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Propensity and comprehensiveness of corporate internet reporting in Egypt

Do board composition and ownership structure matter?

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Abstract

Purpose – The purpose of this study is to examine the impact of corporate governance attributes of listed Egyptian companies on the propensity (adoption) and comprehensiveness (quality) of corporate internet reporting (CIR) practices.

Design/methodology/approach – This study uses archival data from the largest (top) 100 listed companies on the Egyptian Stock Exchange (EGX 100). Corporate governance attributes are captured by ownership structure (free float, managerial ownership, government ownership) and board of directors' structure (board size, board independence, CEO-chair duality). Empirical models are used to estimate the effects of these attributes on the propensity, content, presentation, and overall comprehensiveness of CIR.

Findings – The results of this study indicate mixed effects of governance attributes on the choice to adopt CIR and its quality. The results from the Binary Logistic Regression suggest that Egyptian companies with greater (less) ownership dispersion, managerial ownership, governmental ownership, and (board independence) are more likely to adopt CIR. On the other hand – and as revealed by the seemingly unrelated regressions – among CIR companies those with greater (less) ownership dispersion, board size (governmental ownership), and (board independence) have more comprehensive CIR.

Originality/value – This study extends the relatively limited research on the effects of corporate governance and CIR in emerging markets. The study contributes to this literature by demonstrating how corporate governance attributes affects the choice to adopt CIR disclosure practices and the level of its quality in an emerging market such as Egypt.

Keywords Accounting, Corporate governance, Financial reporting, Ownership structure, Egypt, Free float, Seemingly unrelated regression

Paper type Research paper



1. Introduction

The recent developments in the field of information and communication technology have profoundly altered the ways corporate information is disseminated among stakeholders. Specifically the accounting function had to adapt to new information media such as the internet (Bonson and Escobar, 2006). Chan and

Wickramasinghe (2006) argue that corporate internet reporting (CIR) is advantageous for several reasons. First, CIR saves costs associated with paper-based reporting and facilitates frequent updating of information. Second, CIR allows wider dissemination of information than does paper-based reporting. Finally, CIR facilitates more efficient transfer and integration of information for better decision making.

Despite the prevalence of CIR practices they are usually voluntary and unregulated (Dutta and Bose, 2007). The resulting lack of standardization of CIR has attracted many researchers to examine the firm specific determinants of the use and quality of CIR. The majority of CIR studies have been conducted in developed countries like the USA (Deller *et al.*, 1999; Lymer, 1999; Ettredge *et al.*, 2001; Debreceeny *et al.*, 2002; Oyelere *et al.*, 2003; Lodhia *et al.*, 2004). However, there are also several studies that are based on companies operating in developing countries (Dutta and Bose, 2007; Ezzat, 2008; Ezzat and El-Masry, 2008).

The quality of traditional financial reporting is a function of the strength of governance mechanisms and the effectiveness of securities legislation and government monitoring (Samaha and Dahawy, 2011). Disentangling the roles of these two factors is challenging due to the mandatory nature of traditional financial reporting. On the other hand, the voluntary nature of CIR provides a natural setting, in which legal requirements are neutralized, and thus the “true” effects of governance mechanisms on the quality of corporate reporting could be effectively examined.

Recent empirical work examining the association between corporate governance mechanisms and CIR disclosures has primarily focused on developed countries (Abdelsalam and Street, 2007; Abdelsalam and El-Masry, 2008) rather than emerging capital markets. Egypt is a rapidly emerging market targeted by foreign investors (Samaha and Stapleton, 2009; HassabElnaby *et al.*, 2009). Ezzat and El-Masry (2008) argue that Egypt has witnessed several economic and regulatory changes over the last several years such as the extensive privatization of the public sector, reform of the regulatory framework governing businesses, and the increase in internet usage. Accordingly, the demand for higher quality corporate information has increased. In addition, Egypt has been adopting more effective policies of corporate governance, disclosure, and transparency with the objective of enhancing the quality of corporate information and in turn the stimulation of the Egyptian economy (Samaha *et al.*, 2009; Samaha and Stapleton, 2009; Samaha and Dahawy, 2010).

Recent research in the Egyptian setting (Aly *et al.*, 2009; Desoky, 2009) have focused on the relationship between firm characteristics and the level of CIR disclosure, but the effect of corporate governance mechanisms was absent in these studies. Therefore, this study seeks to extend this research by exploring the propensity and comprehensiveness of CIR disclosures by the top 100 listed Egyptian companies and further investigating the impact of several corporate governance mechanisms on the propensity and comprehensiveness of CIR. The study capture corporate governance attributes by ownership structure (free float, block ownership, managerial ownership, and government ownership) and board of directors’ structure (board size, board independence, and CEO-chair duality).

Results show that ownership structure variables (free float, managerial ownership, and government ownership) are positively related to CIR propensity. The results suggest that less effective monitoring via dispersed ownership leads to greater propensity to adopt CIR. Greater managerial ownership and government ownership

also lead to greater propensity to adopt CIR. In addition the negative relation between board independence and CIR propensity, although weak, does indicate a substitutive effect.

On the other hand it was found that free float is positively related to CIR comprehensiveness and its content and presentation dimensions. This could be explained by the demand of higher “quality” CIR disclosures communicating necessary corporate information to the small equity holding investors, who would lack resources or incentive to participate in monitoring the management actions. In contrast, the negative associations between government ownership and CIR comprehensiveness, content and presentation indicates a substitutive relation. It was also found that companies with larger boards have greater CIR comprehensiveness via better content and presentation. Finally board independence is negatively related to the overall CIR comprehensiveness indicating substitutive effect.

The paper contributes to the literature in two ways. First, it provides direct evidence regarding the effects of corporate governance characteristics of Egyptian companies on the propensity, content, presentation, and overall comprehensiveness of CIR. Second, it uses a comprehensive checklist of 87 attributes as a proxy for CIR quality.

The remainder of the paper is organized as follows. Section 2 provides a literature review and hypotheses development. Section 3 provides a description of the measurement and research design. Section 4 presents the empirical results of this study. Finally, Section 5 gives a summary of the main findings of this study, its limitations and opportunities for future research.

2. Literature review and hypotheses development

Separating ownership and control leads to various agency costs (Jensen and Meckling, 1976) which in turn affects the value of the firm (Hutchinson *et al.*, 2008). Accordingly, agency contracts encompassing numerous forms of governance mechanisms are used to align the interests of principals (owners) and agents (managers) in an attempt to mitigate the agency problem (Fama and Jensen, 1983).

Researchers, regulators and international bodies have defined corporate governance in several ways. For example, the Cadbury Committee Report (1992) defines corporate governance as “the system by which companies are directed and controlled”. Shleifer and Vishny (1997) define corporate governance as:

[...] the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment. How do the suppliers of finance get managers to return some of the profits to them? How do they make sure that managers do not steal the capital they supply or invest it in bad projects? How do suppliers of finance control managers?

Finally, the Organization for Economic Co-operation and Development (OECD, 2004) Principles of Corporate Governance describes governance as:

[...] a set of relationships between a company’s management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined.

The OECD guidelines were a primary source for drafting the Egyptian Code of Corporate Governance in 2005 and that was updated in 2011 which is a collection of guidelines and standards of best practice for Egyptian companies. However, many

of the code's recommendations are adopted and mandated by other regulatory bodies such as the Egyptian Stock Exchange (EGX) and the Egyptian Financial Supervisory Authority. Despite slight differences among the definitions and the approaches to corporate governance, one would agree that the four pillars of corporate governance are fairness, accountability, responsibility, and transparency/disclosure. This paper focuses on the latter pillar. More specifically the focus is on a unique form of disclosure used by Egyptian companies which is CIR.

There are several streams of corporate governance research. The majority of corporate governance papers focus on the effects of corporate governance on the quality of "traditional" financial reporting. Such quality was proxied by a variety of measures such as the abnormal accruals (Klein, 2002), fraud (Beasley, 1996; Farber, 2005), Tobin's Q (Morck *et al.*, 1988), and accounting conservatism (Ahmed and Duellman, 2007), analysts' recommendations (Yu, 2011). Another stream of research focuses on the functioning of monitoring mechanisms (e.g. auditors) within a corporate governance regulatory framework such as the Sarbanes-Oxley Act (Chan *et al.*, 2009).

Finally, a recent stream of corporate governance research examines the role of governance mechanisms within the context of a new form of financial reporting which is CIR (Abdelsalam *et al.*, 2007; Abdelsalam and El-Masry, 2008; Kelton and Yang, 2008; Ezat and El-Masry, 2008; Desoky and Mousa, 2009). This study extends the latter stream of research by examining the various governance mechanisms' effects on the propensity and comprehensiveness of CIR in Egypt.

It is argued that the manner in which governance, proxied by the various characteristics, affects the propensity and comprehensiveness of CIR depends on whether the governance-CIR relation is substitutive or complementary. This is consistent with Kelton and Yang (2008) and Samaha (2010) who argue that a negative association between "strong" governance and more and/or better CIR implies a reduced level of information asymmetry and in turn a reduced demand for disclosure suggesting a substitutive relation. Conversely a positive association implies that corporate governance deters managers from withholding information manifested in greater disclosure suggesting a complementary relation. The authors examine these relations within the Egyptian context while focusing on two sets of governance characteristics:

- (1) the ownership structure; and
- (2) board of directors' structure of the company.

2.1 Ownership structure

2.1.1 Free float.

Free float is a direct proxy of ownership diffusion which in turn is a source of conflict of interest and information asymmetry (Jensen and Meckling, 1976). Disclosure is a tool used to mitigate such agency problems. Prior studies have found that ownership diffusion is positively related to CIR (Pirchegger and Wagenhofer, 1999; Marston and Polei, 2004; Bollen *et al.*, 2006; Momany and Al-Shorman, 2006). Such result suggests that companies use CIR to provide a widely dispersed shareholder base with information thus facilitating more effective monitoring of management. Prior studies based on Egyptian companies documented a positive association between free float and the timeliness of CIR (Ezat and El-Masry, 2008).

The 2009 Report on the Observance of Standards and Codes (ROSC) in Egypt issued by The World Bank (2009) highlighted the lower monitoring role of minority shareholders in Egypt. In light of this, ownership dispersion (proxied by free float)

leads to less effective corporate governance. This deficiency would be compensated by adopting and providing higher quality CIR. Based on this argument the following hypotheses were developed:

H_{1a} . Free float is positively associated with the propensity of CIR.

H_{1b} . Free float is positively associated with the comprehensiveness of CIR.

2.1.2 Managerial ownership. The separation between ownership and control leads to an array of agency problems which are all based on the premise that managers are homo-economicus (economically self-interested). Based on agency theory, one way to mitigate this problem is to align the interests of managers with those of shareholders by increasing the level of managerial ownership (Jensen and Meckling, 1976). However, effects of managerial ownership on corporate governance are non-linear. High levels of managerial ownership could result in entrenchment which in turn would weaken corporate governance (Morck *et al.*, 1988; Rosenstein and Wyatt, 1997; Gul and Wah, 2002).

While results from Abdelsalam *et al.* (2007) and Kelton and Yang (2008) did not find a significant managerial ownership impact on CIR, Abdelsalam and El-Masry (2008) document a positive relation between the CEO ownership and the extent of internet-based disclosures. These mixed results led to the development of the following non-directional hypotheses:

H_{2a} . Managerial ownership is associated with the propensity of CIR.

H_{2b} . Managerial ownership is associated with the comprehensiveness of CIR.

2.1.3 Government ownership. Eng and Mak (2003) argue that government-owned companies exhibit higher levels of agency costs because of the inherent potential inconsistencies between the objectives of profit maximization of the firm and the nation-wide objectives. Such a setting requires more disclosure. However, Gahazali and Weetman (2006) argue that government ownership, and thus monitoring, acts as a substitute to disclosure. In addition, the results of Xiao *et al.* (2004) based on a sample of Chinese companies suggest that greater government ownership is associated with lower CIR quality. They attribute this to state owners lacking interest to entice public disclosure resulting from their ability to obtain private information. Accordingly, fewer disclosures are directed to the public. Based on this evidence the following hypotheses were developed:

H_{3a} . Government ownership is negatively associated with the propensity of CIR.

H_{3b} . Government ownership is negatively associated with the comprehensiveness of CIR.

2.2 Board of directors' structure

2.2.1 Board size. The board of directors is an important tool used to monitor managerial actions (Fama and Jensen, 1983; Healy and Palepu, 2001). Davidson *et al.* (2005) highlights market perspectives of the role of the board in terms the ensuring validity and soundness of accounting choices made by management (see for example, New York Stock Exchange (NYSE) *Corporate Accountability and Listing Standards Committee*, 2002).

The number of directors serving on a company's board could be a determinant of monitoring effectiveness. A large number of directors, arguably, will reduce the management opportunistic behavior, such that it would be less likely to withhold information to their own benefit. However, there is empirical evidence that suggests that smaller boards are more effective monitors of managerial practices than larger ones. For example, Yermack (1996) found that US companies with larger boards exhibit lower Tobin's Qs. This phenomenon was also documented by Andrés Alonso *et al.* (2005) who used an international sample. The latter study concludes that coordination, communication, and flexibility problems seem to be outweighing any potential benefits of large boards. Within the context of CIR studies, Desoky and Mousa (2009) found that companies with larger board size are more likely to provide on-line disclosures. Accordingly the following hypotheses were developed:

H_{4a} . Board size is positively associated with the propensity of CIR.

H_{4b} . Board size is positively associated with the comprehensiveness of CIR.

2.2.2 Board independence. Board independence enhances the board's effectiveness as a governance mechanism. Fama and Jensen (1983) argue that the independence posture of non-executive directors reduces complacency of the board in mitigating managerial opportunism. In addition non-executives have reputational capital that is only preserved and enhanced by more effective monitoring of companies which they serve on the boards.

There is pervasive empirical evidence on the role of board of directors in promoting financial reporting quality. For example, Ahmed and Duellman (2007) found a direct relation between the proportion on independent directors serving on the board and accounting conservatism. Another stream of research documents a negative relation between board independence and earnings management, proxied by abnormal accruals (Klein, 2002; Peasnell *et al.*, 2005). Finally studies such as Beasley (1996), Dechow *et al.* (1996), and Farber (2005) document a negative association between board independence and the likelihood of financial statement fraud.

Based on the above evidence it is clear that there is a consensus regarding the effectiveness of independent boards as monitors of the financial reporting process. A similar consensus is found within the context of CIR literature, as Abdelsalam *et al.*'s (2007), Kelton and Yang's (2008) and Desoky and Mousa's (2009) empirical results show that the board independence is positively related with the CIR disclosures. Thus, the following hypotheses were developed:

H_{5a} . Board independence is positively associated with the propensity of CIR.

H_{5b} . Board independence is positively associated with the comprehensiveness of CIR.

2.2.3 CEO-chair duality. Prior studies have found that in cases where the CEO assumes the position of chairman of the board, governance is impeded to some extent. Fama and Jensen (1983) and Messier (2000) argue that the separation between the CEO and chairman of the board (i.e. lack of CEO-Chair duality) is conducive to better monitoring. Empirical research has shown that duality increases the likelihood of SEC enforcement actions (Dechow *et al.*, 1996) and increases the extent of earnings management (Davison III *et al.*, 2004). In addition auditors view duality as a governance weakness

which results in a higher level of control risk. This argument is supported by Tsui *et al.* (2001) who document a positive relation between duality and audit fees.

In the context of CIR studies, Abdelsalam *et al.* (2007) and Ezat and El-Masry (2008) did not find any significant effect of duality on the timeliness of CIR for Irish companies and Egyptian companies, respectively. In addition, Kelton and Yang (2008) did not report any significant association between CEO-duality and CIR practices for NASDAQ listed companies. Thus, the following non-directional hypotheses were developed:

H_{6a} . CEO-chair duality is associated with the propensity of CIR.

H_{6b} . CEO-chair duality is associated with the comprehensiveness of CIR.

3. Measurement and research design

This section outlines the sample selection procedure, the measurement of the dependent variables of CIR propensity and comprehensiveness dimensions, the measurement of the independent variables of corporate governance attributes, firm characteristics, and finally the formulation of the estimation models.

3.1 Sample and data sources

The sample is based on the top 100 Egyptian companies (EGX 100) listed in the Egyptian Exchange (EGX), which combines the constituents of the other two main indices of the exchange, EGX 30 and EGX 70. One would expect that companies in such sample are more likely to adopt CIR than other listed companies. This might be because of the larger size, more active trading, stronger investor relation culture, and greater resources.

The sample company names were obtained from the Egyptian Company for Information Dissemination (EGID). To determine their internet presence, searches using common search engines were made. Using this approach, only 69 companies web sites were located, out of which three web sites were not established yet (under construction), and one web site was not currently in use (under revision). Four affiliated sample companies had a web existence only by means of their relative holding companies web sites (Table I). To ensure a minimum degree of temporal differences, the 61 sample companies accessible web sites were examined over a short period of time (one month as of January 2009), during which the under construction/revision web sites were frequently checked for accessibility.

Data for the relevant independent variables were collected from a range of sources including the EGX website and publications, the EGID, Reuter's data base, and print-based annual reports. All sample companies related data were collected as of December 2008.

Sample companies (EGX 100)	100
Companies with no identified web site	(31)
	69
Affiliated companies (subsidiaries)	(4)
Companies with web sites under construction	(3)
Companies with currently not in use web sites	(1)
Companies with an accessible web site	61

Table I.
Sample companies' web
sites analysis

3.2 *Dependent variables measurement*

3.2.1 *The propensity of CIR – adoption.* Consistent with Oyelere *et al.* (2003), who focus on New Zealand, this study classifies companies of the EGX 100 into two groups:

- (1) companies with an accessible established web site (61 companies); and
- (2) companies with no web site (39 companies).

The second group includes the sample companies for which a web address cannot be identified (31 companies), the affiliated companies that have not yet established their own web presence (four companies) as well as companies with under construction/revision web site (four companies). The dependent variable *PROP* takes a value of 1 if a company belongs to CIR group and zero if a company belongs to the non-corporate internet reporting companies (NCIR) group.

3.2.2 *The comprehensiveness, content, and presentation of CIR – quality.* From an extensive review of CIR measures used by prior studies in different countries – such as Bangladesh (Dutta and Bose, 2007), China (Xiao *et al.*, 2004), Greece (Spanos and Mylonakis, 2007), the USA (Kelton and Yang, 2008), Eastern Europe (Bonson and Escobar, 2006), and Egypt (Aly *et al.*, 2009) – the authors developed an extensive CIR comprehensiveness checklist of 87 items categorized into content and presentation measures. The developed checklist includes the measures identified by prior CIR literature as relevant investor information and/or important CIR attributes. In comparison with prior studies, the checklist can be considered as a comprehensive instrument that yields rich CIR assessment. It is worth mentioning that except for a few studies (Marston and Polei, 2004; Xiao *et al.*, 2004; Abdelsalam *et al.*, 2007; Aly *et al.*, 2009) the literature is thin on studies that analyzed content and presentation measures.

The CIR comprehensiveness checklist consists of two partial indices: first, content with 67 items and second, presentation comprising 20 items. Content refers to what is disclosed on the web, while presentation is more related to how the information is disclosed. Based on the work of Spanos and Mylonakis (2007) and Dutta and Bose (2007) our content measures are classified into four sub-groups: financial attributes (30 items), corporate governance attributes (19 items), social and environmental attributes (ten items) and investor relations' attributes (eight items). Financial attributes sub index examines the disclosure of company-related accounting and financial information. The paper-based disclosure of such information is mandatory for listed Egyptian companies; however, using the internet as an alternative disclosure media depends completely on a listed company's choice. Corporate governance sub index reviews the on-line availability of certain corporate governance items drawn from extant literature and the Egyptian corporate governance code guidelines. The social and environmental sub index analyzes the extent a sample company provides certain social and environmental items on the web, while investor relations attributes sub index measures the degree that useful relevant investor information is provided on-line.

The other partial index measures (presentation measures) are classified into two sub-groups; one group addresses the specifics of web site design (eight items) forming technological features sub index. Where, the second group examines how easier to navigate the site and locate information, and this group encompasses 12 items represented in the accessibility sub index. Classifying the checklist measures into

sub-groups provides the chance of gaining insight on the levels in different CIR components and dimensions from the sample companies, which in turn adds to the value of the checklist as an assessment instrument. Figure 1 shows the checklist items composition of the overall index and its distribution among the different partial and sub-indices. In addition Table III shows the frequency of the items within the internet reporting companies (CIR) sample.

Equal weights were assigned for all checklist items, assuming equal importance of items to all different user groups. For each CIR company, the aggregate scores for indices are calculated based on the existence (assigned value of 1) or absence (assigned value of 0) of the checklist items described above. Unweighted scoring is adopted, as assigning different weights to the checklist items would contain an element of subjectivity that cannot be totally avoided (Marston and Polei, 2004). For only one presentation measure (loading time of the web site < 10 seconds) scoring is determined on a subjective basis.

Each index is calculated by expressing the aggregate score on each index as a percentage of the total number of items comprising the calculated index. The dependent variables content (*C-CONTENT*), presentation (*C-PRESENT*), and overall comprehensiveness (*C-OVERALL*) are the percentage scores based on 67, 20, and 87 total number of items, respectively. The consistency of the CIR comprehensiveness measures is based on Cronbach's coefficient α (Cronbach, 1951). A scale is considered

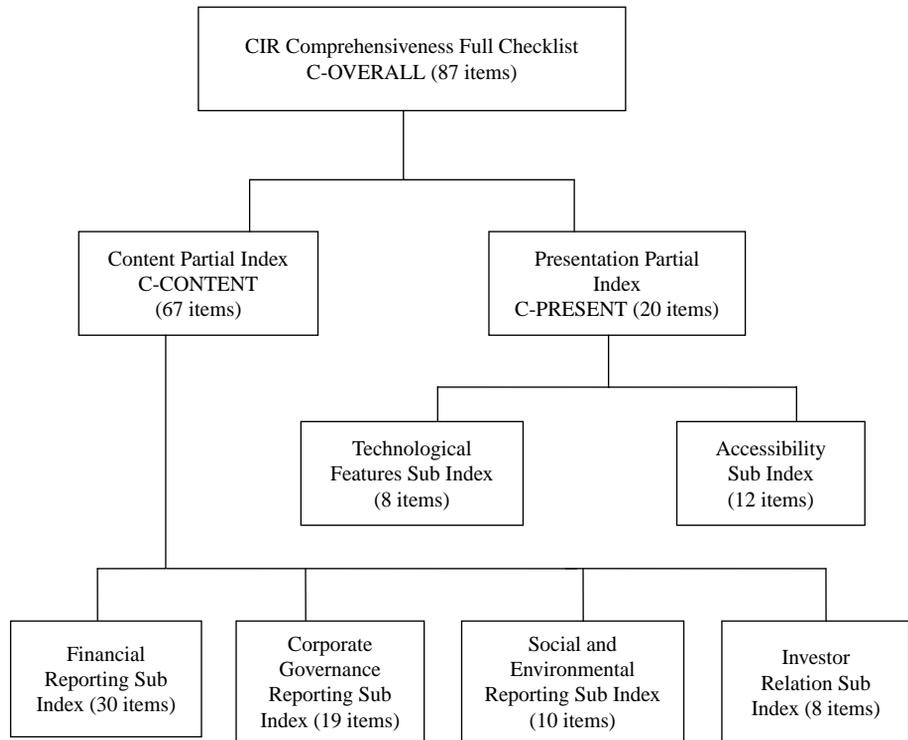


Figure 1.
Internet reporting
comprehensiveness
checklist items
distribution

reliable with a value of 0.7 (Nunnally, 1978). For *C-CONTENT*, *C-PRESENT* and *C-OVERALL* the Cronbach's coefficient α are 0.91, 0.88, and 0.97, respectively, suggesting scale reliability and the measurement validity of the dependent variable.

3.3 Measurement of corporate governance test variables and control variables

Based on the hypotheses the variables of interest capture the governance attributes of ownership structure and board structure. Ownership structure is captured by (*FFLOAT*) measured as the percentage of shares held by individual (retail) investors, managerial ownership (*MAN*) measured as percentage of shares held by management directors, and government ownership (*GOV*) measured as the percentage of shares held by government institutions and/or public sector companies. Board structure is captured by board size (*BOARD*) measured as the number of board members, board independence (*INDIR*) measured as the percentage of board members who are non-executive directors, and CEO-chair duality (*DUAL*) which is a dichotomous variable that is equal to 1 if the company's CEO serves the board chairman and 0 otherwise.

Consistent with prior studies (Abdelsalam *et al.*, 2007; Kelton and Yang, 2008; Khelif and Soiussi, 2010; Samaha *et al.*, 2011), the authors controlled for some firm characteristics such as size, leverage, profitability, industry sector, type of auditor, and internationality. They control for size since larger firms tend to have higher agency costs and political costs as well; voluntary disclosure (on the internet) could be a possible way to reduce such costs (Debreceeny *et al.*, 2002; Marston and Polei, 2004; Bonson and Escobar, 2006). They also measure firm size (*FSIZE*) by the natural logarithm of the firm's market value of equity (i.e. market capitalization).

Leverage is included in the control variables because as debt increases, company managers will increase the level of disclosed information in an attempt to aid creditors' assessments of the company's creditworthiness. Leverage (*LEV*) is measured by the ratio of long term debt to total stock holders equity. On the basis of signalling theory, managers of high performing companies are motivated to disclose more information than less profitable ones. Managers of profitable firms are more inclined to disclose information as justification of their compensation contracts to improve shareholder confidence (Kelton and Yang, 2008). Prabowo and Angkoso (2006) and Aly *et al.* (2009) reported a positive association between CIR and profitability. Return on equity, calculated as the ratio of net income before tax to total stockholders' equity, was used to measure profitability (*PROF*).

Prior literature (Oyelere *et al.*, 2003; Xiao *et al.*, 2004; Bonson and Escobar, 2002, 2006; Abdelsalam *et al.*, 2007) found industry type to be a relevant factor in CIR choices. The industry sector control (*INDTYPE*) is a dummy variable that is equal to 1 if the company belongs to financial sector and 0 otherwise. Internationalization is becoming a trend of large Egyptian companies in the form of foreign operations and/or access to foreign capital. Bollen *et al.* (2006) argues that an "international" company would need a tool for communicating its information to geographically dispersed parties (e.g. clients and investors) with whom it deals.

The internet serves as this communication tool. Thus, internationalization is considered a driver of CIR practices. Accordingly the authors measured the internationality control variable by two dichotomous variables; foreign sales (*FORSALE*) and foreign listing (*FORLIST*) which equal to 1 if the company has

foreign sales and a foreign listing, respectively, zero otherwise. Finally, a positive association between CIR and audit firm type was supported by prior studies. Thus, the authors also control for the type of audit firm (*AUDTYPE*) by using a dichotomous variable which equals 1 the auditor is a Big4 firm, and 0 otherwise.

3.4 Estimation models

To test the hypotheses, the authors ran two main sets of estimation models. First, the binary logistic regression was used to test the relations between the variables of interest and the dichotomous dependent variable (*PROP*). Second, the seemingly unrelated regression (SUR) is used for the continuous dependent variables (*C-CONTENT*, *C-PRESENT*, and *C-OVERALL*). SUR is appropriate because of the correlations between the continuous variables and because the error terms are assumed to be correlated across the equations (Der and Everitt, 2008).

The following models are estimated:

$$\begin{aligned} PROP = & \beta_0 + \beta_1 FFLOAT + \beta_2 MAN + \beta_3 GOV + \beta_4 BOARD + \beta_5 INDIR \\ & + \beta_6 DUAL + \beta_7 FSIZE + \beta_8 LEV + \beta_9 PROF + \beta_{10} INDTYPE \\ & + \beta_{11} FORSALE + \beta_{12} FORLIST + \beta_{13} AUDTYPE + \varepsilon \end{aligned}$$

$$\begin{aligned} C - CONTENT = & \alpha_0 + \alpha_1 FFLOAT + \alpha_2 MAN + \alpha_3 GOV + \alpha_4 BOARD \\ & + \alpha_5 INDIR + \alpha_6 DUAL + \alpha_7 FSIZE + \alpha_8 LEV + \alpha_9 PROF \\ & + \alpha_{10} INDTYPE + \alpha_{11} FORSALE + \alpha_{12} FORLIST \\ & + \alpha_{13} AUDTYPE + \varepsilon \end{aligned}$$

$$\begin{aligned} C - PRESENT = & \delta_0 + \delta_1 FFLOAT + \delta_2 MAN + \delta_3 GOV + \delta_4 BOARD \\ & + \delta_5 INDIR + \delta_6 DUAL + \delta_7 FSIZE + \delta_8 LEV + \delta_9 PROF \\ & + \delta_{10} INDTYPE + \delta_{11} FORSALE + \delta_{12} FORLIST \\ & + \delta_{13} AUDTYPE + \varepsilon \end{aligned}$$

$$\begin{aligned} C - OVERALL = & \lambda_0 + \lambda_1 FFLOAT + \lambda_2 MAN + \lambda_3 GOV + \lambda_4 BOARD \\ & + \lambda_5 INDIR + \lambda_6 DUAL + \lambda_7 FSIZE + \lambda_8 LEV + \lambda_9 PROF \\ & + \lambda_{10} INDTYPE + \lambda_{11} FORSALE + \lambda_{12} FORLIST \\ & + \lambda_{13} AUDTYPE + \varepsilon \end{aligned}$$

where *PROP* is the propensity of CIR which is equal to 1 for CIR companies and zero for NCIR companies, *C-CONTENT* is the CIR content partial index score, *C-PRESENT* is the CIR presentation partial index score, and *C-OVERALL* is the CIR comprehensiveness overall score. The definitions and measurement of the dependent variables are described in Section 3.2 while those of the variables of interest and control variables are described in Section 3.3. Finally ε is the error term.

4. Empirical results and discussion

4.1 Descriptive results

Table II – panel A shows the descriptive statistics regarding the ownership structure variables.

The average free float for the full sample is only 27 percent. Such a result suggests high ownership concentration in Egyptian companies and accordingly implies that major shareholders generally dominate the ownership structures of companies.

	CIR (61 companies)	NCIR (39 companies)	Full sample (EGX 100)
<i>Panel A. Descriptive statistics – ownership structure</i>			
Free float (FFLOAT)			
Mean	0.3356	0.1789	0.2745
Max.	0.90	0.46	0.90
Min.	0.03	0.01	0.01
SD	0.22661	0.10912	0.20393
Managerial ownership (MAN)			
Mean	0.1161	0.0850	0.1040
Max.	0.52	0.98	0.98
Min.	0.00	0.00	0.00
SD	0.19243	0.18580	0.18954
Government ownership (GOV)			
Mean	0.2527	0.2045	0.2339
Max.	0.96	0.92	0.96
Min.	0.00	0.00	0.00
SD	0.33873	0.28519	0.31830
<i>Panel B. Descriptive statistics – board of directors' structure</i>			
Board size (BOARD)			
Mean	11.1311	8.0256	9.92
Max.	31.00	17.00	31
Min.	3.00	3.00	3
SD	6.70193	4.10062	5.99946
Board independence (INDIR)			
Mean	0.0921	0.1167	0.1017
Max.	0.54	0.62	0.62
Min.	0.00	0.00	0.00
SD	0.12364	0.15758	0.13763
CEO-chair duality (DUAL)			
Mean	0.6066	0.6410	0.6263
Max.	1.00	1.00	1.00
Min.	0.00	0.00	0.00
SD	0.49257	0.48597	0.48626
<i>Panel C. Descriptive statistics – control variables</i>			
Untransformed firm size (SIZE)			
Mean	3,000,000,000	900,000,000	2,300,000,000
Max.	30,000,000,000	10,000,000,000	30,000,000,000
Min.	10,000,000	10,000,000	11,408,542
SD	6,419,167,070	2,121,851,981	5,291,487,173
Profitability (PROF)			
Mean	0.3327	0.0589	0.2259
Max.	7.28	1.37	7.28
Min.	-1.40	-2.17	-2.17
SD	1.06310	0.57334	0.91058
Leverage (LEV)			
Mean	1.5089	0.9608	1.2952
Max.	19.51	14.89	19.51
Mini.	0.00	0.00	0.00
SD	3.87933	3.09708	3.58813
Industry type (INDTYPE)			
Mean	0.2295	0.0513	0.1600

(continued)

Table II.
Descriptive statistics of
the variables of interest
and control variables

	CIR (61 companies)	NCIR (39 companies)	Full sample (EGX 100)
Max.	1.00	1.00	1.00
Min.	0.00	0.00	0.00
SD	0.42401	0.22346	0.36845
Foreign sales (FORSALE)			
Mean	0.6721	0.6667	0.6700
Max.	1.00	1.00	1.00
Min.	0.00	0.00	0.00
SD	0.47333	0.47757	0.47258
Foreign listing (FORLIST)			
Mean	0.1475	0.00	0.900
Max.	1.00	0.00	1.00
Min.	0.00	0.00	0.00
SD	0.35759	0.00	0.28762
Audit firm (AUDTYPE)			
Mean	0.4918	0.1795	0.3737
Max.	1.00	1.00	1.00
Min.	0.00	0.00	0.00
SD	0.50408	0.38878	0.48626

Notes: *FFLOAT* is the free float measured as the percentage of shares held by individual (retail) investors, *MAN* is the managerial ownership measured as percentage of shares held by management directors, *GOV* is the government ownership measured as the percentage of shares held by government institutions and/or public sector companies, *BOARD* is the board size measured as the number of board members, *INDIR* is the board independence measured as the percentage of board members who are non-executive directors, *DUAL* is CEO-chair duality which is a dichotomous variable that is equal to 1 if the company's CEO serves the board chairman and 0 otherwise; *SIZE* is the firm's market value of equity, *LEV* is leverage measured as the ratio of long term debt to total stockholders' equity, *PROF* is the return on equity measured as the ratio of net income before tax to total stockholders' equity to measure profitability, *INDTYPE* is industry type which is a dichotomous variable that is equal to 1 if the company is a financial company and 0 otherwise, *FORSALE* is internationality based on foreign sales which is a dichotomous variable that is equal to 1 if the company has foreign sales and 0 otherwise, *FORLIST* is internationality based on foreign listing which is a dichotomous variable that is equal to 1 if the company has a foreign listing and 0 otherwise, *AUDTYPE* is the audit firm type which is a dichotomous variable that is equal to 1 if the auditor is Big 4 and 0 otherwise

Table II.

Executive directors own approximately 10 percent of the companies stock, while on average 23 percent of the equity shares are held by government/public sector institutions. However, CIR companies have greater free float, managerial ownership, and government ownership than NCIR.

Table II – panel B presents the descriptive statistics regarding the board structure variables. The average board members number is ten while on average 10 percent of the sample company BOD's are non-executives. Approximately 63 percent of the companies have CEOs who also act as board chairpersons. Sub-sample results suggest that on average CIR companies have larger boards but slightly lower board independence. CEO-chairman duality exists in around 61 percent of CIR companies.

Finally Table II – panel C shows the descriptive statistics for the control variables. More than three quarters (84) of the sample companies are in the non-financial sector, while only 16 companies operate in the financial services sector. The average return on

equity is 23 percent, indicating that the sample companies are financially sound. The leverage mean value is 1.3, indicating that the sample companies rely substantially on debt to finance their activities. On average 67 percent of the companies operate in foreign markets. About 9 percent of the sample companies are listed on a foreign exchange market. Only 37 percent of the sample companies engage a Big4 audit firm. The results also suggest that on average CIR companies are larger and more profitable than NCIR companies. Approximately 50 percent of the CIR companies are audited by a Big4 audit firm while on the contrary non-Big4 audit firms are dominating the NCIR companies market. It is also worth mentioning that all companies with foreign listings are CIR companies.

The Appendix provides the detailed frequency results for the CIR comprehensiveness checklist items. Some results are worth highlighting. The *CONTENT* partial index and its four sub-indices Regarding “financial attributes” shows that fewer than half of the CIR sample companies which are disclosing mandatory financial statements include the balance sheet (44 and 49 percent), the income statement (43 and 48 percent), the cash flow statement (39 and 44 percent), the statement of changes in equity (38 and 43 percent) for the current and past year, respectively. In addition, the auditor’s report is only reported by 36 percent of CIR companies. An examination of the “corporate governance attributes” items reveals the highest frequency was for profile description of the board members (52 percent) while the lowest was for compensation of the members of the supervisory board (3 percent). Concerning the “corporate, social and environmental attributes” 39 percent of CIR companies report product quality and safety while only 10 percent provide a stand-alone CSR report. Regarding the “investor relations attributes” the results give insight that the sample companies are highly dedicated for establishing an English version of its web site (93 percent).

From the *C-PRESENT* partial index and its two sub-indices shows that for “technological features attributes” all CIR companies had web sites, which load in less than 10 seconds indicating ease of accessing web sites. Finally for the “accessibility attributes” 98 percent of the CIR companies have a click over menu.

Table III summarizes the CIR comprehensiveness descriptive results for the 61 companies. The mean scores of *C-CONTENT*, *C-PRESENT*, and *C-OVERALL* are 33, 48, and 36 percent, respectively, indicating that the CIR disclosure provided by the sample companies tends to be relatively limited. No single company scored 100 percent

	Mean	Max.	Min.	Range	SD
<i>CIR content (C-CONTENT)</i>	0.3266	0.96	0.00	0.96	0.31781
Financial attributes	0.3701	1.00	0.00	1.00	0.39266
Corporate governance attributes	0.2308	0.95	0.00	0.95	0.24897
Social and environmental attributes	0.2475	1.00	0.00	1.00	0.30089
Investor relations attributes	0.4352	1.00	0.00	1.00	0.35417
<i>CIR presentation (C-PRESENT)</i>	0.4846	0.94	0.15	0.79	0.23951
Technological features	0.4484	1.00	0.13	0.87	0.29717
Accessibility	0.5068	0.85	0.08	0.77	0.21291
<i>CIR comprehensiveness (C-OVERALL)</i>	0.3642	0.92	0.05	0.87	0.29635

Table III.
Descriptive statistics for
CIR comprehensiveness
partial and sub-indices

of the checklist/partial indices items, highlighting room for improvement in the Egyptian CIR practices.

The mean of *C-PRESENT* is higher than that of *C-CONTENT* suggesting that companies in the sample focus more on the use of web information technological advances in disclosing corporate information. Regarding the content sub-indices, the sample companies performed best on investor relations attributes with a mean of 44 percent followed by the financial attributes with a mean of 37 percent. However, the sample companies performed poorly on corporate governance and social and environmental attributes with means of 23 and 25 percent, respectively. Regarding the presentation sub-indices, on average the sample companies scored 51 percent on the accessibility measures while they scored only 45 percent on the technological features dimension.

4.2 Regression results

The results in Table IV – panel A suggests that while the correlations are significant for some independent variables, they do not undermine the validity of the findings[1]. In addition the OLS regressions of all independent variables on *C-CONTENT*, *C-PRESENT*, and *C-OVERALL*, yielded tolerance levels above 0.20 and variance inflation factors below ten as shown in Table IV – panel B. Overall the results indicate that multicollinearity does not undermine the validity of the results.

4.2.1 *The effect of corporate governance on the propensity (adoption) of CIR: binary logistic regression.* Table V shows the results of the estimated binary logistic regression for testing the impact of corporate governance mechanisms on the propensity of CIR in listed Egyptian companies. As suggested by the Hosmer-Lemeshow goodness of fit statistic[2] ($\chi^2 = 8.261$, $df = 8$, $p = 0.408$) the overall model fit is acceptable, assuring the reliability of the logistic model results.

Results show that *FFLOAT* has a significant positive effect on *PROP* suggesting that companies with greater ownership diffusion are more likely to adopt CIR. This result is attributable to two factors. First, companies with more dispersed ownership are more likely to use the internet to disseminate corporate information to stakeholders (Pirchegger and Wagenhofer, 1999; Marston and Polei, 2004; Bollen *et al.*, 2006; Momany and Al-Shorman, 2006; Ezat and El-Masry, 2008). Second, ownership is dispersed among small retail non-institutional investors in Egypt. Based on ROSC (2009) such investors are unlikely to have the incentive and/or resources to effectively monitor managers. Thus, it is argued that CIR adoption may be used to compensate for such a deficiency. Overall the result supports H_{1a} .

The positive relation between *MAN* and *PROP* supports H_{2a} suggesting that greater managerial ownership is associated with greater likelihood of adopting CIR and is consistent with Abdelsalam and El-Masry (2008).

Moreover, government ownership *GOV* is shown to have a significant unexpected (5 percent significance level, two-tailed) positive impact on the CIR choices implying that with higher government equity holdings companies have greater incentives for on-line disclosure adoption to enhance the information processing and communication with the public. Such a result is inconsistent with H_{3a} and the results of Xiao *et al.* (2004). This inconsistency may be attributed to the high levels of agency costs and potential lack of alignment between national objectives of state owners and firm-level objectives of other shareholders (Eng and Mak, 2003).

Panel A. Pearson's product-moment correlation coefficients of the independent variables

	FFLOAT	MAN	GOV	BOARD	INDIR	DUAL	FSIZE	LEV	PROF	INDTYPE	FORSALE	FORLIST	AUDTYPE
1	1												
FFLOAT	1												
MAN	-0.133	1											
GOV	-0.253*	-0.153	1										
BOARD	0.663**	-0.121	-0.174	1									
INDIR	0.289*	0.011	-0.138	0.432**	1								
DUAL	-0.096	-0.183	0.344**	-0.137	-0.229	1							
FSIZE	0.355**	-0.193	0.005	0.615**	-0.245	-0.221	1						
LEV	0.050	-0.032	-0.079	0.294*	0.243	0.019	0.109	1					
PROF	0.065	-0.178	-0.108	0.249	0.021	0.016	0.139	0.134**	1				
INDTYPE	0.325*	0.083	-0.269*	0.376**	0.195	-0.138	0.116	0.436**	-0.166	1			
FORSALE	-0.009	-0.013	-0.163	0.082	-0.051	0.033	0.006	-0.171	0.156	-0.117	1		
FORLIST	0.760**	-0.144	-0.186	0.757**	0.289*	-0.058	0.471**	0.095	0.242	0.103	0.094	1	
AUDTYPE	0.322*	-0.141	-0.266*	0.311*	-0.024	-0.114	0.333**	0.002	0.092	0.243	0.198	0.330**	1

Panel B. Tolerance and variance inflation factor (VIF) statistics

Independent variables	Tolerance	VIF
FFLOAT	0.316	3.169
MAN	0.846	1.182
GOV	0.684	1.461
BOARD	0.216	4.629
INDIR	0.724	1.381
DUAL	0.748	1.337
FSIZE	0.506	1.975
LEV	0.648	1.544
PROF	0.759	1.317
INDTYPE	0.474	2.111
FORSALE	0.834	1.199
FORLIST	0.242	4.129
AUDTYPE	0.690	1.449

Notes: ** and * indicate significance at the 0.01 level and the 0.05 level, respectively, (two-tailed); *FFLOAT* is the free float measured as the percentage of shares held by individual (retail) investors, *MAN* is the managerial ownership measured as percentage of shares held by management directors, *GOV* is the government ownership measured as the percentage of shares held by government institutions and/or public sector companies, *BOARD* is the board size measured as the number of board members, *INDIR* is the board independence measured as the percentage of board members who are non-executive directors, *DUAL* is CEO-chair duality which is a dichotomous variable that is equal to 1 if the company's CEO serves the board chairman and 0 otherwise

Table IV.
Multicollinearity
diagnostics tests: Pearson
correlation, tolerance and
variance inflation factor

Variable		Predicted sign	Coefficient estimate	SE	Wald statistic
FFLOAT	H_{1a} (✓)	+	4.118	2.289	3.237**
MAN	H_{2a} (✓)	?	2.545	1.517	2.816*
GOV	H_{3a} (×)	–	1.988	0.995	3.989††
BOARD	H_{4a} (×)	+	– 0.096	0.080	1.412
INDIR	H_{5a} (×)	+	– 3.256	2.100	2.403†
DUAL	H_{6a} (×)	?	– 0.225	0.587	0.147
FSIZE		+	1.130	0.477	5.617***
LEV		+	0.023	0.094	0.060
PROF		+	0.695	0.461	2.270*
INDTYPE		?	1.152	1.239	0.863
FORSALE		+	0.058	0.555	0.011
FORLIST		+	19.174	11,878.716	0.000
AUDTYPE		+	0.469	0.654	0.514
Intercept		?	– 10.101	3.793	7.094***
Model summary		– 2 Log likelihood			
		ratio = 94.327			
Model (χ^2)		8.261 (df = 8,			
		$p = 0.408$)			
Cox and Snell R^2		0.326			
n		100			

Notes: ***, **, * indicates significance at the < 0.01 , < 0.05 , and < 0.1 level, respectively, (one-tailed where signs are predicted, two-tailed otherwise); ††, † indicates significance at the < 0.05 and < 0.15 levels, respectively, (two-tailed for unexpected signs); (✓) indicates that the corresponding hypothesis is supported while (×) indicates that the corresponding hypothesis is not supported; *PROP* is CIR propensity which is a dichotomous that takes a value of 1 if a company uses CIR and 0 otherwise, *FFLOAT* is the free float measured as the percentage of shares held by individual (retail) investors, *MAN* is the managerial ownership measured as percentage of shares held by management directors, *GOV* is the government ownership measured as the percentage of shares held by government institutions and/or public sector companies, *BOARD* is the board size measured as the number of board members, *INDIR* is the board independence measured as the percentage of board members who are non-executive directors, *DUAL* is CEO-chair duality which is a dichotomous variable that is equal to 1 if the company's CEO serves the board chairman and 0 otherwise; $n = 100$; dependent variable: CIR propensity (*PROP*)

Table V.
Binary logistic regression results

In addition, the effect of government ownership on the choice of disclosure tools might differ among countries.

Regarding the board of directors' structure, the authors found a marginally significant unexpected (15 percent significance level, two-tailed) negative relation between *INDIR* and *PROP* which was contrary to H_{5a} and prior literature (Abdelsalam *et al.*, 2007; Kelton and Yang, 2008; Desoky and Mousa, 2009). However, this negative effect could be justified by a potential substitutive effect. In other words, weaker boards in terms of independence are substituted by the use of CIR.

The coefficients of other board of directors' structure attributes (size and duality) were statistically insignificant and therefore H_{4a} and H_{6a} are not supported. Among the controls firm size *FSIZE* and profitability *PROF* were positively related to CIR propensity.

4.2.2 *The effect of corporate governance on the comprehensiveness (quality) of CIR:* SUR. The SURs results provided in Tables VI-VIII indicate a statistically positive coefficient of *FFLOAT*. This supports H_{1b} in line with the results reported on H_{1a} in Table V, and with prior studies based on Australian samples (Pirchegger and Wagenhofer, 1999), German samples (Marston and Polei, 2004), and international samples (Bollen *et al.*, 2006). This evidence suggests that ownership dispersion affects both the choice to adopt CIR and its quality in terms of better content, presentation and overall comprehensiveness. In other words, more dispersed ownership firms will respond to investor decreased power in influencing management decisions with increased disclosures via higher quality CIR, helping them monitor the management behavior.

However, the statistically significant negative coefficients of *GOV* indicate that greater government ownership is substituted by better CIR in terms of content, presentation and overall comprehensiveness supporting H_{3b} . Thus, while government ownership plays an important role in monitoring the management behavior via increasing the likelihood of adopting voluntary CIR as documented in Table V, it substitutes its quality. This result is consistent with the results of Xiao *et al.* (2004)

Variable		Predicted sign	Coefficient estimate	SE	t-value
FFLOAT	H_{1a} (✓)	+	0.808269	0.182592	4.43***
MAN	H_{2b} (×)	?	0.152255	0.129530	1.18
GOV	H_{3b} (✓)	-	-0.15403	0.081648	-1.89*
BOARD	H_{4b} (✓)	+	0.015406	0.007361	2.09**
INDIR	H_{5b} (×)	+	-0.05650	0.218069	-0.26
DUAL	H_{6b} (×)	?	0.038883	0.054250	0.72
FSIZE		+	0.094769	0.044471	2.13**
LEV		+	0.005995	0.007345	0.82
PROF		+	0.010674	0.024745	0.43
INDTYPE		?	-0.07746	0.078581	-0.99
FORSALE		+	0.017005	0.053055	0.32
FORLIST		+	-0.12554	0.130299	-0.96
AUDTYPE		+	0.055447	0.054759	1.01
Intercept		?	-0.95036	0.385343	-2.47**
F statistic		11.29			
p-value		0.0001			
R^2		0.7574			
Adjusted R^2		0.6903			
n		61			

Notes: ***, **, * indicates significance at the <0.01, <0.05, and <0.1 level, respectively, (one-tailed where signs are predicted, two-tailed otherwise); (✓) indicates that the corresponding hypothesis is supported while (×) indicates that the corresponding hypothesis is not supported; *C-CONTENT* is the content index based on 20 items *FFLOAT* is the free float measured as the percentage of shares held by individual (retail) investors, *MAN* is the managerial ownership measured as percentage of shares held by management directors, *GOV* is the government ownership measured as the percentage of shares held by government institutions and/or public sector companies, *BOARD* is the board size measured as the number of board members, *INDIR* is the board independence measured as the percentage of board members who are non-executive directors, *DUAL* is CEO-chair duality which is a dichotomous variable that is equal to 1 if the company's CEO serves the board chairman and 0 otherwise

Table VI.
Seemingly unrelated
regression results:
dependent variable: CIR
content (C-CONTENT)

Variable		Predicted sign	Coefficient estimate	SE	t-value
FFLOAT	H_{1a} (✓)	+	0.532098	0.140585	3.78***
MAN	H_{2b} (×)	?	0.090296	0.099731	0.91
GOV	H_{3b} (✓)	-	-0.13592	0.062864	-2.16**
BOARD	H_{4b} (✓)	+	0.12790	0.005668	2.26**
INDIR	H_{5b} (×)	+	-0.13656	0.167901	-0.81
DUAL	H_{6b} (×)	?	0.032449	0.041769	0.78
FSIZE		+	0.088610	0.034240	2.59***
LEV		+	0.003866	0.005655	0.68
PROF		+	0.002026	0.019052	0.11
INDTYPE		?	-0.02155	0.060503	-0.36
FORSALE		+	0.005833	0.040850	0.14
FORLIST		+	-0.08176	0.100323	-0.81
AUDTYPE		+	0.003499	0.042161	0.08
Intercept		?	-0.59009	0.296692	-1.99**
F statistic		10.54			
p-value		0.0001			
R ²		0.7446			
Adjusted R ²		0.6739			
n		61			

Notes: ***, **, * indicates significance at the <0.01, <0.05, and <0.1 level, respectively, (one-tailed where signs are predicted, two-tailed otherwise); (✓) indicates that the corresponding hypothesis is supported while (×) indicates that the corresponding hypothesis is not supported; *C-PRESENT* is the presentation index based on 67 items, *FFLOAT* is the free float measured as the percentage of shares held by individual (retail) investors, *MAN* is the managerial ownership measured as percentage of shares held by management directors, *GOV* is the government ownership measured as the percentage of shares held by government institutions and/or public sector companies, *BOARD* is the board size measured as the number of board members, *INDIR* is the board independence measured as the percentage of board members who are non-executive directors, *DUAL* is CEO-chair duality which is a dichotomous variable that is equal to 1 if the company's CEO serves the board chairman and 0 otherwise

Table VII.
SUR results dependent
variable: CIR
presentation
(C-PRESENT)

in that state owners are not inclined to encourage public disclosure practices including CIR. Thus, within the Egyptian context government ownership drives the adoption of CIR but not its quality.

The coefficients of *MAN* were insignificant, a result that is consistent with Abdelsalam *et al.* (2007) and Kelton and Yang (2008), but inconsistent with Abdelsalam and El-Masry (2008). This means that H_{2b} cannot be supported. Moreover, this result together with the CIR propensity findings documented in Table V, suggests that while *MAN* increases the likelihood of CIR adoption, it does not affect the quality of CIR practices in Egyptian companies.

In terms of board of directors' structure, the authors found a significant positive relation between *BOARD* and the content, presentation, and overall CIR comprehensiveness supporting H_{4b} . This suggests that larger boards drive higher levels of corporate transparency through better quality CIR practices. This finding is in line with the results of Desoky and Mousa's (2009) analysis of on-line disclosures by Bahraini companies.

The marginally significant unexpected (15 percent, two-tailed) negative coefficient of *INDIR* in the *C-OVERALL* model does not support H_{5b} but is consistent with its

Variable		Predicted sign	Coefficient estimate	SE	t-value
FFLOAT	H_{1a} (✓)	+	0.758869	0.162526	4.67***
MAN	H_{2b} (×)	?	0.143658	0.115295	1.25
GOV	H_{3b} (✓)	-	-0.16108	0.072675	-2.16**
BOARD	H_{4b} (✓)	+	0.014492	0.006552	2.21**
INDIR	H_{5b} (×)	+	-0.09043	0.194104	-1.47†
DUAL	H_{6b} (×)	?	0.043656	0.048288	0.090
FSIZE		+	0.095958	0.039584	2.42***
LEV		+	0.006076	0.006538	0.93
PROF		+	0.012140	0.022025	0.55
INDTYPE		?	-0.07556	0.069945	-1.08
FORSALE		+	0.009152	0.047225	0.19
FORLIST		+	-0.11894	0.115980	-1.03
AUDTYPE		+	0.043161	0.048741	0.89
Intercept		?	-0.88544	0.342996	-2.58***
F statistic		12.67			
p-value		0.0001			
R ²		0.7780			
Adjusted R ²		0.7166			
n		61			

Notes: ***, **, * indicates significance at the < 0.01, < 0.05, and < 0.1 level, respectively, (one-tailed where signs are predicted, two-tailed otherwise); † indicates significance at the < 0.15 level (two-tailed for unexpected signs); (✓) indicates that the corresponding hypothesis is supported while (×) indicates that the corresponding hypothesis is not supported; *C-OVERALL* is the overall comprehensiveness index based on 87 items, *FFLOAT* is the free float measured as the percentage of shares held by individual (retail) investors, *MAN* is the managerial ownership measured as percentage of shares held by management directors, *GOV* is the government ownership measured as the percentage of shares held by government institutions and/or public sector companies, *BOARD* is the board size measured as the number of board members, *INDIR* is the board independence measured as the percentage of board members who are non-executive directors, *DUAL* is CEO-chair duality which is a dichotomous variable that is equal to 1 if the company's CEO serves the board chairman and 0 otherwise

Table VIII.
SUR results dependent
variable: CIR overall
comprehensiveness
(C-OVERALL)

substitutive relation with CIR propensity documented in Table V. It is worth noting that this result is inconsistent with CIR prior research (Xiao *et al.*, 2004; Abdelsalam *et al.*, 2007; Kelton and Yang, 2008; Desoky and Mousa, 2009), which provided no evidence between independent directors' proportion and CIR comprehensiveness. This inconsistency may be attributed to differences in settings and samples among the different studies.

The coefficient of *DUAL* continues to be insignificant in all CIR comprehensiveness models, a result that is consistent with Abdelsalam and Street (2007), Kelton and Yang (2008), Abdelsalam and El-Masry (2008) and Desoky and Mousa (2009). This finding does not support H_{6b} .

Regarding the control variables, only *FSIZE* was found to have a significant positive correlation with the CIR content, presentation and overall comprehensiveness level. This relation is significant at the 0.05 level or less for all models suggesting that larger companies practice better CIR. The authors believe that the insignificant or marginal significance of some of the coefficients could be attributed to the relativity small sample sizes (100 and 61 observations).

5. Summary, conclusion and future research

This study extends prior CIR research by examining whether corporate governance mechanisms affect a firm's propensity to adopt CIR and the extent of its comprehensiveness. The focus was on two sets of corporate governance attributes; ownership structure and board of directors' structure. The study provided practical insight into the CIR disclosures by companies listed on EGX and highlights a sustainable need for improvement in many CIR areas.

This study yields three sets of results. First, approximately 40 percent (39 companies) of the constituents of EGX 100 – the main EGX index – do not adopt CIR. Furthermore, among CIR adopting companies, variations were found in CIR quality in terms of content, presentation and overall comprehensiveness. The results also show that – on average – CIR adopting companies focus more on the presentation dimension rather than the content aspect of CIR. This may indicate the need for more regulatory intervention to streamline CIR practices in Egypt.

Second, a positive relation was found between ownership structure (free float, managerial ownership, government ownership) and the propensity of CIR. However, although weak, a negative relation between board independence and CIR propensity was found. Such results suggest that free float, managerial ownership and government ownership are drivers of CIR adoption. But stronger boards reduce the demand for CIR adoption.

Third, the study shows that free float is positively related to CIR comprehensiveness and its content and presentation dimensions. This could be explained by the demand of higher “quality” CIR disclosures to communicate necessary corporate information to the small equity holding investors, who may not be very effective monitors of management. Furthermore, negative associations between government ownership and CIR comprehensiveness, content and presentation were found thus supporting the original hypothesis of a substitutive relation. Thus, it is argued, in line with Xiao *et al.* (2004) that state owners are not inclined to encourage public disclosure practices including CIR. Thus, within the Egyptian context government ownership drives the adoption of CIR but not its quality.

We also show that companies with larger boards have greater CIR comprehensiveness via better content and presentation. The higher the number of board members the more likely a company will disclose more comprehensive CIR, indicating that board size-CIR inter correlation is complementary. Finally, board independence is weakly negatively related to the overall CIR comprehensiveness suggesting a substitutive effect.

This study provides empirical evidence on the role of corporate governance mechanisms with regard to the propensity to adopt CIR and the extent of its comprehensiveness by Egyptian companies. Such evidence would provide guidance to regulators on how to encourage Egyptian companies towards more disclosure on their websites. The study further indicates the presence of differences in results between studies conducted in developed versus developing nations. As with any other study this one is subject to certain limitations. First, the study is based on a sample of the largest (top listed) companies on the EGX. Thus, there results may not be generalizable to smaller companies. Second, the use of an un-weighted checklist to capture CIR comprehensiveness within a short-period window (one month) might be regarded

as a limitation when compared with an extended period of time. Such limitations could be addressed by future research.

Notes

1. A bivariate correlation above 0.8 would be problematic (Field, 2009).
2. A Hosmer-Lemeshow statistic greater than 0.05 is indicative of good model fit (Cox, 1970; Hosmer and Lemeshow, 1989).

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	Frequency	%
A. Content		
<i>A-1. Financial attributes</i>		
1. Balance sheet of current year	27	44
2. Income statement of current year	26	43
3. Cash flow statement of current year	24	39
4. Statement of changes in equity of current year	23	38
5. Interim statements of current year	22	36
6. Notes to financial statements for current year	24	39
7. Auditor's report of current year	22	36
8. Full annual report of current year	23	38
9. Balance sheet of past year	30	49
10. Income statement of past year	29	48
11. Cash flow statement of past year	27	44
12. Statement of changes in equity of past year	26	43
13. Interim statements of past year	20	33
14. Notes to financial statements of past year	23	38
15. Auditor's report of past year	22	36
16. Archive full annual reports one year	26	43
17. Archive full annual reports two year	24	39
18. Archive full annual reports more than two years	19	31
19. Summary of key ratios over a period of at least five years	20	33
20. Projected (pro-forma) financial statements and forecasts	5	8
21. Segmental reporting by line of business in current year	7	11
22. Segmental reporting by line of business in past years (at least, the last two years)	7	11
23. Current share price	16	26
24. Share price history	17	28
25. Share price performance in relation to stock market index	17	28
26. Current dividend	24	39
27. Dividend of past year	26	43
28. Assessments of analysts (reports of analysts)	5	8
29. Listing of analysts following the firm	13	21
30. Press releases/news about the company in informative media	35	57
<i>A-2. Corporate governance attributes</i>		
31. Shareholder structure (composition)	27	44
32. Number of shares	24	39
33. Classes of shares	3	5
34. Current year resolutions of shareholders' meeting	11	18
35. Speeches of the management board during the AGM	22	36
36. Current year resolutions of the board of directors	21	34
37. Current resolutions of the supervisory board	4	7
38. Past year resolutions of shareholders' meeting	9	15
39. Past year resolutions of the board of directors	13	21
40. Past resolutions of the supervisory board	4	7
41. Corporate governance principles/guidelines	14	23
42. Code of conduct and ethics for directors, officers and employees	15	25
43. Members of the board of directors (CV)	32	52
	<i>(continued)</i>	

Table AI.
The CIR
comprehensiveness
checklist items and their
frequency

	Frequency	%
44. Members of the audit committee (CV)	10	16
45. Compensation of the members of the management board	3	5
46. Compensation of the members of the supervisory board	2	3
47. Information about directors dealing	18	30
48. Articles of association	5	8
49. Disclosure of risks	11	18
<i>A-3. Corporate social and environmental attributes</i>		
50. Special CSR page	13	21
51. Stand-alone CSR report	6	10
52. Environmental policy statement	11	18
53. Information on energy savings	8	13
54. Employee/social/safety or health report	15	25
55. Employee profile	11	18
56. Employee training	10	16
57. Donations/sponsoring to community groups and charitable bodies information	15	25
58. Commercial sponsoring	7	11
59. Product quality and safety	24	39
<i>A-4. Investor relations attributes</i>		
60. Name of investor relations officer	16	26
61. E-mail to investor relations	20	33
62. Phone number to investor relations	19	31
63. Postal address to investor relations	14	23
64. English version of web site	57	93
65. English version of annual reports	28	46
66. Frequently asked questions	13	21
67. Financial calendar: calendar of events of interests to investors	29	48
B. Presentation		
<i>B-1. Technological features attributes</i>		
68. Loading time of the web site < 10 seconds	61	100
69. Annual report in PDF format	30	49
70. Annual report in HTML format	6	10
71. Financial data in processable format	31	51
72. Hyperlinks inside the annual report to accounting data	27	44
73. Video files	6	10
74. Audio files	11	18
75. The use of graphics images; e.g. share price graphs	29	48
<i>B-2. Accessibility (convenience and usability) attributes</i>		
76. Page divided into frames	58	95
77. One-click link to investor relations page/information	38	62
78. One-click link to press releases/news	38	62
79. Clear boundaries between the annual report (audited) and other information	28	46
80. On-line investor information order service: possibility of ordering company-related information	14	23
81. Change to printing friendly format possible	58	95
82. Pull-down menu	27	44
83. Click over menu	60	98
84. Next/previous buttons to navigate sequentially	1	20
85. Mailing list/e-mail news alert	9	15
86. Internal search engine	24	39
87. Availability of help section	4	7

Table AI.