Corporate Governance, Performance and Efficiency:

Case of the Tunisian Listed Firms

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Abstract

The purpose of this article is to develop a synthetic index to evaluate the firms' practices with regard to corporate governance and this based on the stochastic frontier methodology, and stalled on the level of performance achieved by Tunisian Listed firms.

The sample used makes it possible to determine the effect of the corporate governance characteristics on performance as well as the effect of the firm-specific features on the level of efficiency. The profile study of calculated efficiency indices shows that Tunisian firms in general and, especially, those belonging to the financial sector (represented mainly by banks) suffer from a problem of governance.

Keywords: corporate governance, efficiency, index, performance, governance mechanisms, stochastic frontier, Tunisian listed companies…

JEL Classification: G34, C01, C13

1. Introduction

Many striking examples of scandals such as Enron and WorldCom in the United States, Marconi in the United Kingdom and others around the world were caused or worsened by weak governance; this attracted the attention of the financial community as to the accuracy of the simple use of the firm's profitability or growth prospectuses in the evaluation of the firm.

Several studies have shaped measures of corporate governance, and studied the impact of these measures on the performance of firms (Gompers et *al.* 2003; Bebchuk et *al.* 2004; Core et *al.* 2006; Gillan, Hartzell and Starks, 2003; Samontaray 2010; Varshney et *al.* (2012), Zitouni, 2016 and Kaur and Vij, 2018). The corporate governance measure of Gompers et *al.* (2003) is a governance index (G-Index) composed of 24 distinct corporate governance provisions developed by the Investors of The Investor Responsibility Research Center (IRRC).

According to Bebchuk et *al.* (2004) some of these provisions may be more interesting than others and some of them may be correlated. Therefore, they built an index composed of six provisions.

However, the majority of these studies face certain conceptual limitations. Indeed, the indices considered assume that governance is a linear function of the chosen mechanisms and that they are equal-weighted, which is not the case. In fact, Morck et *al.* (1988) have shown that performance is a nonlinear function of managerial ownership. In addition, some research has focused on a particular aspect of governance in the development of governance measures such as the independence of the board (Hermalin and Weisbach (1998, 2003)), the ownership of directors (Bhagat, Carey and Elson (1999)) and duality (Brickley, Coles and Jarrell (1997)).

Furthermore, some authors have attempted to synthesize governance practices based on a very specific sample, such as Black (2001) in Russia; Black et *al.* (2006) in Korea (in the context of emerging countries) and Gompers et *al.* (2003), Core et *al.* (2006), and Gillan, Hartzell and Starks (2003) in the American context.

Hence, what motivates us to embark on this path of research lies first and foremost in the originality of the theme that breaks with the classic framework of the relationship between governance and performance. Then, there is a challenge to try to identify the scanty character of previous research in this field, including the small number of governance mechanisms studied. Finally, the existence of a theoretical controversy over quite a large number of points leads us to attempt an empirical analysis likely to better perceive the various approaches.

Thus, in this work, we try to contribute to the literature that deals with the relationship between corporate governance and performance by taking into account the interaction between the various mechanisms of governance as well as the criticisms addressed to the level of quantification of governance score using an efficiency score-based approach, the stochastic frontier approach, in order to calculate indices reflecting the (in) efficiency of governance. In addition, the choice of Tunisian companies is in itself is a contribution as there is not yet an existing governance measures for listed Tunisian companies (Khiari and

Lajmi, 2018).

2. Corporate governance and efficiency: a literature review

The concept of efficiency emphasizes the quality of the organization and strategic decisions in the markets. It measures not only the financial performance but also the productive performance.

This approach to efficiency focuses attention on the quality of internal management and the quality of strategic choices. It can be considered as measuring managerial efficiency. It is also a useful tool for benchmarking, since the determination of the boundary makes it possible to identify efficient firms that have "best practices" and can therefore serve as a reference for others.

The article by Leibenstein (1966) is certainly one of the classic works which, in conceptualizing the notion of X-efficiency, spoke primarily with the language of corporate governance.

Theories on corporate governance based on efficiency paradigm use a specific model of value creation (Bouaicha, 2015) which allows organization to achieve its objective and reach its survival. Thus, corporate governance characteristics allow firms to improve their efficiency by creating maximum value.

Within this framework, Zelenyuk and Zheka (2006) tried to empirically study the efficiency of firms in an explicit way in the context of corporate governance. They show the existence of a positive relationship between the quality of the corporate governance of the firm and its level of relative efficiency. According to them, this result provides empirical support to Liebenstein's idea that the major source of efficiency is the motivation at each level of management / ownership.

This also supports the idea of Stulz (1998) which says that the establishment and strengthening of corporate governance principles should significantly improve individual businesses and the entire economy, at least because of the efficiency of the resources used. It also result in a negative relationship between the shares held by the state and the efficiency level of the firm, which converges with previous studies (Brown and Earle, 2000, Andreeva, 2003, and Melnychenko, 2002).

In the same context, El Mir and Khanchel (2004) tried to identify efficient governance that is apprehended by the ownership structure and the effectiveness of the control exercised by the board of directors. Based on a sample of 331 US listed firms, for the period 1994-2001, they synthesized governance practices by an index calculated using a non-parametric method, the data wrapping method, which takes into account the nature of the relationship (linear or not, endogenous or exogenous) between the inputs (the control system) and the outputs (the performance). The results they have achieved show that the majority of companies are moderately efficient.

Also, Khiari et *al*. (2007) attempted to investigate the association between performance and the specific characteristics of a sample of American companies. And in order to achieve that

they used a governance efficiency index, calculated using the stochastic frontier method. The purpose of using a latent class structure that is not observable in the sample specification is to establish several levels of efficiency for firms according to their intrinsic characteristics. This structure allowed discerning two groups of companies. The results obtained show that the probability of being in the best performing group is even more important than the stock market return, the size of the company, and a high ROE, whereas a high level of debt seems to increase the chance of being in the lowest performing group. The calculation of the governance indices also shows a significant increase in the index of (in) efficiency over the years. This increase occurred between 1999 and 2001 and could be explained by the very dramatic falls of large American companies.

3. Research Methodology

The objective of this work is to develop a synthetic index that evaluates the firms' practices with regard to the corporate governance. The creation of the model takes, as a starting point, a basic idea that there is a real willingness on the part of firms to comply with international standards of governance and to combine, therefore, the best practices in governance in order to achieve a high level of performance.

The chosen approach is econometric and is based on the stochastic efficiency frontier method. The *proposed governance index* is presented as *an efficiency score* that reflects, for each firm, the distance that separates it from an efficiency frontier expressing "best practices" in terms of corporate governance.

This method makes it possible to determine the possible ways to access "best practices" for N decision-making units (companies), by varying the inputs (the governance variables) or by varying the outputs (the performance apprehended by Tobin's Q) or by combining these two ways.

However, the theoretical and empirical literature shows a tendency towards the decomposition of the indices of governance into sub-indices. Given that the governance mechanisms we use are internal and related solely to the features of the board of directors and the ownership structure, we will create two sub-indices reflecting respectively the efficiency of the board of directors and the efficiency of the ownership structure. The same principle is applied: for each index, it is a question of how to regress the variables related to performance, and how to draw an index of efficiency which translates, for each firm, the distance separating it from applying the best practices on the board of directors and the ownership structure.

3.1. Sample and variables presentation

The study covers 46 Tunisian companies listed on the Tunis Stock Exchange and over a period of 15 years from 1996 to 2010, which means 690 observations. All data was collected from the annual reports present on the following sites: www.bvmt.com.tn, and www.tustesx.com.tn. Most of the companies in the sample belong to the financial sector (52.19%) while the rest are industrial companies (26.08%) or services (21.73%).

Governance is captured by a number of ownership structure and board variables *(as shown in Table 1).* Whereas the performance is apprehended by the logarithm of Tobin's Q, This latter is measured by the ratio between market capitalization and total assets.

Table 1. Definition and Measurement of Governance Variables

Variables		Definitions and Measures
Board of Directors	**BOSIZE**	Board size = number of directors on the board
	OUTDIR	Percentage of outsider external directors on the board = number of outside directors / total number of directors on the board
	DUAL	A dummy variable that takes the value 1 if the manager is a member of the board and 0 otherwise.
	DIRMAND	Directors' term of office: number of years as a member of the board of directors
	MANMAND	Manager's mandate: number of directors' mandates.
	CEOTURN	CEO turover: A dummy variable that takes the value 1 if the CEO has been replaced and 0 otherwise
Ownership Structure	**FAMOWN**	percentage held by families
	OWNCON	The percentage of capital held by the majority shareholders (greater than 5%)
	STATOWN	The percentage of capital held by the State
	INSTOWN	The percentage held by institutional investors
	DIROWN	The percentage held by the directors
	MANOWN	Managerial ownership: The percentage held by the manager
Audit Committee	**AUDIT**	A dummy variable that takes the value 1 if there is an audit committee and 0 otherwise.
	BIG4	A dummy variable that takes the value 1 if the audit firm is big4 and 0 otherwise.

3.2. Econometric Model

Also known as the "compound error model", the Stochastic Frontier Approach breaks down the error term of the studied function into two parts. The first represents random effects and measurement errors and the second represents the degree of inefficiency. The Stochastic Frontier Approach is characterized by taking into account a single output (production, cost, profit) and multiple inputs, and it is also known especially by the hypothesis of the existence of special relations that connect the output to the inputs. The goal is to derive a measure of performance, called "efficiency".

The model of the Stochastic Frontier can be written as follows:

$$y_{ft} = f(x_{ft}, t, \beta) + \varepsilon_{ft} \quad \text{with} \quad \varepsilon_{ft} = v_{ft} - u_{ft}$$

$$\text{and} \ u_{ft} \to [N(m_{ft}, \sigma_u^2)] \quad \text{and} \ v_{ft} \to N(0, \sigma_v^2)$$

f(.) is the theoretical function of production or cost, y_{ft} is the output of the firm f at the date t, x_{ft} is the level of the input j and β is the vector of the parameters to be estimated. In our case, y_{ft} is the level of the company's performance f at the date t measured by the Logarithm of the Tobin'Q. X_{ft} is the vector of the explanatory variables associating respectively the characteristics of the board of directors and the structure of ownership of the company f during the year t;

The v_{ft} are the random error terms which are independently and identically distributed and uncorrelated with the regression coefficients. v_{ft} mainly captures measurement errors and shocks with a white noise character. u_{ft} are non-negative random variables associated with the (in) efficiency of the firm. In the second part of the model, the term (in) efficiency is an explicit function of the k explanatory variables, $z_{k,ft}$, is associated with the specific characteristics of the firms present in our study. In our case, the specific characteristics of the selected firms are presented in *Table 2*.

Table 2. Definitions and measurements of control variables

Variables	Measures
Period	The period between the IPO date of the company and the date of the study.
Sector	The business sector to which the company belongs. This variable is set to 1 if the business belongs to the financial sector and 0 otherwise
Age	Age of the company
ROE	It is the ratio "Return On Equity", it measures the ratio between the net profit and the equity of the company
INDEBT	The level of indebtedness of the company measured by the logarithm of total debts
SIZE	It is the size of the firm measured by the logarithm of total assets

u_{ft} are independently but not identically distributed:

$$u_{ft} \rightarrow N(\delta_0 + \sum_{k=1}^{M} \delta_k z_{k,ft}, \sigma_u^2)$$

The stochastic frontier model is often specified in log, the (in) efficiency term can be interpreted as the deviation from the observed performance and the estimated performance.

The firm's performance frontier is: $y_{ft}^* = \beta' x_{ft} + v_{ft}$

Our focus is on measuring the efficiency or inefficiency of the firm. Thus, the efficiency of the firm i at the date t is $\exp(y_{ft}^*)/\exp(y_{ft}) = \exp(-u_{ft})$ with $y_{ft} = \beta' x_{ft} + v_{ft} - u_{ft}$. It is often more convincing to analyze inefficiency, 1-exp(-u_{ft}).

The most common assumption in the literature is that u_{ft} follow a semi-normal distribution (absolute value of a normal distribution $(0, \sigma_u^2)$).

$$V_{ft} \sim [N\,(0,\,\sigma_v^2)] \qquad U_{ft} = |U_{it}| \text{ or } U_{it} \quad \sim [N\,(0,\,\sigma_u^2)].$$

In order to estimate the different parameters of the model, we write the likelihood function in the following way:

$$\ln L(\beta, \sigma^2, \gamma, \eta) = -\frac{1}{2}\sum_{f=1}^{F} T_f(\ln(2\pi) + \ln(\sigma^2)) - \frac{1}{2}\sum_{f=1}^{F}(T_f - 1)\ln(1-\gamma) - \frac{1}{2}\sum_{f=1}^{F}\ln(1 - \gamma - \gamma\eta_f'\eta_f) - F\ln\left(\frac{1}{2}\right) +$$

$$\sum_{f=1}^{F}\ln\left(1 - \Phi\left[\frac{-\gamma\eta_f'\varepsilon_f}{\sqrt{\gamma(1-\gamma)\sigma^2[1+(\eta_f'\eta_f - 1)\gamma]}}\right]\right) + \frac{1}{2}\sum_{f=1}^{F}\left(\frac{-\gamma\eta_f'\varepsilon_f}{\sqrt{\gamma(1-\gamma)\sigma^2[1+(\eta_f'\eta_f - 1)\gamma]}}\right)^2 - \frac{1}{2}\sum_{f=1}^{F}\frac{\varepsilon_f'\varepsilon_f}{(1-\gamma)\sigma^2}$$

Where $\sigma^2 = \sigma_u^2 + \sigma_v^2$, $\gamma = \sigma_u^2/\sigma^2$, $u_{ft} = \exp(-\eta(t-T))$, and $\varepsilon_{ft} = u_{ft} - v_{ft} = \ln C_{ft} - \beta' x_{ft}$.

The estimated maximum likelihood of this function generates the estimate of all parameters of the frontier function as well as σ^2, η and γ.

In this model, the effect of firm inefficiency f at time t, u_{ft}, is defined as the product of the exponential function of time, $\exp(-\eta(t-T))$, involving an unknown parameter, η, which informs about the efficiency feature and the non-negative random variable u_{ft}.

If η is positive then $-\eta(t-T) = \eta(t-T)$ is positive for t inferior to T and consequently $\exp(-\eta(t-T)) > 1$ which means that the (in)efficiency decreases with time. If η is negative then $-\eta(t-T) < 0$ and consequently the (in)efficiency evolves over time.

A value of $\gamma = 0$ indicates that the deviations around the frontier are entirely due to white noise, while a value equal to unity indicates that all deviations are due to (in) efficiency. Knowing that $\gamma = \sigma_u^2 / \sigma_u^2 + \sigma_v^2$ is between 0 and 1.

Once the likelihood function is estimated, the residual term can be derived by substituting the vector of the estimated parameters β of the cost function. Battese and Coelli (1992) show that efficiency is given by:

$$X - EFF = E\left[\exp(-u_{ft}) \Big/ \varepsilon_f\right] = \frac{\phi\left(\mu_f^*/\sigma_f^* - \eta_{ft}\sigma_f^*\right)}{\phi\left(\mu_f^*/\sigma_f^*\right)}\exp\left(-\eta_{ft}\mu_f^* + \frac{1}{2}\eta_{ft}^2\sigma_f^{*2}\right)$$

With
$$\mu_f^* = \frac{-\eta_f'\varepsilon_f\sigma_u^2}{\sigma_v^2 + \eta_f'\eta_f\sigma_u^2} \qquad\qquad \partial_f^{*2} = \frac{\sigma_v^2\sigma_u^2}{\sigma_v^2 + \eta_f'\eta_f\sigma_u^2}$$

An efficiency value - X equal to unity indicates the efficiency of the firm. Thus, the closer you get to the unit, the more the company in question is efficient. However, a value close to zero indicates low governance efficiency.

4. Empirical results

4.1. Estimation of the efficiency frontier related to the characteristics of the board of directors

The results of the estimation based on the maximum likelihood method related to the board characteristics and control variables are presented in the following table:

Table 3. Results of the estimation of the efficiency frontier related to the characteristics of the board of directors

Variables	Estimations	Std. Err.	Prob
σ^2	-0.1423	0.0201	0.0000
η	-3.6795	0.9238	0.0007
Constante	-1.9987	0.7128	0.0057
OUTDIR	-0.2045	0.1032	0.0943
BOSIZE	-0.2546	0.2673	0.4768
AUDIT	-0.2537	0.1137	0.0176
Big4	0.3112	0.0764	0.0076
DUAL	-0.0653	0.1121	0.4963
DIRMAND	-0.1132	0.0327	0.2765
MANMAND	0.0187	0.0099	0.0000
CEOTURN	-0.4178	0.0895	0.0000
γ	0.4256	0.1620	0.0000
ROA	0.7467	0.3701	0.0005
Size	0.1798	0.0263	0.0000
INDEBT	-0.5457	0.1467	0.0006
Industrial	0.5231	0.3762	0.0520
Service	0.6342	0.2991	0.0310

Results show a negative but insignificant effect of the size of the Board and the combination of the functions of Chairman of the Board and Chief Executive Officer on the performance.

Regarding the presence of outsiders in the board, the table above shows a negative and significant relationship between this variable and performance. This result can be explained by the fact that a board of directors dominated by external members can harm shareholders' interests because they place too much emphasis on their supervisory role rather than on their role as advisers.

Similarly, the results show a negative and significant effect of manager turnover on performance. This implies that the change of the manager is likely to lower the performance. Indeed, several authors show that the more the leader is rooted, the more he will tend to increase the value of the company since he is concerned and affected by any trouble that may harm the interests of the company, so he would be motivated to favor the company's long-term performance, which supports the convergence of interest argument. In addition, the company could benefit from the knowledge and experience of executives who have spent several years in their department.

However, we note a positive effect on the performance when the external audit is a member to one of the large firms as well as the number of mandates of the manager. This result finds its explanation in the rooting thesis. This can be associated with the fact that the longer the period the audit is in the company, the more it become experienced and knowledgeable of the specificities of the company, which facilitates decision-making and will have a positive effect on performance. On the other hand, the auditor is, because of his expertise, a trusted provider. He ensures the statutory audit of the accounts in the interest of the shareholders. Throughout his mission, he assesses the internal control procedures and rules, as well as the degree of compliance of the financial statements prepared with the Generally Recognized Accounting Principles. His role aims to reduce the asymmetry of information due to the opportunistic behavior of managers. Thus, strengthening the quality of the audit allows at best the reduction of asymmetric information. Owners as well as managers have an interest in adopting an audit deemed more efficient. It allows the shareholders to value their investment by better controlling the wealth of the firm and the managers to report the quality of their management.

4.2. Estimation of the efficiency frontier related to the ownership structure variables

The results of the maximum likelihood estimation for the ownership structure are presented in the following table:

Table 4. Results of the estimation of the efficiency frontier related to the ownership structure variables

Variables	Estimations	Std. Err.	Prob
σ^2	0.1978	0.0147	0.0000
η	-3.0098	0.9879	0.0004
Constante	-2.7865	0.3234	0.0000
OWNCON	-0.0960	0.1755	0.5298
STATOWN	-1.3426	0.5678	0.0125
INSTOWN	-0.1332	0.3122	0.0085
ADMOWN	1.3725	0.4761	0.0022
FAMIOWN	0.0184	0.2067	0.7398
MANOWN	-1.8964	1.7956	0.8561
γ	0.0174	0.0039	0.0000
ROA	0.8722	0.3351	0.0001
Size	0.1736	0.0365	0.0000
INDEBT	-0.7360	0.1728	0.0100
Industrial	0.5427	0.1735	0.0216
Service	0.6013	0.3421	0.0235

According to these results, the company's performance reacts negatively to the increase in the concentration of the ownership since the coefficient obtained is negative but not significant, implying neutrality in the concentration / performance relationship.

Institutional ownership results show a negative and significant relationship between this variable and performance. Indeed, various studies have examined the impact of institutional

investor presence on performance, and have led to the fact that the presence of institutional investors can lead to an improvement in performance. This result was explained by the fact that institutional investors are best able to encourage managers to increase the development of new products through commitment to research and development expenses.

Also, the training of large institutional investors could nevertheless strengthen corporate governance, because they have both the will and the ability to monitor the performance of a company and a significant power to take action in this regard. If institutional investors influence managers' decisions in order to maximize the return on their investments, the value of the business, agency costs decrease and performance improves.

With respect to state-owned property, the results we have achieved indicate that the lower the state's ownership interests in the property, the lower the performance. This result shows that the presence of the state is likely to affect performance.

Regarding the managerial ownership, we note a positive and significant effect of this variable on performance. In fact, according to some authors, the proportion of capital held by the directors appears to be a determining factor in the firm's performance. This result can be explained by the fact that the percentage of capital held by the directors is supposed to favorably influence the control of the directors by encouraging the members of the board to defend their interests more harshly. As a result, the greater the share of capital held by directors, the less bad management is allowed.

4.3. The influence of the firm-specific characteristics on efficiency

The model used has the advantage of determining the effect of firm-specific characteristics on the level of efficiency. This work will enable us to establish a link between the governance related to the ownership structure, the board of directors and some observable characteristics specific to the firms as this relation was discussed in many research works related to the relation between firms characteristics and performance (Arora and Bhandari, 2017), notably the size, the level of indebtedness, the return on the assets (ROA) and the business sector.

The results obtained show a globally significant impact of all the control variables used on the level of efficiency of the ownership structure and the board of directors. This shows that firm-specific characteristics are important determinants of the efficiency of the governance mechanisms of Tunisian listed companies.

The results in *Tables 3 and 4* show a similarity in the relationship between a firm-specific characteristics and efficiency indices. We note a positive effect of the size, the affiliation to the sector of industry and service and the asset profitability on the level of efficiency of the firms in the sample. This indicates that the governance system is efficient in large companies. Indeed, they have the means and the capacity to invest in more efficient and sophisticated governance systems. They are also motivated to do so because they want to maintain their competitive position and reputation on the stock market. These results are consistent with those of Black et *al*. (2006) who affirm the existence of a positive relationship between governance and the size of the firm.

However, we note a negative effect of indebtedness on efficiency. In other words, inefficiency arises both from a failure in the ownership structure and at the level of the board structure. This result shows that the most indebted companies suffer from an inefficient governance system.

Further, these results show that in the financial sector (represented mainly by the banks), the governance system is inefficient, which reflects the reality of Tunisian companies in this sector. Indeed, the specificity of the sector strongly influences the governance system of companies in this field. This sector is more complex as it includes several partners with divergent interests. It is characterized by external mechanisms with controversial effects and a discipline exerted by ineffective or limited markets.

4.4. Characteristics of efficiency indices

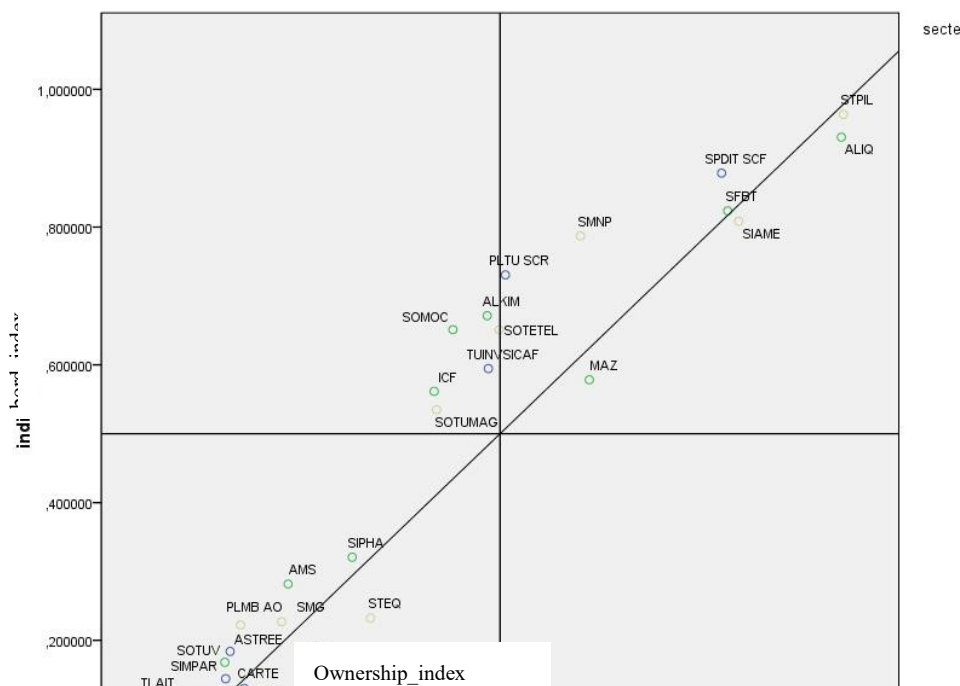The goal of this section is to study the profile of calculated efficiency indices.

Figure 1. Classification of companies by means of the averages of efficiency indices

This figure shows the distribution of Tunisian listed companies based on average indices reflecting the efficiency of corporate governance. The results obtained show that the majority of Tunisian listed companies are relatively characterized by a poor efficiency in terms of governance practices related to the ownership structure and the board of directors. Indeed, this theme is not yet very developed in Tunisia, and Tunisian companies do not have a code of good governance practices that they are supposed to follow and apply the recommendations. It was only in 2008 that Tunisia put in place a code expressing best practices in governance. However, the rules in this report are a bit general and their

application is not forced.

Nevertheless, only five companies are, on average, efficient in terms of governance (Sotrapil, SFBT, SIAME, Air Liquide and SPDIT Sicaf), which corresponds to 10.87% of the companies in the sample. Indeed, we notice that in class 3 (poor efficiency) the majority of companies belong to the financial sector. Similarly, class 1 (good efficiency) shows that the majority of companies with good governance practices are non-financial enterprises, which shows that Tunisian firms in general and particularly those in the financial sector (represented mainly by the banks) suffer from a problem of governance. Indeed, banks are more opaque than other firms, (Furfine, 2001). In other words, they present problems of transparency towards all the constituents of their internal and external environments. They are characterized by distinct and accentuated agency problems compared to other firms, which are generated mainly by the information asymmetry existing between all the players in the banking sector (Llewellyn, 2001). This information asymmetry affects the relations between the directors and the members of the bank's board. It also affects the relations between these "interns" and the shareholders.

5. Conclusion

This work aims to develop a synthetic index of corporate governance practices, based on the stochastic frontier method, which is determined by the level of performance achieved by different firms.

In addition, the adopted model has the advantage of evaluating the quality of the governance practices of each firm, and offering benchmarking tools since the determination of the frontier makes it possible to identify the efficient firms that have the 'best practices', and can therefore serve as a reference for others. It also enables businesses to identify ways to access "best practices", which are a guarantee of better performance. On the other hand, the model makes it possible to determine the effect of corporate governance characteristics on performance as well as the effect of firm-specific characteristics on efficiency indices.

The results obtained show a globally significant impact of firm-specific characteristics on the level of efficiency of the ownership structure and the board of directors. This shows that firm-specific characteristics are important determinants of the efficiency of the governance mechanisms of Tunisian listed companies. Moreover, the results obtained show that in the financial sector (represented mainly by banks), the governance system is inefficient, which absolutely reflects the reality of Tunisian companies in this sector.

Nonetheless, it is important to mention that there are some caveats that should be considered. The sample used that covers only the pre-revolution period of the 14th of January 2011 makes our results less precise and cannot be generalized to the actual situation of the Tunisian firms. In fact, after the Revolution of January 14, 2011, Tunisians have lived a period of insecurity through its struggle with terrorism and strikes which deepened instability and delayed economic recovery. Tunisia's economic difficulties become even more important with the debt crisis of its main economic partner, namely the European Union. Moreover, the former regime and its allies engaged in conspicuous and predatory corruption that undermined

investment and entrepreneurial incentives and sowed indignation over the lack of free and fair competition in the market place. For instance, poor governance of the banking sector has led to deep dysfunctions which made the banking system inefficient, highly vulnerable, characterized by low profitability, and especially unable to optimally allocate resources toward the productive activities resulting in weak economic performance and insufficient jobs creation.

We think that a comparison pre and post revolution can be very interesting and shows the impact of the Revolution of January 14, 2011 on the efficiency of the Tunisian governance system.

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