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CORPORATE GOVERNANCE AND INFORMATION TRANSPARENCY: A SIMULTANEOUS EQUATIONS APPROACH



Maali KACHOURI¹⁺ Anis JARBOUI²

¹Faculty of Economic Sciences and Management of Sfax, University of Sfax, Sfax, Tunisia

²Professor of Finance and Accounting, University of Sfax, Tunisia



(+ Corresponding author)

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The purpose of this paper is to review the relationship between corporate governance mechanisms and information transparency. In this paper, we aim to answer the important questions of whether corporate governance affects financial information transparency, if so, whether transparency reporting can affects corporate governance mechanisms and the interaction of internal and external governance mechanisms. This study uses a sample of 28 non-financial listed Tunisian companies and covers an eight-year period from 2006 to 2013. To test the hypotheses of this research, a simultaneous equation system model was applied. The results obtained shows that, for the Tunisians companies, financial transparency have a significant effect on board size and on audit quality. The current study also provides evidence that corporate governance mechanisms are interdependent. The findings may be of interest to those academic researchers, practitioners and regulators who are interested in discovering corporate governance practices in Tunisian context. This paper extends the existing literature, in the Tunisian context in particular, by examining the causal relationship between corporate governance and information transparency.

ABSTRACT

1. INTRODUCTION

Financial information transparency is a fundamental property of good governance practices. Financial information and corporate governance has been an object of research since the 1960s, recently, researchers have shown an increased interest in studying the relationship between corporate governance and disclosure information. Previous studies have reported that good corporate governance practices are aimed to improve communication policies with stakeholders and in particular the shareholders (Girard and Rakotonjanahary, 2006). Studies of Li (2010) show the importance of corporate governance in improving the disclosure of reliable information. However, these rapid changes are having a serious effect on financial information, because information transparency is addressed to external users of annual reports; it is, then considered as an external governance mechanism which helps protect against the managers' opportunism. However, these users most often exert external control over the firms. In this regard, corporate governance mechanisms would stand as means whereby agency conflicts can be monitored and managers are inspired to behave and act use with respect to shareholders' interests. In literature on corporate governance, the relative importance of financial information has been subject to considerable debate; because an effective corporate governance practice should help reduces the managers' opportunism behaviour and reducing information asymmetry. The information disclosure should serve to allow shareholders to control and monitor leaders through reducing information asymmetries. Consequently information transparency can be considered as a behaviour variable in so far as it constitutes the result of a predetermined choice. Similarly, the interrelationship between governance mechanisms has been investigated by several researchers. Although some research has been carried out on the interaction of governance mechanisms (Bathala et al., 1994; Agrawal and Knoeber, 1996) there have been few empirical investigations into the relationships between internal and external governance mechanisms. Indeed, the entireties of its arguments improve the existences of a causal relation between information transparency and corporate governance mechanisms. In this case, researchers have not treated this causal relationship in much detail. What is not yet clear is the impact of information transparency on corporate governance practices. This paper attempts to show that information transparency can affect corporate governance practices and explain the interaction of governance mechanisms. The major objective of this study was to investigate the nature of the relation between corporate governance and financial information transparency on the one hand, and the interaction of governance mechanisms on the other hand. The central question in this dissertation asks how corporate governance has an effect on financial information transparency and how this information can also change corporate governance practices. Data for this study were collected using financial statements available on the Tunis Stock Exchange (TSE) and Financial Market Council (FMC) websites. This study is one of very few studies which have investigated the causal relationship between corporate governance mechanisms and information transparency. Another potential problem is that the scope of my thesis may be too broad. In this area, it is my experience of working with corporate governance that has driven this research.

The remainder of this paper is organized as follows. Section 2 reviews previous literature and develops the hypotheses. Section 3 describes the methodology used. Section 4 evaluates the empirical results and finally, Section 5 concludes.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. The Interaction among Internal and External Governance Mechanisms

A large and growing body of literature has investigated the interrelation among internal and external governance mechanisms. Numerous studies have attempted to explain the hypotheses of substitution and complementarities between corporate governance mechanisms (Bathala *et al.*, 1994; Agrawal and Knoeber, 1996). In this regard, Agrawal and Knoeber (1996) found that there is an ambiguous relationship between institutional ownership and managerial ownership. Such finding seems consistent with the existence of a certain complementarity among these mechanisms. Thus, the authors have confirmed the negative relationship between managerial ownership and institutional ownership. In the same vein, Bathala *et al.* (1994) focuses on the predominance of a negative relationship between institutional ownership and capital concentration. This result seems to confirm the interrelationship between managerial ownership and institutional ownership. Hence the following hypothesis:

H1. Managerial ownership is negatively associated with institutional ownership.

Similarly, concerning the board functions, board is exclusively composed of externals directors can reinforcing the efficiency of the directors' board in this context, some authors have mainly been interested in question concerning board structure, they assert that a large board improves the predominance of outside directors in the board (Yermack, 1996; Hallock, 1997; Core *et al.*, 1999). Hence, our hypothesis:

H2. Board size is positively associated with percentage of outside directors.

In the same line of thought, Godard and Schatt (2005) noted that a large board size can ensure firm to run efficiently and to monitor managers carefully. Jensen and Meckling (1976) suggest that ownership concentration is negatively related with board size. In turn, Zajac and Westphal (1994) have found a negative relationship between

managerial ownership and outside directors' proportion in the board. This view is supported by Fernández and Arrondo (2005) who writes that a negative relationship between percentage of outside directors and shareholders blocks. Thus, the next hypothesis can be formulated as follows:

H3. Board size and outside directors' percentage is negatively associated with ownership concentration.

In American context, Fich and Shivdasani (2005) have discovered that the probability for the number of directors to grow, when the percentage of institutional investors is higher. Baudru and Kechidi (1998) suggests that institutional investors can be differ in their behaviour, when the firm characterized by higher percentage of institutional investors. This view is supported by Girard and Rakotonjanahary (2006) who write that institutional investors are more likely to play an active role for the sake of leaders as well as their board's structure. Hence the following hypothesis:

H4. The percentage of outside directors is positively associated with institutional ownership.

The external audit usually aims to apply good governance practices and helping in regulating the relationship among the various interest holders in the company (O'Sullivan and Diacon, 1999). Consequently, the existence of an interaction between external audit and governance mechanisms is confirmed. In this sense, Beasley and Petroni (2001) along with Lennox (2005) noted that outside directors help boards' directors to choose a better quality of the audit. In fact, an effective audit quality helps well guarantee the reliability of financial statements for administrators which should reduce the information asymmetry between them. Similarly, O'Sullivan (2000) has found that the proportion of external directors has a positive impact on audit quality. A high percentage of external directors on the board can promote control measures. Hence, our hypothesis:

H5. The percentage of outside directors is positively associated with auditor quality.

A relationship exists between institutional ownership and audit quality. In this context, Chan *et al.* (1993) proposes that the dominance of shareholders promote audit quality. However, Velury *et al.* (2003) along with Kane and Velury (2004) study on audit quality found positive relation between institutional ownership and audit quality. In the same line of thought, in Tunisian context, Shabou (2003) offers that institutional investors help in promoting the development of economic structures, which is likely to drive and incite their demand for a high external audit quality. Within the same study, Makni *et al.* (2012) have noted a positive relationship between institutional ownership and external audit quality. Hence, the following hypothesis can be formulated as:

H6. Institutional ownership is positively associated with auditor quality.

2.2. Corporate Governance Mechanisms and Information Transparency

Most researchers analyse corporate governance while and assuming that governance is an exogenous variable. However, recent research works have accounted the endogenous nature of certain governance mechanisms. Some authors focused on the endogenous character of managerial ownership in studying the relationship between managerial ownership and firm performance (Chan et al., 1993; Davies et al., 2005). Bhagat and Black (2002) suggest that firms' performance can influence the board composition. Similarly, they found that none performing firms increasing the percentage of outside directors. Demsetz and Lehn (1985) propose that corporate governance is related to the characteristics relevant of the director and of the firm. In this respect, among the first authors who have attempted to apply the simultaneous equations approach in studying the relationship governance-performance we can mention Agrawal and Knoeber (1996); Loderer and Martin (1997). To note, a simultaneous equations approach serves to take into account both of the endogeneity and causal effect. Switzer and Kelly (2006) apply simultaneous equations system to explain the interaction of four governance mechanisms, namely: board independence, managerial ownership as well as indebtedness level, and they found a significant impact of some governance mechanisms on performance. Given the corporate governance concept and importance of the transparency notion, verification of causal relationship is motivating. Hence, the following hypothesis can be formulated as:

H7. A causal relationship exists between governance mechanisms and financial information transparency.

3. DATA AND METHODOLOGY

3.1. Sample Selection and Data

This paper used a convenience sample of 28 Tunisian companies listed in the Tunisian Stock Exchange (TSE) relevant to the non-financial sector. The study period ranges from the beginning of 2006 to the end of 2013. Table 1 presents the distribution of the delisted firms of our sample. Thus, 28 firms and 224 observations will make up our sample construct, as depicted on table 1 below our database has been collected from the financial statements available on the Tunis Stock Exchange and Financial Market Council (FMC) websites. A small sample was chosen because of the expected difficulty of obtaining data, especially concerning corporate governance practices.

Table-1. Selection sample

Initial sample	77
Financial firms	(34)
Firms with insufficient data	(15)
Final sample	28
Study duration	5
Total observations	224

3.2. Methodology

This review of the inter-relationship among governance mechanisms, and financial transparency suggests that, from an econometric viewpoint, to study the causal relationship between corporate governance and information transparency and interdependence of governance mechanisms, one would need to formulate a system of simultaneous equations that specifies the relationships among the above mentioned variables. This model has previously been used by several research works, especially for the purpose of validating the causal effect between governance and performance, among which one can cite Bhagat and Bolton (2008) along with Switzer and Kelly (2006).

We specify the following system of six simultaneous equations:

Transparency = f (board size, outside directors' proportion, ownership concentration, institutional ownership, auditor quality, Z_1 , ε_1) (1)

Board size = f (transparency, outside directors' proportion, ownership concentration, institutional ownership, auditor quality, Z_1, ε_1) (2)

Outside directors' proportion = f (transparency, board size, ownership concentration, institutional ownership, auditor quality Z_1 , ε_1 ,) (3)

Ownership concentration = f (transparency, board size, outside directors' proportion, institutional ownership, auditor quality, Z_1 , ε_1) (4)

Institutional ownership = f (transparency, board size, outside directors' proportion, ownership concentration, auditor quality, Z_1 , ε_1) (5)

Auditor quality = f (transparency, board size, outside directors' proportion, ownership concentration, institutional ownership Z_l , ε_l ,) (6)

Where the Z $_{i}$ am vectors of control variables l and instruments influencing the dependent variables and the ϵ_{i} are the error terms.

To date various methods have been developed and introduced to estimates simultaneous equations. We estimate three-stage least squares (3SLS)² to allow for potential endogeneity and cross-correlation between the equations.

¹ Control variables are: leverage, firm size and ratios market-book

²Three - stage least squares, the first work on models Balestra and Nerlove (1966) to use methods of complete information, they need to understand the entire model and assume that the model is globally identifiable. Therefore it is assumed that all equations are identified or identified.

Financial transparency is measures by a voluntary disclosure index. In this context various empirical studies proposes a construction of voluntary disclosure index among which the work elaborated by Botosan (1997) which has the basis for several other empirical studies. Based on several previously studies (for instance, Patelli and Prencipe (2007)) this study attempts a construct of voluntary disclosure index that rests on the Botosan (1997) while including three information categories, namely: information on intangible assets, social and environmental information and governance information. The voluntary disclosure index consists of 83 items. In the checklist, each item scores 1 if it is disclosed and 0 if it is not disclosed (Gul and Leung, 2004). Voluntary disclosure index is the total of scores awarded for each item in the voluntary disclosure index. The disclosure index for each firm is then expressed in the form of a percentage.

Variable names	Measures
TRS	Voluntary disclosure index consisting of 83 items, which takes a value 1 if each item is
	disclosed, and 0 otherwise; scaled to have a value between 0% and 100%.
BSIZE	Board size is measured by the number of meetings of the board of directors
POD	dividing the number of outside directors with the total number of directors in the board
CONC	Proportions of shares held by the majority of shareholders of the company
INVI	Proportions of equities held by institutional investors
BIG	Dummy variable taking the value 1 when the company is
	audited by at least one "Big 4" and 0 otherwise
LEV	Total liabilities to total assets
MB	Ratio market-book
FSIEZ	Log of firm's total assets

Table-2. Summary of variables definitions

4. EMPIRICAL RESULTS

4.1. Descriptive Statistics and Uni-Variate Analysis

Table 3 presents the summary descriptive statistics. For each variable, we present the difference between transparent firms and non-transparent firms'3s using the Mann-Whitney U test⁴. Table 3 shows that both transparent firms and non-transparent firms have the same governance characteristics except for board size. These results indicate that both groups are characterized by similar governance systems. This finding can explain by the governance mechanisms imposed by the Tunisian guide to good governance practices, published in June 2008. Adoption of this guide implies that all companies have to follow the same governance practices with respect to governance mechanisms, namely, board directors, ownership structure and auditor quality. The single most striking observation to emerge from the data comparison was in the broad size. This finding corroborates the ideas of Yermack (1996) and Mak and Kusnadi (2005) who suggested that small size the boards, more effectives will be.

Surprisingly, no differences were found for the rest of governance mechanisms such as percentage of outside directors, ownership concentration, institutional ownership and audit quality, regarding information transparency.

³ We subdivide the sample through the median basis of voluntary disclosure index, two group of firms will presented, the first group with transparent firms and the second groups with non-transparent firms

⁴The Mann-Whitney U test is used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed.

Table-3. Descriptive statistics and results of univariate analysis of the two groups (groups of transparent firms and groups of non-transparent firms)

Variables	Groups	N	Z	P(z)
BSIEZ	Transparent(1)	118	2.272	0.023**
	Non transparent(2)	106		
CEO	Transparent(1)	118	0.422	0.673
	Non transparent(2)	106		
POD	Transparent(1)	118	-0.273	0.785
	Non transparent(2)	106		
CONC	Transparent(1)	118	-0.052	0.958
	Non transparent(2)	106		
INVI	Transparent(1)	118	1.494	0.135
	Non transparent(2)	106		
BIG	Transparent(1)	118	1.116	0.264
	Non transparent(2)	106		

BSIZE: Board activity is measured by the number of meetings of the board of directors: CEO: binary variable coded 1 if there is a duality function of the CEO, 0 otherwise, POD: dividing the number of outside directors with the total number of directors in the board, CONC: Proportions of shares held by the majority of shareholders of the company, INVI: Proportions of equities held by institutional investors, BIG: Dummy variable taking the value 1 when the company is audited by at least one "Big 4" and 0 otherwise

4.2. Regression-Analyses Results

The results obtained from 3 SLS regression of simultaneous equation system are presented in In Table 4. Prior to presenting the simultaneous equations results, it seems essential to check the endogeneity of the model's variables through application of the Hausman test 5 . The Hausman test indicate that all our equations shows a chi-square significant at the 1% level (p = 0.000). This implies that the exogeneity hypothesis of the model's variables is confirmed.

Table-4. Simultaneous equations results (3SLS method)

	Model 1 TRS	Model 2 BSIZE	Model 3 POD	Model 4 CONC	Model 5 INVI	Model 6 BIG
TRS		-2.577 (.019)*	0.063 (.653) ns	-0.036 (.886) ns	0.011 (.929) ^{ns}	-0.782 (.002) ***
BSIZE	-0.009 (.019)*		0.028 (.001) ***	-0.020 (.185) ns	-0.0031 (.690) ns	-0.069 (.000) ***
POD	0.014 (.003)***	1.769 (.001) ***		0.609 (.000)***	-0.000 (.992) ^{ns}	0.629 (0.000)***
CONC	-0.002 (.022)**	-0.383 (.185) ns	0.182 (.000)***		0.150 (.000)***	-0.333 (.000)***
INVI	0.002 (.929) ns	-0.223 (.690) ns	-0.000 (.992)	0.565 (.000)***		0.257 (.042)**
BIG	-0.054 (.002) ***	-1.336 (.000)***	0.193 (.000)***	-0.340 (.000)***	0.070 (.042)**	
LEV	-0.079 (.046) **	-1.225 (.065)**	0.345 (.000)***	-0.306 (.044)**	0.093 (.236) ^{ns}	-0.762 (.000)***
FSIZE	-0.003 (.667) ns	1.080 (.000)***	-0.029 (.126) ^{ns}	0.060 (.083)*	0.023 (.184) ^{ns}	0.181 (.000)***
MB	0.007 (.001) ***	-0.056 (.160) ^{ns}	0.111 (.026)**	0.006 (.457) ^{ns}	0.008 (.080)*	0.027 (.002)***
R-square	0.145	0.332	0.283	0.247	0.155	0.370
Endogeneity test	χ2=143.43***	* \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	5* χ2=162.59* *	** χ2=157.54***	χ2=2457.4.	5***

Statistical significance: $\dagger p < .10; *p < .05; **p < .01; ***p < .001.$

battering metalet. Ip 5.103, p 5.037, p 5.037, p 5.037.

VDI :Voluntary disclosure index consisting of 83 items p, which takes a value 1 if each item is disclosed, and 0 otherwise; scaled to have a value between 0% and 100,BSIZE: Board activity is measured by the number of meetings of the board of directors, POD: dividing the number of outside directors with the total number of directors in the board, CONC: Proportions of shares held by the majority of shareholders of the company ,INVI: Proportions of equities held by institutional investors, LEV: Total liabilities to total assets, BIG: Dummy variable taking the value 1 when the company audited by at least one "Big 4" and 0 otherwise; FSIEZ: Log of firm's total assets, MB: book to market ratio

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⁵ Implementation of simultaneous equation approach requires certain conditions to be verified, namely, the existence of endogeneity among variables. This condition consists in checking the existence of endogeneity among variables through applying the Hausman test Davidson, Goodwin-Stewart and Kent (2005).

The first model presents the impact of corporate governance mechanisms on financial transparency. The results, as shown in table 5, indicate that board size is negatively related to voluntary disclosure. This finding is in agreement with Chen and Jaggi (2000) which suggested that a small-size board helps strengthen managerial control. Similarly, a positive correlation was found between the percentage of outside directors and voluntary disclosure index. This result may be explained in part by the fact that the success of independent directors board, as an internal mechanism of control to provide better protection for minority shareholders who do not have access to a privileged level of information. This finding further support the idea of Chen and Jaggi (2000) as well as Lim et al. (2007). Ownership concentration has a negative effect on information transparency. A possible explanation for this might be that when capital is concentrated, the majority shareholders' dominance hinders the interests of minority shareholders at the level of information access. These results match those observed in earlier studies (Makhija and Patton, 2004; Khlifi and Bouri, 2007; Loukil and Triki, 2008; Chakroun and Matoussi, 2012). One unanticipated finding was that institutional ownership have no a significant effect on information transparency. Another surprising result that audit quality has a negative effect on financial transparency. It seems possible that these results are due to friendly relationship between manager and auditor, especially in our Tunisian context. The finding observed results which corroborate the finding of great deal of the previous work in this field. With regard to control variables, further analysis showed that leverage and firms' size have a negative impact on information transparency, the finding of the current study are consistent with those of Raffournier (1990). This result may be explained by the fact that the large companies do not have the advantage of being visible vis-à-vis banks and the financial market. However, a positive correlation was found between market-to-book-ratio and information transparency. This finding is in agreement with Durney and Kim (2005) finding which showed that firms with large growth opportunities seem have a greater value. In the second model, the dependent variable is the board size. There was a significant negative correlation between information transparency and board size. Indeed, information transparency affects negatively the board size. This refers us back to the first equation, which supposes that the causal relationship between transparency and board size proves to be confirmed. Strong evidence was found that outside directors' proportion is positively related to the board size. It seems possible that these results are due, because when board size is large, the percentage of outsides directors increases. In this regard, it can be noticed that the more the board size increases, the more the good governance practices will be applied. Such finding corroborates the idea of Kole and Lehn (1999) as well as Bushman and Smith (2001) who suggested that a large board helps greatly in controlling managers. There was no significant correlation between ownership concentration and institutional ownership with board size. Although, these result differ from some published studies (Fich and Shivdasani, 2005) they are consistent with those of proposes a significant relationship between board size and ownership concentration. As for, audit' quality have a negative impact on board size, this result may be explained by the fact that audit quality inefficient when board size is large. Similarly, leverage and ratios market-to book are negatively associated with board size, when debt level and growth opportunities is low, board size is large. In the third model, the dependent variable is outside directors' percentage. In this context, there was no significant correlation between, information transparency and outside directors' percentage. Regarding the interaction among governance mechanisms, the result as shown table 4, indicate that board size positively affect the percentage of outside directors. A possible explanation for this result may be that a large board mainly involves outside directors, which highlights the existence of a direct relationship between large board size and a high percentage of outside directors. Surprisingly, ownership concentration is positively affecting the percentage of outside directors. This finding is in agreement with Charreaux (1996) findings which showed that the board independence constitutes the least expensive mechanism whereby, executives' can be controlled. However, there was no significant correlation between institutional ownership and firm size with the percentage of outside directors. Another important finding was that audit quality, leverage level, and growth opportunities have a significant and positive impact on the percentage of outside directors. A possible explanation for this result may be the independence between, audit quality and the internal governance mechanisms. In the fourth model, the dependent variable is ownership concentration. It

is apparent from table 4 that no significant differences were found between information transparency and ownership concentration. What is interesting in this model is that outsides directors have positively influence ownership concentration. This finding supports previous research into this brain area which link ownership concentration and proportion of outside directors (Bathala et al., 1994; Agrawal and Knoeber, 1996). Then, audit quality and leverage level are negatively correlated with ownership concentration, this result may be explained by the fact that more capital is dispersed, more audit quality decreased. In the fifth model, the dependent variable is institutional ownership. As table 4 shows there were no significant impact of information transparency on institutional ownership. Regarding the interrelationship among governance mechanisms, regression proves that board size, percentage of outside directors, leverage and firm size has no significant effect on institutional ownership. This problem has been raised by certain researchers, namely, Black et al. (2003) who posed the question whether good governance practices help encourage investors to better assess the company value. These finding support the idea that market-to-book ratios have a positive impact on institutional ownership. Indeed company with large growth opportunities is essentially characterized by high institutional ownership. In sixth model, the dependent variable is audit quality, what is interesting in this model is that financial transparency has a significant and negative impact on audit quality. These result suggest that, with successive increases in level of the information transparency, the audit quality moved further to decreases. The interaction among governance mechanisms is highly appreciated at this level. Overall, all models' variables have a significant impact on audit quality. Indeed, this finding of the current study are consistent with those of Omri (2002); O'Sullivan (2000); Lennox (2005) who demonstrated the positive impact of the outside directors percentage and institutional ownership on auditor quality. Similarly, firm's size and market-to-book ratios, have a significant and effect on audit quality. However, leverage level has a negative impact on auditor quality, this result denoting that the indebted companies are those which hire high-quality auditors. In summary, these result show that financial information transparency have significant impact just on board size and audit quality. Regarding interaction between governance mechanisms, taken together, these results suggest that there is interdependence between internal and external governance mechanisms. The present results are significant in at least major respects. However, more research on this topic needs to be undertaken before the association between corporate governance and information transparency is more clearly understood.

5. CONCLUSION

This study set out to determine the interrelationship among internal and external governance mechanisms and causal relationship between these mechanisms and financial information transparency. The most obvious finding to emerge to this study is that financial information transparency have an impact on board size and on audit quality, the second major finding was that corporate governance mechanisms are interdependent. This is the first study reporting an advantage in those who financial transparency can effect governance mechanisms. Although the current study is based on a small sample of firms, the finding suggests an important conclusion for Tunisian firms in the subject of corporate governance. However, with a small sample size, caution must be applied, as the findings might not be transferable to the all Tunisian companies. This research has thrown up many questions in need of further investigation. It would be interesting to assess the effects of information transparency on manager remuneration. Finally the finding of this study has a number of important implications for future practice.

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