead us to argue that Tunisian listed companies were better organized and followed the legal instructions before the revolution than after that. In addition, the financial performance of these companies depends a lot on this rigor which attracts the trust of investors and customers (Beasley 2001, Morck et al 1988, Dimitropoulos and Asteriou (2010), Garcia Martín and Begoña Herrero (2018).

• These facts are supported by the results of the second model. Indeed, after the revolution the coefficients of the variables: "pinst" (0.13) (Omri 2002), "end" (-0.34) (Jay 2015) and "tail" (0.032) became significant with a difference at the sign level.

This result allows us to conclude that the financial performance of companies listed after the revolution depends more on the debt of the company, its size and the institutional property that taints its structure. This phenomenon can be explained by the fact that to cover the losses suffered by these companies after the revolution following the deterioration of the economic fabric in recent years, they resorted to debt as first solution. In order to hedge against the risk of non-payment, institutional institutions require higher collateral and are more dissatisfied with the governance of the firm according to the size of the latter and the extent of its debt (Cornett et al (2005), Faccio and Lasfer (2000)).

Table 7. Synthesis of hypotheses

Hypotheses	Results
H1: There is a relationship between the size of the audit firm and the financial performance of the company. H1-1: There is a relationship between the size of the audit firm and the financial performance of the company before the revolution. H1-2: There is a relationship between the size of the audit firm and the financial performance of the company after the revolution.	H1 is rejected (Sarah A. Garven, and al (2018), Piot et Janin (2008))
H2: There is a relationship between managerial property and financial performance. H2-1: there is a relationship between managerial property and financial performance before the revolution. H2-2: There is a relationship between managerial property and financial performance after the revolution.	H2-1 is confirmed (Dimitropoulos and Asteriou (2010)) H2-2 est rejetée
H3: There is a relationship between ownership concentration and financial performance.	H3 is rejected (Aymen 2016) et

H3-1: There is a relationship between ownership concentration and financial performance before the revolution. H3-2: There is a relationship between ownership concentration and financial performance after the revolution.	Demestz et Villalonga (2001)
H4: There is a relationship between institutional ownership and financial performance. H4-1: There is a relationship between institutional ownership and financial performance before the revolution. H4-2: There is a relationship between institutional ownership and financial performance after the revolution.	H4-1 is rejected (Cornett et al (2005), Faccio et Lasfer (2000)) H4-2 is confirmed
H5: There is relationship between the audit committee and financial performance. H5-1: There is relationship between the audit committee and the financial performance before the revolution. H5-2: There is relationship between the audit committee and financial performance after the revolution.	H5-1 is confirmed (Chan et Li 2008, Anna Gold et al 2018) H5-2 is rejected
H6: there is a relationship between the level of indebtedness and financial performance. H6-1: There is a relationship between the level of debt and financial performance before the revolution. H6-2: There is a relationship between the level of debt and the financial performance after the revolution.	H6-1 est rejetée (Umar et al 2012), (Sana et al 2015), H6-2 is confirmed

5. Conclusion

Our study aims to analyse the impact of the determinants of external audit quality and corporate governance on the financial performance of Tunisian companies before and after the 2011 revolution.

This impact is tested on a sample of 31 companies listed on the Tunis Stock Exchange and observed for eight years divided into two periods. The first period spans from 2007 to 2010, before the revolution, and the second period spans from 2013 to 2016, after the revolution.

The results of our study can be summarized as follows:

• After the revolution: the relationship is significant between the financial performance of one side and the size and indebtedness of the companies that are the subject of the study on the other hand. This result allows us to conclude that the financial performance of companies listed after the revolution depends more on the debt of the company, its size and the institutional property that taints its structure. This phenomenon can be explained by the fact that to cover the losses suffered by these companies after the revolution following the deterioration of the economic fabric in recent years, they resorted to debt as a first solution. In order to hedge against the risk of non-payment, institutional institutions require higher collateral and are more dissatisfied with corporate governance depending on the size of the company and the size of its debt (Cornett et al (2008), Faccio and Lasfer (2000)).

• Before the revolution, there was a significant relationship between financial performance on one side and the existence of an audit committee and managerial property on the other.

These results lead us to argue that Tunisian listed companies were better organized and followed legal and legal instructions better than after the revolution, and that the financial performance of these companies depends very much on this rigor, which attracts the trust of investors and customers (Beasley 2001, Morck et al 1988, Dimitropoulos and Asteriou (2010)).

The behavior of Tunisian companies changed after the revolution. This revolution was aimed at improving the national system and recovering the country's wealth in order to achieve better growth and strategic governance of the country in general and of the companies in particular. However, these objectives are far from being met, and the 2011 revolution allowed the various parties who were against good governance to negatively affect investor confidence in auditors and the performance of the company. It's a crisis of the crisis

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