



**Board of Directors Characteristics, Governance Disclosure and
Information Asymmetry between Managers and Investors**

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Abstract

In this study, we extend the existing literature on voluntary disclosure by investigating the impact of governance disclosure on information asymmetry. Results show a negative (positive) association between share price volatility (Tobin's Q) and the extent of governance disclosure. The same relationship is observed for Board size and Audit committee size. This suggests that governance disclosure may serve as a complement of a firm's governance mechanisms in reducing stock market asymmetry, especially in a country like Canada where legal protection of investors is high. In other words, voluntary disclosure about corporate governance is more likely to be perceived as credible in an effective governance regime. Finally, it appears that firms take into account ultimate costs and benefits to shareholders when determining the governance disclosure.

Key words: Governance disclosure, governance mechanisms, information asymmetry.

Résumé :

Dans la présente étude, nous analysons la relation entre la communication sur le Web au sujet de la gouvernance et l'asymétrie d'information dans les marchés boursiers. À partir d'équations simultanées visant à tenir compte de l'endogénéité entre ces relations, nos résultats montrent que : la communication de la gouvernance réduit l'asymétrie d'information sur les marchés boursiers (mesurée par la volatilité des titres et Tobin Q) ; la même relation est observée en ce qui concerne la taille du conseil d'administration et la taille du comité d'audit ; il y a complémentarité entre les attributs du conseil d'administration et la communication au sujet de la gouvernance.

Mots clés : mécanismes de gouvernance, communication au sujet de la gouvernance, asymétrie d'information.

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INTRODUCTION

In this paper, we assert and test that the determination of corporate governance disclosure and information asymmetry are closely intertwined processes. Accordingly, our research design takes into account the simultaneous effects of a firm's web-based disclosure strategy on: 1) the determinants of web-based governance disclosure and 2) the impact of web-based governance disclosure on information asymmetry. We extend Cormier, Ledoux and Magnan (2009) who suggest that firms take into account variables proxying for information costs and benefits accruing to stockholders when determining the extent of their web-based disclosure and that such a disclosure affect its earnings valuation multiple, although in a differential manner according to the nature of the information being conveyed. To the best of our knowledge, this study is the first to investigate the impact of web-based governance disclosure on information asymmetry, taking into account corporate governance mechanisms.

We rely on a conceptual framework that weaves together two complementary perspectives: information costs and benefits, and governance concerns. From an information costs and benefits perspective, we argue that organisations provide disclosure to cater to their stockholders' needs and interests, a requirement if they are to be able to tap capital markets efficiently in the future. However, an organisation's propensity to provide information to capital markets is conditioned by its governance structure, particularly at the board level.

Our results from simultaneous equations show a negative (positive) association between share price volatility (Tobin's Q) and the extent of corporate governance disclosure. The same relationship is also observed for Board size and Audit committee size. This suggests that

governance disclosure may serve as a complement of a firms' governance mechanism in reducing stock market asymmetry, especially in a country like Canada where legal protection of investors is high. In other words, voluntary disclosure about corporate governance is more likely to be perceived as credible in an effective governance regime. Finally, it appears that firms take into account ultimate costs and benefits to shareholders when determining the corporate governance disclosure.

The remainder of the paper is organised as follows. Section 2 contains a theoretical background and research propositions. The study's methodology is described in section 3. Results are presented in section 4. Finally, section 5 provides a discussion of results' potential implication.

2. THEORETICAL BACKGROUND AND RESEARCH HYPOTHESIS

2.1 Voluntary disclosure and information asymmetry

The board of directors and top management are accountable toward the firm's shareholders. Hence, the firm must provide shareholders with value-relevant information that impounds cost-benefit trade-off assessments. By reassuring a firm's investors about various aspects of its operations, expanded disclosure leads to a reduction in information asymmetry between managers and investors and, ultimately, to a reduction in information costs to be incurred by investors (e.g., Kim and Verrecchia, 1994). This, in turn, brings benefits to a firm by allowing it to lower its share price volatility and its cost of capital, to raise its valuation multiples, to increase stock liquidity and to enhance interest by institutional investors (Healy, Hutton and Palepu, 1999).

We posit that the decision by a firm's management to disclose information about its governance is likely to be influenced by a trade-off between the direct and indirect costs to be incurred for providing such disclosure and the benefits to be derived by the firm or its shareholders from such disclosure (Scott, 1994). On the one hand, a firm may decide to voluntarily disclose information if doing so is less costly than having investors and other market participants incur information costs themselves (Atiase 1985; Lang and Lundholm 1993; Milgrom, 1981; Roberts, 1992). For instance, firms which expansion is dependent upon continuous access to capital markets or firms that are widely followed by investors have incentives to reduce information asymmetry between managers and investors since such actions lower financing costs (Frankel, McNichols and Wilson, 1995; Clarkson, Kao and Richardson, 1994). On the other hand, a firm may decide to refrain from disclosing some aspects of its activities if it provides outside parties with information that could be used to the firm's detriment (e.g., competitors, unions) (Scott, 1994).

Overall, our emphasis on governance information quality is consistent with prior work in financial/non-financial disclosure (e.g., Botosan, 1997; Association for Investment Management and Research, 1992, 1993 and 2000; Healy, Hutton and Palepu, 1999; Lang and Lundholm, 1993 and 1996; Welker, 1995; Clarkson, Richardson and Vasrini, 2008). It is our view that governance disclosure ultimately affects information asymmetry.

2.2 Governance and Monitoring

Prior studies show that a firm's governance influences the quality of its voluntary disclosure (Eng and Mak, 2003). More specifically, the intensity of monitoring by a board has a direct influence on managerial discretion and typically requires firms to engage into more

extensive organisational performance measurement and reporting (Fama, 1980). Leuz, Nanda and Wysocki (2003) suggest that earnings management increases with inside control.

Such monitoring by the board can be implemented through various means and attributes. For instance, an independent board is more likely to be effective in assessing managerial decisions and performance than a board that comprises only insiders (Fama and Jensen, 1983; Beasley, 1996; Xie, Davidson and DaDalt, 2003). With respect to voluntary disclosure, Chen and Jaggi (2000) document that a board that comprises mostly independent non-executive directors is more likely to be associated with comprehensive financial disclosure. Another example is provided by Karamanou and Vafeas (2005) who show that firms with better governance are more likely to issue voluntary earnings forecasts. However, Cheng and Courtenay (2005) find that the relation between governance and disclosure is enhanced if there is an efficient regulatory environment.

Furthermore, there is evidence that stock options can align manager interests with shareholder interests. However, contracting costs may lead to incomplete contracts and agency conflicts. Aboody and Kaznik (2000) show that managers with stock-based compensation mislead shareholders by accelerating bad news and by delaying good news, thus potentially reducing the exercise price of coming stock option grants. Hence, web-based disclosure is likely to be opportunistically affected by the presence of CEO stock options.

2.3 Research hypothesis

In the literature, several approaches to assess a firm's information asymmetry have been proposed. Francis, Khurana and Pereira (2005), Leuz and Verrecchia (2000), Healy Hutton and Palepu (1999) and Welker (1995) show that the extent of information asymmetry – proxied by

bid-ask spread, share price volatility or stock liquidity – is negatively associated with disclosure quality. Other studies rely on Tobin's Q or Market-to-Book ratio (e.g. Aerts, Cormier and Magnan, 2007; Clarkson, Richardson and Vasrini (2008), for assessing the impact of voluntary disclosure on information asymmetry.

Cormier, Ledoux and Magnan (2009) show that a firm's web-based disclosure strategy affects earnings valuation multiples, but in a differential way according to the nature of the information being disclosed. More specifically, while disclosure about Human & Intellectual capital and to a lesser extent Social responsibility is associated with a larger earnings multiple, i.e. a lower cost of capital, the authors do not find any association concerning disclosure about Customer value and Financial/Governance. A potential explanation for the absence of a significant relationship for financial/governance disclosure is that financial information disclosed on the web is already known from many sources. In the current study, we focus on web-based corporate governance disclosure.

A few studies document an association between corporate governance and stock returns or firm value (e.g. Gompers, Ishii and Metrick, 2003; Chen, Wei and Chen, 2003; Beiner, Drobetz and Zimmermann, 2006). More specifically, Chen, Wei and Chen document that investing on firms with a high corporate governance index generate on average 8.5% of abnormal return. Concerning the disclosure of corporate governance practices, on average, the authors find that such disclosure reduces the cost of equity capital by 0.47% while a firm's corporate governance ranking reduces its cost of equity capital roughly by 1.26%. We must mention that the coefficient for disclosure is only marginally significant. The authors argue that the superiority of corporate governance mechanisms above the disclosure in reducing the cost of capital is dependent upon the legal protection of investors and the overall level of corporate governance in the economy.

Chen, Wei and Chen find that governance disclosure play a weak role in reducing the cost of capital in Asia' emerging markets. They argue that this is due to a lack of effective governance mechanism.

We argue that governance disclosure may serve as a complement of a firms' governance mechanism in reducing stock market asymmetry, especially in a country like Canada where legal protection of investors is high. In such a context, voluntary disclosure about corporate governance is more likely to be perceived as credible by investors. Hence, we anticipate complementarities between governance disclosure and governance mechanisms.¹

This gives rise to our research hypothesis:

Governance disclosure leads to a reduction in share price volatility even after controlling for a firm's corporate governance mechanisms.

3. METHOD

3.1 Sample

The sample comprises 155 observations of web disclosure for the year 2005. We initially collected web disclosure in the Summer of 2002 for an international study (Aerts, Cormier and Magnan, 2007). All non-financial firms represented on the Toronto Stock Exchange S&P/TSX Index were identified. To ensure that our sample comprised firms with active information dynamics and investors interest, we selected firms that were followed by at least two financial analysts. The resulting 2002 sample comprised 189 non-financial firms. Mergers and

¹ In Canada, in June 2005, Ontario Securities Commission released *National Policy 58-201 Corporate Governance Guidelines* that makes mandatory the disclosure of some governance practices (e.g. board composition, competence, compensation, business ethics, description of board committees and their work). At the time of our data collection, firms were not yet complying with that policy. Therefore, we can suppose that web-based governance disclosure is voluntary.

acquisitions, bankruptcies and delistings reduced our sample to 155 in 2005. The same coding grid has been used by Cormier, Ledoux and Magnan (2009) and Aerts, Cormier and Magnan (2007). For the current research, web-based disclosure was collected from Web sites in Spring 2005. Financial data was collected from the Stock Guide and governance data was collected from 2004 proxy statements, those available in Spring 2005. The final sample comprises 131 firms since, out of the initial sample of 155 firms, there are missing data for board size and board independence (2 firms), stock options (12 firms), and share volatility (10 firms). Sample firms operate in the following industries: Metals and mines; Gold and precious metals; Oil and gas; Paper and forest products; Consumer products; Industrial products; Real estate; Utilities; Communication and media; Merchandising.

3.2 Empirical model

This study attempts to provide an integrated analysis of firms' web-based governance disclosure strategy. We posit that this strategy affects simultaneously information asymmetry and disclosure. It is thus important to actually control for the presence of endogeneity between our critical variables. To control for endogeneity, simultaneous equations models are used.

Based on prior literature, we use share price volatility and Tobin's Q as proxies for information asymmetry. The following structural equations summarize the approach adopted in the empirical analysis:²

² In additional simultaneous equation models, we will add Board meetings and audit committee meetings to both equations.

(1.1) Share price volatility_{it} =

$$f(\beta_0 + \beta_1 \text{ Systematic risk} + \beta_2 \text{ Analyst following} + \beta_3 \text{ Free float} + \beta_4 \text{ Board independence} + \beta_5 \text{ Board size} + \beta_6 \text{ Audit committee size} + \beta_7 \text{ Governance disclosure})_{it}$$

(1.2) Governance disclosure_{it} =

$$f(\beta_0 + \beta_1 \text{ New Financing} + \beta_2 \text{ Free float} + \beta_3 \text{ Leverage} + \beta_4 \text{ Profitability} + \beta_5 \text{ US listing} + \beta_6 \text{ Size} + \beta_7 \text{ Board independence} + \beta_8 \text{ Board size} + \beta_9 \text{ Audit committee size} + \beta_{10} \text{ CEO stock options})_{it}$$

(2.1) Tobin's Q_{it} =

$$f(\beta_0 + \beta_1 \text{ Inverse of Assets} + \beta_2 \text{ Return on Assets} + \beta_3 \text{ Board independence} + \beta_4 \text{ Board size} + \beta_5 \text{ Audit committee size} + \beta_6 \text{ Board meetings} + \beta_7 \text{ Audit committee meeting} + \beta_8 \text{ Governance disclosure})_{it}$$

(2.2) Governance disclosure_{it} =

$$f(\beta_0 + \beta_1 \text{ New Financing} + \beta_2 \text{ Free float} + \beta_3 \text{ Leverage} + \beta_4 \text{ Profitability} + \beta_5 \text{ US listing} + \beta_6 \text{ Size} + \beta_7 \text{ Board independence} + \beta_8 \text{ Board size} + \beta_9 \text{ Audit committee size} + \beta_{10} \text{ CEO stock options})_{it}$$

For the data concerning governance characteristics, we rely to 2004 proxy statements since we collected governance disclosure web sites during Spring 2005, i.e. in line with information available from the more recent proxy statement available at that time, namely 2004.

The structural equations are estimated for total score of governance disclosure and for the five individual disclosure components.

3.3 Measurement of governance disclosure

Governance disclosure is essentially based on indicators proposed by United Nations in 2002 and updated in 2005 *Guidance on Good Practices in Corporate Governance Disclosure* (United Nations, 2006).³ The grid comprises 17 disclosure items grouped into five categories: Strategic management, Managers, Directors, Audit committee, and Ownership. The web content is split among qualitative elements (indicative, descriptive) and monetary or quantitative elements. Web sites were analyzed and coded online, with the structure of the web site being kept on a CR-Rom for future reference and validation. To ensure consistency across firms, two persons reviewed all individual scores independently. All disagreements were subsequently reviewed by one of the co-researchers.⁴

The use of a coding scale to qualify a firm's governance disclosure is appropriate for the following reasons. First, it allows for an integration of different types of information into a single figure that is comparable across firms in terms of relevance. Second, a qualitative scale allows the researcher's judgment to be impounded in rating the value or quality of the disclosure made

³ In the United Nations' document, non-financial disclosures related to corporate governance are grouped into nine categories: Objectives; Ownership and shareholder rights; Governance structure and policies; members of the board and key executives; material issues regarding stakeholders, and environmental and social stewardship; Risk factors; External auditors; and Internal audit function.

⁴ A coding manual documenting coding instructions as well as standardized coding worksheets were prepared before hand. Each coder then applied the following coding sequence: (1) independent identification of the occurrence of items relative to the different coding categories; (2) independent coding of the items according to quality level of content and (3) timed reconciliation on a subset of company reports. The coders were intensively trained in applying coding instructions and in using the coding worksheets. They were unaware of the research hypotheses. Initial differences in identifying grid items accounted for on average 7% of the maximum number of items identified. Of the information quality level coding, less than 10% had to be discussed for reconciliation. Disagreement between coders mostly happened at the beginning of the coding process (essentially the first 40 sample firms). A researcher reconciled coding disagreements exceeding 5% of the highest total score between the two coders. Smaller disagreements were resolved by the two coders themselves. Overall, we think that this coding process provides a reliable measure of web-based disclosure.

by a firm. While this process is more subjective, it ensures that irrelevant or redundant generalities are not considered strategic disclosure.

3.4 Explanatory Variables Measurement

3.4.1. *Determinants of share price volatility*

Prior studies on the determinants of information asymmetry component of cost of capital suggest numerous determinants other than voluntary disclosure (Leuz and Verrecchia, 2000). Based on that literature, we use systematic risk, free float and analyst following as determinants of share price volatility/Tobin's Q.

Analyst following. Prior studies (Atiase and Bamber, 1994; Imhoff and Lobo, 1992; Marquardt and Wiedman, 1998) argued that analyst following functions as a proxy for a firm's information that is publicly available. More specifically, Roulstone (2003) documents results that are consistent with analysts reducing information asymmetry by providing public information to market participants, while no support is found for analyst following functioning as a proxy for privately held information. If analyst information is quickly disseminated to large numbers of market participants, then high analyst following represent a "good" information environment for uninformed and partially informed market participants. This argument would imply that analyst reports are indeed substitutes and not just complements of corporate disclosures. On this point, the empirical literature is not equivocal (Francis, Schipper and Vincent, 2002; Frankel and Li, 2004). Chen and Jiang (2006) argue for a reconciliation of the substitution and complementary roles considering the relative timing of analyst research and corporate disclosure. They document that the role of analyst research depends on the timing of analyst reports relative to earnings announcements.

The substitutory role of analyst following is also consistent with empirical results showing that the impact of corporate disclosures on the cost of capital and on the properties of analyst forecasts decreases with the number of analysts following the firm (Botosan, 1997; Hope, 2003; Richardson and Welker, 2001).

Therefore, considering the fact that in a pre-earnings setting analyst reports are mainly information substitutes and the evidence of analyst following as a proxy for public information instead of privately held information, we use analyst following as the most efficient proxy for non-web-based disclosures. Moreover, controlling for other disclosure outlets would inflate the number of endogenous variables within our system that would be difficult to control efficiently. Hence, a firm's analyst following is used as a proxy for the level of non-web based disclosures and the extent of a firm's communication with financial analysts (Leuz, 2003). Analyst forecasts' performance is likely to improve, as more information about a company is processed and disclosed by analysts (Alford and Berger, 1999). A firm's analyst following is often used as a proxy for the level of other disclosures and the extent of a firm's communication with financial analysts (Leuz, 2003). Hence, we expect a negative relation between analyst following and information asymmetry.

Systematic risk. The higher a firm's systematic risk, the more difficult it is for investors to precisely assess a firm's value and the more likely they are expected to incur information costs to assess its risk drivers. Prior research shows that investors charge a higher cost of equity for firms with higher systematic risk (e.g. Leuz and Verrecchia, 2000; Hail and Leuz, 2006; Botosan and Plumlee, 2005; Mikhail, Walther and Willis, 2004; Gebhardt, Lee and Swaminathan, 2001; and Botosan, 1997). A positive relation is expected between systematic risk and information asymmetry.

Free float. We use free float as an inverse proxy for the presence of insiders since control blocks have generally greater superior access to private information (Leuz and Verrecchia, 2000). Hence, we expect a negative association between free float and information asymmetry.

Governance and monitoring. Three variables are introduced to capture the impact of corporate governance as a monitoring factor affecting information asymmetry: Board independence; Board size; and Audit committee size.

Board independence. We expect board independence, measured as the proportion of outside directors, to be associated with share price volatility. Another aspect of board independence is the separation of the roles of Chair and Chief Executive Officer. Rechner and Dalton (1991) show that an independent leadership structure in which two different persons are posted as Chair and CEO monitors the top management effectively. Our variable takes the value of zero (0) when the majority of directors are not independent, one (1) when the majority of directors are independent and two (2) when the majority of directors are independent, and the function of CEO and Chair of the board is separate. We expect a negative relationship between this variable and information asymmetry.

Board size and Audit committee size. Beasley (1996) finds a positive relationship between board size and the likelihood of financial statement fraud while Abbott, Park and Parker (2000) find no relationship. Moreover, Bédard, Chtourou and Courteau (2004) find that board size is associated with less earnings management but only for income decreasing accruals. Moreover, we put forward the view that audit committee effectiveness is a critical determinant of voluntary web-based disclosure. In Canada, audit committees must comprise at least three independent members. We can argue that three is a small number for the audit committee to play effectively its monitoring role and that adding a few more members could be beneficial in that regard.

Hence, we expect board size and audit committee size to be negatively associated with information asymmetry.

Governance disclosure. We posit that governance disclosure may serve as a complement of a firm's governance mechanism in reducing stock market asymmetry. Hence, we anticipate complementarities between disclosure and corporate governance mechanisms. Therefore, governance disclosure should lead to a reduction in information asymmetry.

3.4.2. Determinants of Tobin's Q

Tobin's Q is defined as the market value of a firm's equity, plus the book value of its debt, divided by the book value of equity and debt. We expect the opposite sign of the relationship between Tobin's Q and governance mechanisms and disclosure compared with share price volatility. A reduction in share price volatility is expected to be associated with an increase in market premium as proxied by Tobin's Q.

3.4.3. Determinants of governance disclosure

Verrecchia (1983) argues that whether a firm will voluntarily disclose corporate information is a function of the proprietary costs associated with the disclosure. Unless there is perceived benefit that outweighs the proprietary cost, firms will not disclose.

Information costs. Three variables are used to capture investors' information needs and, information costs with respect to a firm's web-based disclosure: New Financing; and Free float.

New financing. Lang and Lundholm (1993) document a positive relationship between the need for financing and voluntary disclosure (as measured by financial analysts' disclosure

scores). Issues of long-term debt and equity are a measure of actual external financing (Dechow, Sloan and Sweeney, 1996; Bujaki and McConomy, 2002; Collett and Kraski, 2005). The variable measures the actual amount of long-term financing raised through stock or debt offerings scaled by total assets. We expect a positive relationship between the variable *New financing* and governance disclosure.

Free float. Ownership structure can determine the level of monitoring and, thereby, the extent of disclosure (Eng and Mak, 2003). Firms with widely-held ownership are expected to be responsive to public investors' information costs since no dominant shareholders typically have access to the information they need (Hope, 2003) and do want or need to share it with other stakeholders such as employees (Roe, 2003). Yhim, Karim and Ruthledge (2003) document that the proportion of outside ownership is significantly associated with high-level forecast precision. A positive relation is expected between Free float and governance disclosure. Moreover, Ben-Amar and Boujenoui (2008) for a Canadian sample document a negative association between the disclosure of governance practices and internal ownership (managers and board members).

Litigation/proprietary costs. A priori, the magnitude of potential costs a firm faces because of disclosure is difficult to assess since it requires the identification of all parties that may use information to the firm's detriment. However, a firm's financial condition does provide a measure of its willingness to release proprietary information since only firms that are financially sound may be able to trade off the benefits from additional disclosure with the costs of revealing potentially damaging information. In contrast, firms in poor financial condition may be unable to withstand the initial negative consequences that are needed to gain any benefits from more extensive disclosure. Four variables proxy for a firm's ability to support proprietary costs: Leverage; Profitability; US listing; and Firm size.

Leverage. Firms in poor financial condition may not be able to withstand the initial negative consequences that are needed to gain any benefits from more extensive disclosure. Thus, consistent with prior findings (McGuire, Sundgren and Schneeweis, 1988; Cormier and Magnan, 2003), it is expected that there is a negative relationship between a firm's leverage as measured by Long term financial debt/Total assets and governance disclosure.

Profitability. Many studies document a positive association between a firm's level of disclosure and its financial performance (Mills and Gardner, 1984; McGuire, Sundgren and Schneeweis, 1988; Cormier and Magnan, 2003). A positive relationship is expected between profitability, as measured by return on assets, and governance disclosure.

US listing. U.S. listed firms are meant to face disclosure pressures internationally (Leuz and Verrecchia, 2000). Debreceeny, Gray and Rashman (2002) find that in addition to a firm's size, listing on US exchange is a specific determinant of Internet financial reporting. Moreover, Ben-Amar and Boujenoui (2008) for a Canadian sample document a positive relationship between the disclosure of governance practices and US listing. Hence, *U.S. listing* is introduced as a binary variable (1; 0 if not) and a positive relation is expected between SEC and governance disclosure.

Firm Size. Prior evidence is consistent in showing a positive relation between the extent of corporate disclosure and firm size (Scott, 1994; Cormier and Magnan, 1999; Neu, Warsame and Pedwell, 1998; Eng and Mak, 2003). Firm size proxies also other factors, such as the extent of monitoring by analysts. Under these conditions, firm size, measured as $\ln(\text{Assets})$, is introduced with an expectation of a positive relation with governance disclosure.

Governance and monitoring. Four variables are introduced to capture the impact of corporate governance as a monitoring factor affecting governance disclosure: Board

independence; Board size; Audit committee size, and CEO stock options. We expect a positive relationship between board effectiveness and corporate governance disclosure. As for the variable Stock options, we argue that the importance of contracting costs may lead to incomplete contracts and agency conflicts. The more agency conflicts between managers and shareholders are important, the more managers with stock-based compensation will manage disclosure to maximize the value of their stock options. We expect the voluntary nature of governance disclosure to be opportunistically affected by the presence of CEO stock options. Since the actual impact of stock options on reporting is unclear, no directional predictions are made.

3.5. Variable measurement

Independent variables	Measure
<i>Information costs</i>	
Systematic risk	Beta
New financing	Long-term debt borrowing plus stock issued scaled by total assets.
Free float	The percentage of shares that are not closely held (total shares outstanding minus control blocks of 10% or more).
Analyst following	Number of analysts following a firm.
<i>Litigation/Proprietary costs</i>	
Leverage	Long term debt / Total assets
Profitability	Return on assets
US listing	SEC registration (binary variable 1; 0 if not).
Firm size	Ln(Total Assets) as of year-end
<i>Governance/Monitoring</i>	
Board independence	(0) if a majority of directors are not independent; (1) if a majority of directors are independent; (2) if a majority of directors are independent and if the function of CEO and Chair of the board is separated.
Board size	Number of directors on the board.
Audit committee size	Number of audit committee members.
Board meetings	Number of board meetings
Audit committee meetings	Number of audit committee meetings
CEO stock options	Value of in-the-money exercisable stock options / salaries + bonus

4. RESULTS

4.1 Descriptive statistics

Table 1 provides some descriptive statistics about sample firms' independent variables. Sample firms are relatively large and exposed to media (total assets averaging 5 billion dollars). About 60% of sample firms have a concentrated ownership, with more than 50% being publicly-traded in the United States. 12% of sample firms have recently relied on capital markets for additional financing. CEO value of in-the-money exercisable stock options represents almost twice their salary and bonus. Our sample firms have independent directors in a proportion of 36% while CEO and board chair duality in 20%.

[Insert table 1]

Table 2A presents the correlation for Share price volatility model. Consistent with our hypothesis, Governance disclosure is associated to a reduction in share price volatility (-0.017 for total score and -0.16 for strategic management). We also document an association between Board size (-0.37) and Audit committee size (-0.33) and share price volatility. Table 2B show correlations for Corporate governance disclosure model. Essentially, Free float (0.24), US listing (0.25) and Size (0.28) are the key variables correlated with total disclosure score. Moreover, results do not show any correlation between board effectiveness and governance disclosure. This suggests that our governance disclosure variables are quite independent from variables relating to the characteristics of the board of directors and its audit committee.

[Insert table 2A and 2B]

As illustrated in Table 3, corporate governance disclosure score is on average 17.94. Among disclosure components, Strategic management (6.18) and Directors (6.69) exhibit the highest scores. Internal consistency estimates (Cronbach's alpha on score components) show that

the variance is quite systematic (alpha= 0.75 for total governance score and varying from 0.68 to 0.81 for individual components). This is slightly higher than Botosan (1997) who finds an alpha of 0.64 for an index including five categories of disclosure in annual reports. Cronbach's alpha estimates the proportion of variance in the test scores that can be attributed to true score variance. It can range from 0 (if no variance is consistent) to 1.00 (if all variance is consistent). According to Nunnally (1978), a score of 0.70 is acceptable.

[Insert table 3]

In our study, we observe that, in many cases, web-based governance disclosure is far more detailed compared to mandatory governance mechanisms released in proxy statements. To illustrate the extent of web disclosure related to strategic management, board of directors and audit committee, we can refer to Talisman and Abitibi-Bowater web pages:

Strategic management:

Talisman. “*A Clear Strategy to Unlock Value*. In May, Talisman unveiled a new corporate strategy. This strategy has four major objectives: Lengthen the stride to demonstrate longer-term growth; Increase focus on fewer, more material assets; Maintain healthy returns while delivering sustainable growth; Improve delivery against achievable targets. In order to achieve these objectives, the company developed a four point action plan: Focus the Portfolio - Exit non strategic areas; - Size the UK for sustainable delivery; Grow Existing Base - NAO, UK assets as firm base - Grow Southeast Asia, Norway; New Growth Opportunities - Determine unconventional potential in NAO - Potential Future Growth in North Africa, South America; Optimize Global Exploration - Support core area growth in the short term - Increase focus toward larger pool sizes.”

Board of directors:

Abitibi-Bowater. “*Criteria and Procedure for Evaluating Board Performance*. The Nominating and Governance Committee oversees the process of evaluating the performance of Board committees and the Board as a whole. Each of the full Board, Nominating and Governance Committee, the Human Resources and Compensation Committee, the Audit Committee and the Environmental, Health and Safety Committee shall conduct an annual self-assessment of its performance. Each committee shall report its findings and recommendations to the Board. These reports shall specifically review areas in which the Board and/or management believes a better contribution could be made.”

Audit committee:

Abitibi-Bowater. *Setting Additional Criteria for Audit Committee Members* “In addition to satisfying the general independence standards as described above, Audit Committee members are required to satisfy the SEC independence standards found in Rule 10A-3, which was enacted pursuant to Sarbanes-Oxley Section 301 as well as the listing standards of the New York Stock Exchange, as each may be amended from time to time. In general, these standards state that no fee (other than for service as a Director, including consulting and advisory fees) may be received from the Company or its subsidiaries, regardless of the amount. In addition, no member of the Audit Committee may be a partner, member or principal of a law firm, accounting firm or investment Additional Criteria for Audit Committee Members. In addition to satisfying the general independence standards as described above, Audit Committee members are required to satisfy the SEC independence standards found in Rule 10A-3, which was enacted pursuant to Sarbanes-Oxley Section 301 as well as the listing standards of the New York Stock Exchange, as each may be amended from time to time. In general, these standards state that no fee (other than for service as a Director, including consulting and advisory fees) may be received from the Company or its subsidiaries, regardless of the amount. In addition, no member of the Audit Committee may be a partner, member or principal of a law firm, accounting firm or investment banking.”

4.2 Multivariate analyses

Since we posit that a firm’s information dynamics affect disclosure and share price volatility simultaneously, we first assess whether or not endogeneity exists between these variables using a Hausman test. Using this procedure, we reject the null hypothesis of no endogeneity with respect to Share price volatility and Governance disclosure (t-test = 2.44; $p < 0.016$)⁵ and concerning Tobin’s Q and governance disclosure (t-test = 1.80; $p < 0.074$).⁶

Table 4 reports results of a three-stage estimation model regarding the simultaneous test of share price volatility and Governance disclosure. The seemingly unrelated regression (SURE)

⁵ Following Hausman procedure, we regress Total governance disclosure on New Financing, Free float, Leverage, Profitability, US listing, Size, Board independence, Board size, Audit committee size, CEO stock options, and then add the residuals of this regression in Share price regression model.

⁶ We regress Total governance disclosure on New Financing, Free float, Leverage, Profitability, US listing, Size, Board independence, Board size, Audit committee size, CEO stock options, and then add the residuals of this regression in Tobin’s Q regression model.

method is used.⁷ Consistent with our hypothesis, our results show a negative and significant relation between share price volatility and the extent of governance disclosure (-0.019; $p < 0.050$). Concerning the disclosure components, three out of five components (Strategic management: -0,056; $p < 0.010$; Directors: -0.033; $p < 0.050$; and Audit Committee: -0.091; $p < 0.010$) are negatively and significantly associated with a reduction in share price volatility.

Moreover, we also observe that coefficients for Board size and Audit committee size are negative and significant in all regressions. An incremental Chi2 change test is computed to assess the incremental value relevance of specific aspects of governance disclosure coefficients. With a change in Chi2 statistic of 8.08 ($p < 0.005$) for total disclosure, 6.55 ($p < 0.010$), for Strategic management, 3.38 ($p < 0.007$) for Directors, and 7.25 ($p < 0.005$) for Audit committee, results suggest that specific aspects of governance disclosure have a marginal relevance in reducing share price volatility over governance mechanisms. This suggests that governance disclosure may serve as a complement of a firms' governance mechanism in reducing stock market asymmetry.

Concerning the determinants of total disclosure, we observe that information costs and benefits [Free float (12.877; $p < 0.010$), US listing (4.793; $p < 0.010$), firm size (3.723; $p < 0.010$)] are positively related to governance disclosure while the magnitude of the CEO's stock option value is negatively associated with governance disclosure (-0.069; $p < 0.100$). These results suggest that the extent of CEO stock options lead to less qualitative transparency while efficient governance mechanisms do not influence transparency. The fact that voluntary disclosure could be opportunistically affected by the extent of the CEO stock option is consistent

⁷ The seemingly unrelated regression, also known as Zellner's method, estimates the parameters of the system, accounting for heteroskedasticity, and contemporaneous correlation in the errors across equations. The simultaneous approach allows constraints on coefficients to be placed across equations and to employ techniques that account for correlation in the residuals across equations.

with findings by Aboody and Kaznik (2000). Moreover, results show a positive relation between Board independence and disclosure concerning managers (0.477; $p < 0.050$) and Ownership (0.485; $p < 0.050$). This result is consistent with Chen and Jaggi (2000) who document that a board that comprises mostly independent non-executive directors is more likely to be associated with comprehensive financial disclosure.

[Insert table 4]

One additional way to measure the effectiveness of a board committee is to look at the frequency of its meetings. As a first sensitivity analysis, we add board of director meetings and audit committee meetings to our models. Concerning the audit committee, best practices suggest three or four meetings per year (KPMG, 1999). We expect that the frequency of board meetings and audit committee meetings will be positively related to disclosure. We observe that twenty firms did not disclose this information. Results for the reduced sample are presented in table 5. We do not find any relationship between Board meetings, Audit committee meetings, and corporate governance disclosure. Concerning, the impact of board meetings and Audit committee meetings on share price volatility, results suggest that Audit committee meetings can lead to a reduction in asymmetry while the opposite is observed for Board meetings. Could it mean that a board of directors that meet repeatedly could be a signal of potential problems for market participants? For our sample firms, board meetings range from four to twenty-eight meetings (mean of 9.6 meetings and median of 8.0 meetings).

Concerning Tobin's Q model, results presented in table 6 support those presented in previous tables. The difference is that disclosure about managers is associated with a larger Tobin while disclosure about Strategic management does not seem to be related to Tobin.

As a sensitivity analysis, we split the variable Board independence in two different variables: independent members (1/0) and CEO not Chair of the Board (1/0). Our results (not tabulated) suggest that an external board has a positive impact on total disclosure (0.081; $p < 0.071$ one-tailed), Strategic management (0.038; $p < 0.056$ one-tailed), and Directors (0.047; $p < 0.054$ one-tailed). These two variables do not affect stock price volatility.

CONCLUSION

In this paper, we build on prior literature on voluntary disclosure by investigating the impact of corporate governance disclosure on stock price volatility. We adopt a conceptual framework that weaves together two complementary perspectives: Capital market(s)-driven information costs and benefits and governance concerns.

Through simultaneous equations, our results show a negative (positive) association between share price volatility (Tobin's Q) and the extent of corporate governance disclosure. The same relationship is also observed for Board size and Audit committee. This suggests that governance disclosure may serve as a complement of a firms' governance mechanism in reducing stock market asymmetry, especially in a country like Canada where legal protection of investors is high. In other words, voluntary disclosure about corporate governance is more likely to be perceived as credible in an effective governance regime.

Our results show that firms take into account ultimate costs and benefits to stockholders when determining the extent of their disclosure. Results also suggest that the extent of CEO stock options is associated with less disclosure. The fact that voluntary disclosure could be

opportunistically affected by the extent of the CEO stock option is consistent with findings by Aboody and Kaznik (2000).

The results of this study should be interpreted with caution at least for two reasons. First, 3SLS is sensitive to the choice and validity of the instruments (Barhart and Rosenstein, 1998). To mitigate specification error, we base the choice of instruments for the disclosure model on information economics theory, as well as on prior empirical studies. However, it does not completely eliminate the potential for model misspecification and bias of the coefficients that would result from such misspecification. A second potential limitation is that the paper's focus on web-based disclosure and, as such, excludes hyperlinked documents such as quarterly or annual financial statements, press releases, annual reports, sustainability reports or proxy statements. Finally, our empirical research can be further extended using a larger sample.

Table 1**Descriptive statistics**

	Minimum	Maximum	Mean	Std dev.
Information asymmetry				
Share price volatility (std dev. of change in daily stock prices for year 2005)	0.818	10.385	2.233	1.494
Tobin's Q	0.751	9.862	1.997	1.294
Systematic risk	0	2.71	0.682	0.489
Analyst following	0	35	6.829	5.888
Information costs				
New financing	0	0.70	0.086	0.119
Free float	0.098	0.999	0.776	0.225
Litigation/Proprietary costs				
Leverage	0	2.00	0.220	0.214
Profitability	-1.07	0.56	0.035	0.131
US listing	0	1	0.511	0.501
Firm size (Total Assets in million Can \$)	26	40 076	4 844	7 226
Governance/Monitoring				
Board independence	0	2	0.909	0.515
Board size	4	18	9.987	2.755
Audit committee size	2	9	3.980	1.103
Board meetings	4	28	9.592	6.603
Audit committee meetings	0	44	6.267	3.941
CEO stock options	0	229	1.786	21.715

Table 2A
Correlations – Information asymmetry model

	2	3	4	5	6	7	8	9	10	11	12	13
1 Share price volatility	*0.26	0.06	-0.14	-0.07	*-0.37	*-0.33	*-0.17	*-0.16	-0.07	-0.11	-0.10	-0.05
2 Systematic risk	1	*0.17	*0.20	0.06	-0.12	-0.13	-0.08	0.07	0.08	-0.04	-0.06	-0.05
3 Free float		1	0.12	0.12	-0.12	0.05	*0.24	0.12	0.15	*0.23	*0.26	-0.09
4 Analyst			1	-0.09	0.03	0.06	0.03	-0.04	0.07	0.09	-0.01	0.06
5 Board independence				1	0.11	0.09	0.01	0.05	0.14	-0.07	-0.03	*0.16
6 Board size					1	*0.55	0.13	*0.20	0.03	0.08	-0.02	0.05
7 Audit committee size						1	0.10	0.07	0.06	0.11	0.05	-0.04
8 Governance disclosure							1	*0.72	*0.43	*0.69	*0.57	*0.19
9 Strategic management								1	*0.11	0.07	0.02	0.07
10 Managers									1	*0.36	*0.18	*0.11
11 Directors										1	*0.67	0.02
12 Audit committee											1	0.01
13 Ownership												1

Table 3
Governance Disclosure
Mean scores by component

	Min.	Max.	Mean	Std dev.	Cronbach Alpha
Strategic management	0	26	6.187	4.893	0.71
Managers	0	8	2.574	1.468	0.80
Directors	0	24	6.690	5.971	0.68
Audit committee	0	11	1.967	3.090	0.81
Ownership	0	6	0.516	1.202	0.72
Total score N=155	1	52	17.935	11.658	0.75

Table 4
Simultaneous Equations analyses (3SLS) of the Determinants of
Governance disclosure and Share Price Volatility

	Governance disclosure						
	Total score	Strategic management	Managers	Directors	Audit committee	Ownership	
Dependent variable:							
Share price volatility							
Systematic risk	+	***0.663	***0.664	***0.671	***0.666	***0.649	***0.669
Free float	-	**1.042	*0.880	0.765	*0.894	**1.013	0.681
Analyst	-	***-0.045	***-0.044	***-0.047	***-0.046	***-0.050	***-0.048
Board independence	-	0.019	0.064	0.055	-0.014	0.001	0.045
Board size	-	**0.096	**0.085	***0.108	***0.105	***0.111	***0.107
Audit committee size	-	**0.183	**0.210	**0.188	**0.176	**0.173	**0.194
Governance disclosure	-	***-0.026	***-0.056	-0.053	**0.033	***-0.091	-0.023
Adjusted R ²		23.5%	23.5%	23.4%	23.1%	24.6%	23.4%
Chi2 (P value)		46.4(0.00)	44.8(0.00)	38.5(0.00)	41.7(0.00)	45.4(0.00)	38.3(0.00)
Governance disclosure Chi2 change (p value)		8.08 0.005	6.55 0.010	0.25 0.60	3.38 0.070	7.25 0.005	0.30 0.60
Dependent variable:							
Governance Disclosure							
<i>Information costs</i>							
New financing	+	-0.407	-1.457	0.790	-2.094	1.745	0.625
Free float	+	***12.877	**3.553	**1.106	***5.546	***3.435	-0.745
<i>Litigation/Proprietary costs</i>							
Leverage	-	-4.082	-1.466	**1.334	-2.367	1.698	-0.599
Profitability	+	4.525	1.222	0.243	1.653	1.038	0.707
US listing	+	***4.793	*1.138	**0.467	***2.661	0.330	0.243
Firm size	+	***3.723	***1.374	***0.250	***1.502	***0.544	*0.126
<i>Governance/Monitoring</i>							
Board independence	+	1.296	1.030	**0.477	-0.672	0.018	**0.485
Board size	+	-0.438	0.075	-0.042	-0.283	-0.204	-0.003
Audit committee size	+	-0.538	-0.634	-0.010	0.171	0.045	-0.129
CEO stock options	+/-	*-0.069	-0.018	0.002	*-0.037	-0.013	-0.004
Adjusted R ²		27.4%	18.2%	13.6%	21.1%	12.8%	6.8%
Chi2 (P value)		50.4(0.00)	30.8(0.00)	19.5(0.03)	35.5(0.00)	19.9(0.03)	9.7(0.08)
N=131							

*: p < 0.10; **: p < 0.05; ***: p < 0.01. One-tailed if there is a predicted sign, two-tailed otherwise.

Table 5
Simultaneous Equations analyses (3SLS) of the Determinants of
Governance disclosure and Share Price Volatility
(Including board meetings and audit committee meetings)

	Governance disclosure						
	Total score	Strategic management	Managers	Directors	Audit committee	Ownership	
Dependent variable:							
Share price volatility							
Systematic risk	+	***0.719	***0.719	***0.732	***0.717	***0.719	***0.733
Free float	-	*0.886	0.742	0.618	*0.803	*0.863	0.678
Analyst	-	***-0.048	***-0.046	***-0.049	***-0.049	***-0.052	***-0.052
Board independence	-	0.144	0.153	0.137	0.107	0.125	0.096
Board size	-	** -0.094	** -0.087	***-0.103	***-0.103	***-0.103	***-0.104
Audit committee size	-	*-0.146	*-0.159	*-0.142	*-0.137	*-0.137	*-0.138
Board meetings	-	*0.042	*0.043	**0.046	**0.046	*0.041	**0.047
Audit committee meetings	-	0.005	0.005	0.001	0.001	0.004	0.001
Governance disclosure	-	** -0.019	** -0.042	-0.004	** -0.030	** -0.068	0.086
Adjusted R ²		26.1%	26.7%	26.9%	26.1%	26.8%	27.7%
Chi2 (P value)		42.7(0.00)	42.2(0.00)	37.4(0.00)	40.1(0.00)	41.1(0.00)	38.6(0.00)
Governance disclosure Chi2 change (p value)		4.73 0.025	4.28 0.035	0.47 0.50	2.66 0.100	3.59 0.060	0.23 0.70
Dependent variable:							
Governance Disclosure							
Information costs							
New financing	+	-9.490	-6.256	-0.236	-4.187	1.129	-0.103
Free float	+	***13.085	**3.429	**1.280	**5.815	***3.540	-0.977
Litigation/Proprietary costs							
Leverage	-	3.405	-0.604	-0.834	1.023	4.132	-0.176
Profitability	+	13.917	-0.093	1.326	8.268	4.189	0.628
US listing	+	***7.371	**1.842	***0.675	***3.737	0.675	**0.529
Firm size	+	***3.165	***1.291	0.103	***1.401	**0.422	-0.012
Governance/Monitoring							
Board independence	+	2.022	0.825	***0.757	-0.184	0.146	**0.496
Board size	+	-0.329	0.120	0.004	-0.312	-0.169	0.017
Audit committee size	+	-0.657	-0.511	-0.017	-0.021	-0.063	-0.053
Board meetings	+	-0.086	-0.053	-0.022	0.041	-0.052	0.003
Audit committee meetings	+	-0.162	-0.011	0.038	-0.180	-0.003	-0.010
CEO stock options	+/-	** -0.079	-0.020	0.001	** -0.042	-0.014	-0.004
Adjusted R ²		32.3%	21.5%	21.1%	24.8%	16.7%	9.2%
Chi2 (P value)		52.7(0.00)	30.0(0.00)	26.4(0.01)	36.5(0.00)	22.5(0.03)	10.9(0.09)
N=111							

*, p < 0.10; **, p < 0.05; ***, p < 0.01. One-tailed if there is a predicted sign, two-tailed otherwise.

Table 6
Simultaneous Equations analyses (3SLS) of the Determinants of
Governance disclosure and Tobin's Q
(Including board meetings and audit committee meetings)

	Governance disclosure						
	Total score	Strategic management	Managers	Directors	Audit committee	Ownership	
Dependent variable:							
Tobin's Q							
Inverse of Assets	+	***1.746	***1.730	***1.696	***1.727	***1.724	***1.686
Return on Assets	+	***3.985	***3.941	***3.819	***3.946	***4.027	***3.835
Board independence	+	***0.726	***0.716	***0.645	***0.765	***0.735	***0.709
Board size	+	***-0.163	***-0.165	***-0.158	***-0.158	***-0.158	***-0.163
Audit committee size	+	**0.222	**0.220	**0.214	**0.214	**0.211	**0.217
Board meetings	+	**_-0.051	**_-0.052	**_-0.051	**_-0.055	**_-0.051	**_-0.053
Audit committee meetings	+	**0.052	**0.054	**0.047	**0.056	**0.055	**0.056
Governance disclosure	+	**0.016	0.011	**0.131	**0.034	*0.052	0.025
Adjusted R ²		35.9%	34.9%	34.9%	36.3%	36.5%	35.2%
Chi2 (P value)		0.000	0.000	0.000	0.000	0.000	0.000
Governance disclosure Chi2 change (p value)		4.20	0.20	2.90	5.55	3.30	0.70
		0.035	0.70	0.075	0.010	0.066	0.40
Dependent variable:							
Governance Disclosure							
Information costs							
New financing	+	-2.057	-4.430	0.135	-0.571	*3.011	-0.074
Free float	+	***13.380	**3.205	***1.587	***6.222	***3.504	**_-1.030
Litigation/Proprietary costs							
Leverage	-	-4.424	-1.869	*_-1.478	-3.649	2.578	-0.323
Profitability	+	-0.073	-1.025	0.423	-0.794	0.428	0.778
US listing	+	***6.310	***2.407	***0.658	***2.681	0.026	***0.555
Firm size	+	***3.575	***1.223	**0.180	***1.792	**0.511	-0.030
Governance/Monitoring							
Board independence	+	1.039	0.611	***0.681	-0.679	-0.058	***0.494
Board size	+	-0.189	0.172	0.012	-0.241	-0.151	0.021
Audit committee size	+	-1.248	-0.596	-0.055	-0.344	-0.215	-0.046
Board meetings	+	-0.179	-0.117	-0.034	0.027	-0.054	0.001
Audit committee meetings	+	-0.150	0.012	0.031	-0.193	0.008	-0.011
CEO stock options	+/-	**_-0.066	-0.017	0.002	*_-0.035	-0.011	-0.004
Adjusted R ²		33.2%	25.0%	22.3%	25.2%	17.3%	9.9%
Chi2 (P value)		0.000	0.000	0.001	0.000	0.040	0.079
N=104							

*: p < 0.10; **: p < 0.05; ***: p < 0.01. One-tailed if there is a predicted sign, two-tailed otherwise.

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Appendix

Disclosure grid

Leadership
Mission
Strategic planning
Risk management
Globalization
Total strategic management
Competence of managers
Managers' compensation
Total managers
Competence Board
Independence Board
Compensation (stocks/options)
Other committees
Total directors
Competence Audit committee
Independence Audit committee
Relations with external auditors
Relations with internal auditors
Total Audit committee
Ownership structure
Other
Total ownership
Total corporate governance