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Governance and the Decision to Issue a Profit Warning*

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Abstract
The theoretical concept of agency costs developed by Jensen and Meckling (1976) and Jensen (2005) are used to study the relationship between the quality of a firm's governance and its decision to issue a profit warning (PW) when it is overvalued. Based on a sample of Canadian companies between 2000 and 2004, results were only partially supportive of the hypotheses. The characteristics of the board seem to play only a secondary role in the decision to issue a profit warning when the firm is overvalued. On the other hand, as expected, governance mechanisms that factor in market values to align the interests of managers and directors with those of shareholders are negatively related to the profit warning decision. Copyright © 2008 ASAC. Published by John Wiley & Sons, Ltd.

JEL Classifications: G300, M410

Résumé
Le concept théorique de coûts d'agence de Jensen et Meckling (1976) et Jensen (2005) sert de fondement à l'étude de la relation présumée entre la qualité de la gouvernance d'une entreprise et sa décision de publier une alerte aux résultats AR, lorsqu'elle est surévaluée. Basés sur un échantillon de sociétés canadiennes entre 2000 et 2004, les résultats ne confirment que partiellement les hypothèses. La composition et le mode de fonctionnement du CA ne semblent jouer qu'un rôle secondaire dans la décision de publier une AR lorsque l'entreprise est surévaluée. En revanche, comme anticipé, l'étude montre que les mécanismes de gouvernance qui intègrent les valeurs marchandes pour aligner les intérêts des dirigeants et des administrateurs sur ceux des actionnaires ont une influence négative sur la décision de publier une AR. Copyright © 2008 ASAC. Published by John Wiley & Sons, Ltd.

Keywords: corporate governance, profit warning, overvalued equity

Mots clés : gouvernance d'entreprise, alerte aux résultats, surévaluation boursière

Jensen (2005, p. 5) has continued to develop the theoretical concept of agency costs (Jensen & Meckling, 1976) to include corporate equity overvaluation and "to explain the dramatic increase in corporate scandals and value destruction in recent years." Equity overvaluation implies that a company will not be in a position to attain the level of performance that would justify its market value except by pure chance. In this case, managers are tempted to take advantage of the information asymmetry that characterizes this agency situation to maintain the illusion of growth. They often begin with a "strategic" manipulation of financial information in order to meet market expectations.[1] These manipulations, however, do not create value. On the contrary, once the avenues of creative accounting are exhausted, they can lead to deception and fraud. When fraud is discovered, a scandal breaks out and results in a catastrophic destruction of investor value. On that point, Jensen remarked (p. 7): "It

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is important for managers and boards to recognize that overvaluation triggers organizational forces that are very difficult to control and which will almost certainly destroy value."

To prevent value from spiraling out of control, Jensen (2005) has recommended that managers and administrators undertake "value resetting" by voluntarily warning the market that the expected level of performance will not be achieved. He stated (p. 17): "If our company's stock price begins to get too high, we must talk it down. Warren Buffet is one of the few CEOs who regularly and beneficially warn shareholders and markets when overvalued conditions prevail."

Thus, when managers see that their company is overvalued, they have two options: (a) they can allow market forces to run their course and, so long as a scandal does not break out, engage in a spiral of actions to maintain the illusion of growth (e.g., account manipulation, unjustified acquisitions, unprofitable investments, fraudulent transactions); (b) they can deliberately warn the market of their inability to achieve expected results. This voluntary disclosure constitutes a profit warning (abbreviated as PW) and lets stockholders and investors know of a downward correction in expected results.[2]

It is, however, relatively difficult for managers to purposely admit that the anticipated result will not be realized. Such an announcement could have a negative impact on their reputation, the value of their stock portfolio, or corporate stock options. That is why Jensen (2005, p. 15) has maintained that "the major, and perhaps the only private solution to the agency problem of overvalued equity is the corporate governance system." Whenever a company is overvalued, other governance mechanisms that use market value to operate, such as the granting of options and the mergers and acquisitions market, will not function. In fact, when a company is overvalued, the granting of stock options only aggravates the situation, since management has an even greater incentive to maintain this artificial overvaluation past the strike price of their options. The mergers and acquisitions market is also ineffective. A public bid for a hostile takeover theoretically provides a way to impose sanctions by replacing managers, but this is provided that the market value of the company is lower than its core value, which is not the case in a period of equity overvaluation. Karamanou and Vafeas (2005) agree with Jensen (2005). They examined whether proper internal governance could motivate executives to publish non-public information relative to predicted performances thereby reducing the information asymmetry between agents both internal and external to the company. The results of their empirical study indicated that the independence of the board of directors and the financial expertise of members of the audit committee have a significant positive effect on the probability of management's revising their predictions.

We build on that line of research by asking whether governance mechanisms, such as the board of directors, systems of shareholding, and minority shareholder protection stimulate overvalued companies to recognize their overvaluation by issuing a PW.

Previous studies focusing on the subject of PWs were primarily interested in the information such warnings contain.[3] We hope to contribute here by examining PWs from the standpoint of agency, governance, and voluntary disclosure theories. In fact, in addition to governance variables, which this research targets, our study takes into account other factors related to the characteristics of overvalued companies, which are also theoretically capable of influencing this voluntary disclosure decision. Moreover, since the publication of material facts,[4] such as at the time of a PW, is at the heart of current regulatory reform regarding the obligation to disclose, our results may have implications for the regulatory outlook. Financial scandals, including those of the multinationals Enron and Nortel, which were analyzed by Jensen (2005), resulted in or are feeding a regulatory shock wave on an international scale rarely seen before, the epicenter of which is the Sarbanes-Oxley act. Since Canada is at the forefront of the reform,[5] this study is based on a sample of Canadian companies listed on the Toronto Stock Exchange and assessed for their quality of governance by the *Globe and Mail Report on Business* (GMRB).

Our results only partially corroborate Jensen's 2005 thesis that only a good system of governance can cause the management of a company to alert the market in the event of overvaluation. However, our findings are completely consistent with those of Jensen in showing that when overvaluation comes from the market, governance mechanisms that include the market value to align the interests of managers and administrators with those of the shareholders have rather the opposite effect. In fact, it appears that the greater the executives' and the administrators' equity shareholding, the less interest they have in publishing a PW that might lead to a devaluation of their holdings. In the case where analysts are the ones to overvalue a company, as represented by the interaction between the quality of the board of directors and the magnitude of overvaluation, there is a weak association that is both positive and significant at 10% between this variable and the decision to issue a PW. The source of overvaluation would thus have an effect on the decision to issue a PW. If executives believe that analysts are getting carried away with the company outlook for the future, they try to temper analysts' expectations by

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issuing a PW. On the other hand, if overvaluation comes from the market, they let it be. This said, in all our analyses, it is the variables drawn from the literature on voluntary disclosure (area of activity, debt levels, and company size; Kasznik & Lev, 1995), that best explain the decision to publish a PW.

This article is structured as follows. We begin by presenting the framework for analyzing the relationship between governance and the PW decision. We then present our explanatory model, describe our sampling procedure and analyses, and then interpret and discuss our results.

Conceptual Framework

Positive agency theory as proposed by Jensen and Meckling (1976) serves as a conceptual framework for the analysis of a presumed relationship between the quality of a company's internal governance and its decision to publish a PW when it is overvalued. In this contractual setting, managers are given the mandate to run a company in the shareholders' best interests. According to this framework, the separation of ownership and management gives rise to a problem of governance or to a situation of information asymmetry in favour of the managers of overvalued companies. The managers, who do not carry the full economic burden of their decisions, face the decision to alert the market to this overvaluation or to maintain the illusion of growth. On the one hand, the problem of adverse selection arises because managers can profit from the advantage that they have over shareholders in the form of more accurate or better information on their company's current operations and future prospects. On the other hand, this situation of asymmetry may give rise to a problem of moral hazard if a manager takes advantage of it to slip away or undertake actions other than those specified by the principal. Thus, to reduce this asymmetry and the opportunistic behaviours it might cause, managers agree to incur the costs of control and monitoring through various internal governance mechanisms supervised by the board of directors (Fama & Jensen, 1983). In addition to these internal mechanisms, there are the added pressures exerted by the market. In particular, managers have an interest in being transparent in order to maintain the company's credit rating in the financial markets and to preserve their reputation on the labour market.

In the same vein as in his 1993 article (p. 862), Jensen (2005) contended that only the board of directors (BoD) can reduce the agency costs related to overvaluation by motivating executives to inform the market that the results anticipated by this overvaluation will not be achieved. The empirical study by Karamanou and Vafeas (2005) was based on the same theoretical argument. These authors questioned whether good internal governance can encourage executives to publish nonpublic information relative to expected results and thereby reduce the information asymmetry between agents both internal and external to the company. Their study focused on a sample of 275 American companies that published their expected financial performance data for the period of 1995–2000. Their results indicated that the independence of the BoD and the financial expertise of members of the audit committee have a significant positive effect on the probability that executives will revise their predictions.

Thus, we assumed a relationship between the quality of the governance system and the decision to issue a PW. Studies by Kasznik and Lev (1995), Soffer, Tiagarajan, Walther (1998), Clare (2001), and Jackson and Madura (2003) indicated that executives tend to advise the market even if the probability of a loss in value in the short term is greater than if they do not issue a warning.

Many variables are traditionally used to assess the power and independence of the BoD. These include the proportion of independent administrators on the BoD (Anderson, Deli, & Gillan, 2003; Beasley, 1996; Bujaki & McConomy, 2002; Dechow, Sloan, &. Sweeney 1996; Farber, 2005; Felo, Krishnamurthy, & Solieri, 2003; Klein, 1998; Uzun, Szewczyk, & Varma, 2004) or on the audit committees (Abbott, Park, & Parker, 2000; Abbott, Parker, & Peters, 2004; Bédard, Chtourou, & Courteau, 2004; Klein, 1998), nominating committees, or compensation committees, the aggregation of functions by administrators (Beasley), and separation of the functions of chief executive officer and chairman of the BoD (Abbott et al., 2000; Carcello & Nagy, 2004; Dechow et al.).

Jensen (2005) also argued that in the context of overvalued companies, governance mechanisms that take market values into account in order to align executive officers' and directors' interests with those of shareholders have rather the opposite effect. In fact, the granting of stock options serves only to aggravate the situation given that executives are now vested in not issuing a PW in order to artificially maintain the share price above the option strike price. Proceeding along the same line of reasoning, Efendi, Srivastava, and Swanson. (2005) showed that the most likely factor that would cause executives to manipulate accounting information is the fact that they hold stock options whose value exceeds the exercise price.[6] The mergers and acquisitions market would also be ineffective, since the acquisition price in a period of equity overvaluation is too high.

Based on the above theoretical framework, the model that we constructed attempts to determine the

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effect of governance mechanisms on the financial transparency of a company in a situation of equity overvaluation.

Determinants of the Profit Warning Decision

In this section, we present a determinant model for the decision of overvalued companies to issue a PW. This model attempts to test the effect of governance variables on this decision. It also includes control variables to account for other structural and cyclical factors that may influence this decision. The population-averaged probit analysis is based on the following model:

$$PW_{it} = \beta_0 + \beta_1 (Governance\ Variables)_{it} + \beta_2 (Control\ Variables)_{it-1} + \varepsilon_{it} \quad (1)$$

The variable to be explained, denoted PW, is a dichotomous variable equal to unity when a company issued at least one alert between 2000 and 2004. PWs were identified on the basis of articles and press releases published in the *Globe and Mail*, which is one of the principal daily business newspapers in Canada and comparable to the *Wall Street Journal* in the United States. The *Globe and Mail* also includes both press releases from companies and specialized articles about these companies. Several key words were used to identify PWs: "profit warning," "earnings warning," "financial warning," "miss estimates," "weaker-than-expected outlook," "will fall short of promise," and "lag expectations." The most common expression (87% of the cases) was "profit warning".

Table 1 gives the measurement of the independent variables used in our model and their expected relationship with the issuance of a PW.

Governance Variables

To measure the governance quality of a company, we used the corresponding grade attributed to the company by the *Globe and Mail Report on Business* (GMRB). To be included in our sample, a company had to be listed among those companies that GMRB graded for governance between 2002 and 2004.[7] The GMRB grades four aspects of governance for a possible total score of 100.

1. The first, with a maximum grade of 40 in 2002, 2003, and 2004, has to do with the independence, composition, and mode of operation of the board and its committees. A high grade in this area means an effective BoD.
2. The second aspect, graded out of 23, 21, and 19 in 2002, 2003, and 2004, respectively, evaluates whether the executive officers and the directors are encouraged to own stock, the importance of this ownership (without giving any indications of their actual participation), and the quality of information disclosed regarding their modes of compensation. This score excludes everything concerning the granting of options, which is evaluated under the third heading.
3. The third element, graded out of 22, 24, and 28 in 2002, 2003, and 2004, respectively, reflects the degree of minority shareholder protection. The fewer the shares with multiple votes per share where the vote-to-ownership ratio might discourage the mergers and acquisitions market, or the fewer the options, which have the effect of diluting the equity, the greater the governance score.
4. The final aspect, graded out of 15 in 2002 and 2003 and out of 13 in 2004, reflects the transparency of a company with regard to governance practices. We did not take this aspect into consideration because of its strong correlation with the first three governance scores. So that all three scores retained for the purposes of our study would be comparable among themselves and over time, we converted them into percentages of the maximum scores in each category.

In accordance with the theoretical framework, we posited that the score representing the board characteristics (QUAL_CA) is positively associated with the decision to issue a PW. According to Jensen (2005), an effective board tends to incite executives of overvalued companies to publish PWs to notify the market accordingly.

In contrast, as stated by Jensen in his thesis (2005), a negative correlation is expected between a decision to publish a PW and officers' and directors' equity participation (PART). In fact, the more officers and directors are encouraged to participate in company equity, the less inclined they are to publicly recognize equity overvaluation, since they are interested in maintaining the value of their portfolio. It should be noted, however, that the theory is silent on the effect of no-option compensation information on the decision to publish a PW.

Finally, the variable (RIGHTS) reflects the fact that according to the GMRB index, the fewer the number of shares with multiple votes or options, the better the protection enjoyed by minority shareholders against the dilution of their voting and equity rights, especially in the event of a public takeover bid. This variable, however, designed to measure the degree of protection of minority shareholders, should be negatively associated with the decision to issue a PW. In fact, executives have no motivation to publish a PW that would reduce the price of

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Table 1
Description Variables and their Association with Profit Warning Decision (PW)

Variable	Expected relationship with profit warning	Notation	Measure	Estimationl period
Governance quality indices	+	QUAL_CA	Notation used by the *Globe and Mail Report on Business*: Board quality	t or t – 1
	–	PART	Incentive to participate, participation in equity and information on executive and administrative compensation	
	–	RIGHTS	Right of shareholders	
Industry	+	TECH	1 for high technology sector, 0 otherwise	t – 1
Company size	+	ASSETS	Log of total assets	t – 1
Debt level	–	DEBT	Long-term debt / total assets	t – 1
Multiple listings	+	LIST	1 if company listed on at least two international exchanges, 0 otherwise	t – 1
Information asymmetry	+	VOLAT	Absolute value of beta coefficient	t – 1
External financing through issue of securities	+	MARQ	1 if company raises money in financial markets (shares or bonds) during warning or the following year, 0 otherwise	t or t + 1
Competitive position	+	COMP	Difference between return on assets of company and corresponding return on assets in its industry	t – 1
Overvaluation by market	+	OVERVAL_MB	1 if difference between *Market to Book* ratio of company and median ratio for industry is positive, 0 otherwise	t – 1
Overvaluation by analysts	+	OVERVAL_PREV	1 if mean deviation between earnings per share predicted by analysts in the course of the year and actual earnings per share is positive, 0 otherwise	t – 1
Magnitude of overvaluation by market	+	MAG_OVERVAL_MB	Positive deviation between *Market to Book* ratio and industry median as percentage of industry median	t – 1
Magnitude of overvaluation by analysts	+	MAG_OVERVAL_PREV	Mean positive deviation between earnings per share predicted by analysts in the course of the year and actual earnings per share positive as percentage of actual earnings per share	t – 1

shares and increase the probability of a takeover bid, and indirectly, the risk that they would be replaced.

Control Variables

Since the publication of a PW constitutes a discretionary decision, we should also refer to the literature on voluntary disclosure to explain it. Several structural and cyclical factors may influence the discretionary choices made by executives with regard to information.

Following the examples of Kasznik and Lev (1995) and Efendi et al. (2005), our model incorporates the companies' area of activity, debt level and size. High-tech firms (TECH) publish more PWs on average than do companies in traditional sectors given that information

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asymmetry is more important in their case. The variable TECH is dichotomous (1 for high-tech firms, 0 otherwise). These companies were identified under codes 71, 82, 84, and 87 in the Stock Guide database.

The influence of size is explained by the fact that large corporations are generally the object of an especially close scrutiny by financial analysts and that to maintain their credibility, they are motivated to be transparent and to disclose equity overvaluation. Size is measured as the log of total assets (ASSETS).

According to Efendi et al. (2005), if a company is found to have failed to comply with restrictions in its loan contracts, the decision-making authority of the executive responsible for mergers, acquisitions, investments, or dividends may be curtailed. Dichev and Skinner (2002) have also indicated that the executive in question manipulates performance to avoid violating restrictive provisions of loan agreements. Thus, when a company is about to find itself in a default situation, the executive may not be motivated to issue a PW, which implies a negative relationship with debt levels as measured by the ratio of long-term debt to total assets (DEBT).

Raffournier (1995) and Depoers (2000) have also shown that the degree of internationalization of a company motivates better communication as compared to a national company, due to the stronger regulatory and institutional restrictions to which the company is subject. The degree of internationalization was assessed based on a dichotomous variable (LIST), equal to one if the company was listed in at least two international markets.

For Healy and Palepu (1993), discretionary communications are explained by the coexistence of better or less informed agents. Voluntary publications have the objective of reducing the information gap between the two categories of agents. Thus, the higher the degree of asymmetry, the higher the probability of having to disclose nonpublic or profit warning-type information in the event of equity overvaluation. Information asymmetry increases the uncertainty of investors with regard to the company's future earnings thereby increasing the risk they carry as shareholders. This risk is measured by the companies' beta coefficient, or its market return volatility (VOLAT) (Dierkens 1991).

Also, voluntary disclosure may reduce the cost of capital (Botosan & Harris, 2000; Healy & Palepu, 1993, 1995; Lang & Lundholm, 1996; Leuz & Verrechia, 2000). Because of this possible effect, companies about to issue shares are also motivated to publish information that reduces the asymmetry and thus their financing costs. The variable MARQ is equal to one if a company was financed through a public offering during the year of the warning or the following year, and zero otherwise.

Finally, according to the proprietary costs hypothesis developed in particular by Darrough and Stoughton (1990), Teoh and Hwang (1991), Newman and Sansing (1993), or Verrecchia (2001), the competitive position of an overvalued company may lead it to issue a PW in order to dissuade potential new entrants, since such published information would create the impression that expected profit would be less than the cost of entry. In such a situation, PWs may serve as protection against increased competition. Competitive position (COMP) measures the difference between return on a company's assets and return on assets in its industry. The larger the difference, the stronger the competitive position of the company.

The variables TECH, ASSETS, DEBT, and COMP come from the Stock Guide database. They are drawn from the annual reports for the year preceding the PW. The variables LIST, MARQ, and VOLAT are extracted from SEDAR, FPInfomart-New Issues, and the Toronto Stock Exchange (TSX) databases, respectively.

Overvaluation Variables

Overvaluation of companies is at the center of our study. According to Jensen (2005), it is an agency cost difficult for shareholders to protect against. The greater it is the more investors should be made aware of it. We measured overvaluation in several ways by referring both to market data and to predictions made by financial analysts.

Like Jensen (2005, p. 11), who presented market to book as a measure of market overvaluation, we first considered that a company is overvalued by the market when this ratio is greater than the median ratio for the corresponding sector (OVERVAL_MB). This equity overvaluation variable was calculated based on the Stock Guide database.

However, since this ratio may reflect the weight of intangibles as well as market overvaluation, as in Dong, Hirshleifer, Richardson, and Teoh (2006), we made use of a second measure of overvaluation alongside the sectorial one. In fact, Jensen believed a company to be overvalued when not capable of achieving its anticipated level of performance. Hence, a company is considered overvalued when its earnings forecast in t – 1 according to the consensus of analysts is greater than the earnings figure actually published in t (OVERVAL_PREV). These variables were taken from the IBES (Institutional Brokers' Estimate System) database. This is overvaluation by financial analysts.

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Finally, to take account of the fact that, according to Jensen (2005), agency problems related to overvaluation do not manifest themselves unless overvaluation is relatively high, we also measured the magnitude of the overvaluation by market (MAG_OVERVAL_MB) and by financial analysts (MAG_OVERVAL_PREV). The magnitude of market overvaluation corresponds to a positive difference between the market to book ratio for the company in question and the median ratio for the industry all divided by the median industry ratio. The magnitude of overvaluation by analysts is measured by the mean positive deviation between analysts' predictions of earnings per share (BPA) of the company in question and its actual earnings per share all divided by the actual earnings per share.

Now that our explanatory model of the decision to publish a PW has been presented, in the following section, we present the samples used to test model (1), the descriptive statistics, and the univariate analyses.

Sample, Descriptive Statistics, and Univariate Analysis

Our objective is to determine whether, among the companies that proved to be overvalued, it was those with better governance that alerted the market by publishing PWs. To avoid a selection bias, the initial sample included all publicly listed Canadian companies, since they were all likely to publish PWs. On this point, Martinez and Saboly (2005) showed that certain listed companies choose to publish PWs preventively, that is, to disclose future difficulties. Along the same lines, Kearns and Whitley (2002) stated that PWs may enable companies to inform the market not only of a deviation from what is anticipated, but also of difficulties to come and of deteriorating financial performance. Therefore, the retained sample is composed of all the companies included in the S&P/TSX index that had their governance graded by the GMRB in 2002–2004 with the exception of companies in the public and financial sectors. The sample consists of 179 companies. We obtained economic, accounting, and stock market data for 111 of these companies, making 442 observations in total after the exclusion of missing data. During the period covered by the study, these companies published 34 PWs (7.7% of the total number of observations). Table 2 provides a distribution of observations by sectors of industry as defined by the Toronto Stock Exchange.

Table 3 presents the descriptive statistics of the continuous independent variables for the total sample (part A), for companies that issue a PW (part B), and those that did not do so (non-PW, part C). Univariate analysis (part D) brought out several differences of means between these latter two groups that were both significant and conformant to the hypotheses.

Table 2
Distribution of Observations by Industry

Industry	Number of observations	% of Observations
Manufacturing	127	28.7%
Oil and gas	71	16.1%
Distribution	57	12.9%
Gold and precious metals	56	12.7%
Consumer goods	41	9.3%
Metals and minerals	36	8.1%
Communications and media	36	8.1%
Pipelines	5	1.1%
Conglomerates	5	1.1%
Paper and forestry products	4	0.9%
Real estate	4	0.9%
Total	442	100.0%

Except for the variable related to board effectiveness, all the governance and control variables that describe the characteristics of companies that issued PWs showed differences that conform to the theory. However, with regard to governance, only the mean of the scores related to rights given to shareholders (RIGHTS) of companies that published PWs was significantly less (at 5%) than that of companies that did not. Let us recall that this variable reflects the probability that a hostile takeover may succeed in the event of a poorly managed firm. In such a situation, desirable though it may be from the governance point of view, executives may prefer not to issue a PW for fear of losing their jobs.

As for control variables, as expected in theory, companies that published PWs were on average significantly larger (at 1%), less leveraged (at 10%), and associated with a higher degree of information asymmetry (at 5%) than were those that did not so publish. On the other hand, there did not seem to be any statistically significant difference between the two groups of companies on the magnitude of overvaluation.

Table 4 presents contingency analyses of the dichotomous variables. As predicted, results indicate that the number of PWs issued by the high-tech companies was significantly higher than for the non-PWs, at the significance level of 1%. Companies listed on multiple exchanges and companies overvalued by analysts also had a tendency to publish PWs more often (difference significant at 10%). In contrast, the decision to issue a PW did not seem to be associated with companies'

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Table 3

Descriptive Statistics and Parametric Tests of Differences between Means of Continuous Independent Variables

		QUAL_CA	PART	RIGHTS	ASSETS	DEBT	VOLAT	COMP	MAG _OVERVAL _MB	MAG _OVERVAL _PREV
A—Entire sample	**Mean**	65.50	56.93	71.68	14.43	0.20	0.71	20.69	113.76	113.06
	Median	67.50	56.52	75.00	14.31	0.20	0.62	16.65	75.38	45.69
	Standard deviation	20.57	18.96	21.50	1.30	0.16	0.58	15.66	119.48	186.92
	N	442	442	442	442	442	442	442	299	278
B—Companies issuing profit warning	**Mean**	64.93	58.03	62.97	15.09	0.15	0.94	23.13	114.35	113.38
	Median	60.00	60.87	63.64	15.15	0.15	0.80	25.98	77.71	84.79
	Standard deviation	20.94	17.54	24.25	1.40	0.12	0.76	12.07	147.14	94.40
	N	34	34	34	34	34	34	34	21	30
C—Companies not issuing Ppofit warning	**Mean**	65.55	56.83	72.41	14.38	0.20	0.69	20.49	113.72	113.02
	Median	67.50	56.52	75.00	14.24	0.20	0.58	16.52	73.33	42.60
	Standard deviation	20.56	19.09	21.13	1.28	0.16	0.55	15.92	117.45	195.29
	N	408	408	408	408	408	408	408	278	248
D—Comparison of means	**t**	−0.17	0.354	−2.47	3.11	−1.78	2.38	0.94	−0.02	−0.01
	Probability	0.865	0.723	0.014**	0.002***	0.076*	0.018**	0.346	0.981	0.992

Notes: Two-tailed significance intervals at 1%, 5%, and 10% are represented by ***, **, and *, respectively.
PW = profit warning; QUAL_CA = board quality; PART = encouragement to participate, participation in equity and information on executive and administrative compensation; RIGHTS = rights of shareholders; ASSETS = company size as log of total assets; DEBT = level of debt; VOLAT = information asymmetry; COMP = competitive position; MAG_OVERVAL_MB = magnitude of overvaluation by market; MAG_OVERVAL_PREV = magnitude of overvaluation by analysts.

Table 4
Contingency Tables and Chi-Square Tests of Differences between Frequencies of Binary Independent Variables

PW * TECH				
		TECH		Total
		0	1	
PW	0	383 (0.1)	25 (0.7)	408
	1	27 (0.7)	7 (8.4***)	34
Total		410	32	442
Pearson's chi-square:	**9.77**	Significance level (df = 1):		**0.002*** **
PW * LIST				
		LIST		Total
		0	1	
PW	0	246 (0.1)	162 (0.2)	408
	1	15 (1.3)	19 (1.9)	34
Total		261	181	442
Pearson's chi-square:	**3.40**	Significance level (df = 1):		**0.065***
PW * MARQ				
		MARQ		Total
		0	1	
PW	0	281 (0.0)	127 (0.0)	408
	1	24 (0.0)	10 (0.0)	34
Total		305	137	442
Pearson's chi-square re:	**0.04**	Significance level (df = 1):		**0.835**
PW * OVERVAL_MB				
		OVERVAL_MB		Total
		0	1	
PW	0	130 (0.0)	278 (0.0)	408
	1	13 (0.4)	21 (0.2)	34
Total		143	299	442
Pearson's chi-square:	**0.58**	Significance leve (df = 1):		0.445
PW * OVERVAL_PREV				
		OVERVAL_PREV		Total
		0	1	
PW	0	160 (0.5)	248 (0.3)	408
	1	4 (5.9**)	30 (3.5**)	34
Total		164	278	442
Pearson's chi-square:	**10.13**	Significance level (df = 1):		0.001***

Notes: Two-tailed significance intervals at 1%, 5%, and 10% are represented by ***, **, and *, respectively. The numbers in parenthesis indicate the contribution of each of the cells to Pearson's Chi-square.
PW = profit warning; TECH = high-tech sector; LIST = listings on multiple exchanges; MARQ = external financing through issue of securities; OVERVAL_MB = overvaluation by market; OVERVAL_PREV = overvaluation by analysts.

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intentions to issue stock (MARQ), or with the fact that a company may have been overvalued by the market (OVERVAL_MB). Based on the univariate analyses, it is interesting to note that a company was less likely to publish a PW when it was overvalued by the market than when it was overvalued by analysts. This statement seems to support Jensen's thesis (2005).

Multivariate Analysis and Interpretation of Results

To examine the impact of governance on the decision to publish a PW, we also performed several population-averaged probit analyses using Stata software. Table 5, which gives the coefficients of correlation among the variables, shows they were not too high to be used simultaneously in multivariate analyses. Table 6 gives the first four analyses applied to the entire list of companies in the sample, given that they were all likely to voluntarily publish a PW.

Model (1), presented in the first column of Table 6, incorporated governance and control variables without overvaluation variables as explanatory factors. This model had a predictive power of 76.3%. All coefficients of the variables had the expected signs. For factors representing the quality of governance, only the variable related to the rights of minority shareholders (RIGHTS) was statistically significant at 5% and had the anticipated negative effect on the decision to publish a PW. Let us recall that according to GMRB, the score for "good governance" herein reflects a very high probability of a public takeover bid in the event of bad management, stemming from a low risk of capital dilution (few options), and/or a low votes-to-ownership ratio (few shares with multiple votes per share). In this case, executives are not motivated to warn the market in the event of overvaluation. They fear that this warning would result in a possible drop in the market price, thus adding to the risk that their company would be the object of a takeover and that they would be replaced.

As for the control variables, size (ASSETS) had a coefficient that was positive and significant at 1%. In conformance with the results of Kasznik and Lev (1995), we observed that a large company was more prone to issue a PW than a smaller one. As for the level of debt (DEBT), it had a negative coefficient, statistically significant at 5%. In accordance with our theoretical framework, heavily indebted companies preferred not to publish PWs.

To take the context of overvaluation, which is the focus of our study, into account, model (2) contains a dichotomous variable that identified companies overvalued by the market (OVERVAL_MB) and its interactions with each of the governance variables. OVERVAL_MB equaled 1 if the difference between the market to book ratio of a company and the median of the same ratio for its industry was positive and 0 otherwise. Adding this variable and its interaction with the governance variables increased the predictive power of the model from 76.3% to 76.6%. In this model, only the variables ASSETS and DEBT remained statistically significant, which conforms with the literature on voluntary disclosures. However, the decision to issue a PW remained unaffected by governance variables.

The third model (3) comprised a dichotomous variable measuring overvaluation by financial analysts (OVERVAL_PREV) and its interaction with governance variables. It took on the value of 1 if on average the company was overvalued by analysts in the course of a year and 0 otherwise. This variable increased the predictive power from 76.3% to 82.3%. In addition to the variables ASSETS, DEBT, and RIGHTS, which were already statistically significant in preceding probit analyses, this model reveals the propensity of high-tech companies (significant at 10%) to publish PWs.

Finally, model (4) integrated both the variables of overvaluation by market and by financial analysts. The variables RIGHTS, TECH, ASSETS, and DEBT remained statistically significant, and had the expected effect on the decision to publish a PW.

Up to this point, we tested the models presented in Table 6 on the totality of companies graded for governance by the GMRB in order to avoid a selection bias, since they all could publish PWs, whether overvalued or not. Thus far, aside from the variable RIGHTS, there did not seem to be any connection between governance variables and the decision to warn the market by publishing a PW. Nonetheless, Jensen (2005, p. 5) posited that agency problems related to overvaluation manifest themselves primarily in cases where overvaluation is relatively high. Consequently, models presented in Table 7 took into account the magnitude of overvaluation and whether it occurs in the market (MAG_OVERVAL_MB) or in the predictions of financial analysts (MAG_OVERVAL_PREV).

Model (5), which had to do only with companies overvalued by the market, brought out again the predicted negative effect of the variable RIGHTS on the decision to publish a PW. This effect was weakly significant at 10%. As for the variable PART, it essentially measured executives and directors' participation in the company's equity. If one combines, as is proper, the coefficients of this variable with overvaluation by the market [MAG_EVAL_MB_X_PART]), the net effect was negative and significant, as expected. It seemed, in fact, that executives and directors' shareholding and overvaluation by the market did not provide any motivation to alert the

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Table 5
Coefficients of Correlation between Model Variables

	PW	QUAL_CA	PART	RIGHTS	TECH	ASSETS	DEBT	LIST	VOLAT	MARQ	COMP	OVERVAL_PREV
QUAL_CA	–0.01											
PART	0.02	0.25										
RIGHTS	–0.1 2	0.22	0.13									
TECH	0.15	0.03	–0.03	–0.13								
ASSETS	0.15	0.16	0.33	0.15	–0.03							
DEBT	–0.08	0.08	0.10	0.02	–0.08	0.35						
LIST	0.09	0.06	0.01	0.00	0.09	0.08	–0.11					
VOLAT	0.11	–0.12	–0.08	–0.17	0.20	–0.13	–0.25	0.20				
MARQ	–0.01	–0.08	–0.05	0.04	0.02	–0.15	0.06	0.02	–0.08			
COMP	0.05	0.00	–0.10	0.00	0.10	–0.12	–0.14	0.21	–0.05	0.01		
OVERVAL_MB	0.15	–0.03	–0.07	–0.02	–0.04	–0.02	0.00	0.09	0.04	0.16	–0.04	–0.10
MAG_OVERVAL_MB	0.00	–0.10	–0.01	0.01	0.18	–0.21	–0.14	0.02	0.16	–0.05	0.09	
OVERVAL_PREV	–0.04	0.01	0.05	0.02	–0.05	0.06	–0.10	–0.02	0.03	0.04	–0.01	
MAG_OVERVAL_PREV	0.25	0.07	0.00	0.03	–0.01	–0.02	–0.03	–0.03	0.11	0.06	–0.03	

Notes: PW = profit warning; QUAL_CA = board quality; PART = encouragement to participate, participation in equity and information on executive and administrative compensation; RIGHTS = rights of shareholders; TECH = high-tech sector; ASSETS = company size as log of total assets; DEBT = level of debt; LIST = listing on multiple exchanges; VOLAT = information asymmetry; MARQ = financing through issue of securities; COMP = competitive position; OVERVAL_MB = overvaluation by market; OVERVAL_PREV = overvaluation by analysts; MAG_OVERVAL_MB = magnitude of overvaluation by market; MAG_OVERVAL_PREV = magnitude of overvaluation by analysts.

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Table 6

Population-Averaged Probit Models for Determinants of Profit Warning Decision for All Companies Graded for Governance by GMRB

Variables	1 Governance variables + control variables		2 + Variable for companies overvalued by M/E		3 + Variable for companies overvalued by analysts (IBES)		4 + Variables in 2 and 3 related to overvaluation	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	−5.3710	0.0000***	−5.4408	0.0000***	−6.2762	0.0010***	−6.2682	0.0020***
QUAL_CA	0.0338	0.9520	0.3089	0.7320	2.2454	0.2070	2.3908	0.2010
PART	−0.1238	0.8350	−0.0325	0.9720	−0.5928	0.7000	−0.4464	0.8060
RIGHTS	−0.9969	0.0480**	−1.1123	0.1880	−2.8367	0.0460**	−3.0141	0.0590*
TECH	0.4801	0.1750	0.4770	0.1820	0.6262	0.0820*	0.6406	0.0820*
ASSETS	0.3183	0.0000***	0.3188	0.0010***	0.3256	0.0000***	0.3271	0.0010***
DEBT	−1.5726	0.0450**	−1.6079	0.0430***	−1.5919	0.0400**	−1.6163	0.0390**
LIST	0.0576	0.7990	0.0473	0.8350	0.0650	0.7690	0.0495	0.8250
VOLAT	0.0875	0.6490	0.0942	0.6250	0.0451	0.8190	0.0497	0.8020
MARQ	0.1083	0.6170	0.0990	0.6490	0.0783	0.7280	0.0727	0.7480
COMP	0.0050	0.4640	0.0048	0.4810	0.0054	0.4320	0.0054	0.4390
OVERVAL_MB			0.1462	0.8760			0.0027	0.9980
OVERVAL_MB _X_ QUAL_CA			−0.4584	0.6790			−0.2494	0.8290
OVERVAL_MB_X_ PART			−0.1372	0.9050			−0.3909	0.7490
OVERVAL_MB_X_ RIGHTS			0.1606	0.8720			0.4053	0.6890
OVERVAL_PREV					1.0394	0.4530	1.0449	0.4580
OVERVAL_PREV _X_ QUAL_CA					−2.6577	0.1550	−2.6629	0.1530
OVERVAL_PREV_X_ PART					0.7361	0.6530	0.8456	0.6120
OVERVAL_PREV_X_ RIGHTS					2.0269	0.1790	1.9188	0.2050
Others	408		408		408		408	
Profit warnings	34		34		34		34	
Wald chi2	23.53		23.90		29.83		30.06	
Prob > chi2	0.009***		0.047***		0.008***		0.037**	
Discrimination rate (C-statistic)*	76.3%		76.6%		82.3%		81.6%	

Notes: ***, **, and *: two-tailed significance thresholds at 1%, 5%, and 10%. The C statistics represents the area under the *Receiver Operating Characteristic* (ROC) curve.

PW = profit warning; QUAL_CA = board quality; PART = encouragement to participate, participation in equity and information on executive and administrative compensation; RIGHTS = rights of shareholders; TECH = high-tech sector; ASSETS = company size as log of total assets; DEBT = level of debt; LIST = listing on multiple exchanges; VOLAT = information asymmetry; MARQ = financing through issue of securities; COMP = competitive position; OVERVAL_MB = overvaluation by market; OVERVAL_PREV = overvaluation by analysts.

Table 7
Population-Averages Probit Models for Determinants of Profit Warning Decision for Overvalued Companies

Variables	Companies overvalued by market 5		Companies overvalued by analysts 6	
	Coefficient	Prob.	Coefficient	Prob.
C	−7.0802	0.0000***	−6.7903	0.0000***
QUAL_CA	−0.6400	0.5200	−1.5535	0.0580*
PART	1.9655	0.0710*	0.3917	0.6160
RIGHTS	−1.5300	0.0700*	−0.7821	0.2510
TECH	0.5728	0.2740	0.5047	0.2700
ASSETS	0.3987	0.0010***	0.4839	0.0000***
DEBT	−1.4310	0.1550	−2.2520	0.0170**
LIST	−0.1209	0.6820	−0.0375	0.8830
VOLAT	0.1923	0.4480	−0.1228	0.6120
MARQ	−0.0620	0.8400	−0.1075	0.6870
COMP	0.0083	0.3340	0.0096	0.2200
MAG_OVERVAL_MB	1.0250	0.1430		
MAG_OVERVAL_MB _X_ QUAL_CA	−0.0244	0.9690		
MAG_OVERVAL_MB_X_ PART	−2.1336	0.0120**		
MAG_OVERVAL_MB_X_ RIGHTS	0.2413	0.6600		
MAG_OVERVAL_PREV			−0.1938	0.6000
MAG_OVERVAL_PREV _X_ QUAL_CA			1.0764	0.0930*
MAG_OVERVAL_PREV_X_ PART			−0.2718	0.4820
MAG_OVERVAL_PREV_X_ RIGHTS			−0.5342	0.1940
Others	278		248	
Profit warnings	21		30	
Wald chi2	22.79		27.30	
Prob > chi2	0.064*		0.018**	
Discrimination rate (C-statistic)	83.0%		82.3%	

Notes: ***, **, and *: two-tailed significance thresholds at 1%, 5%, and 10%. The C statistics represents the area under the *Receiver Operating Characteristic* (ROC) curve.
PW = profit warning; QUAL_CA = board quality; PART = encouragement to participate, participation in equity and information on executive and administrative compensation; RIGHTS = rights of shareholders; TECH = high-tech sector; ASSETS = company size as log of total assets; DEBT = level of debt; LIST = listing on multiple exchanges; VOLAT = information asymmetry; MARQ = financing through issue of securities; COMP = competitive position; OVERVAL_MB = overvaluation by market; OVERVAL_PREV = overvaluation by analysts; MAG_OVERVAL_MB = magnitude of overvaluation by market; MAG_OVERVAL_PREV = magnitude of overvaluation by analysts.

market for fear of reducing the value of their share. Once again, it is the large corporations (ASSETS) that are the most inclined to proceed with PWs.

In the case of companies overvalued by financial analysts (model 6), contrary to Jensen's thesis (2005), the quality of the board of directors was negatively associated (at 10%) with the decision to publish a PW. This weak negative relationship was, however, strongly attenuated by the positive and significant coefficient of interaction between the magnitude of overvaluation by analysts and the board of directors. In this model, the control variables ASSETS and DEBT were again significantly associated with the decision to issue a PW.

To summarize, our results only partially corroborate Jensen's thesis that only a good system of governance can cause the management of a company to alert the market in the event of overvaluation. Our findings support Jensen's argument in showing that when overvaluation comes from the market, the mechanisms of governance, which use market value to align the interests of executives and directors with those of shareholders, tend to have the opposite effect on PW. Where analysts are the ones to overvalue a company, as measured by the interaction between the quality of the board of directors and overvaluation, there is only a weak positive and significant association at 10% between this variable and the decision

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to issue a PW. That being said, in most of the analyses performed, it is the variables drawn from the literature on voluntary disclosure that best explain the decision to proceed with a PW. For instance, like in Kasznik and Lev (1995), our results reveal that high-tech and/or large firms publish more PWs on average than do companies in a traditional sector and/or characterized by a small size.

Conclusion

Summary

The theoretical concept of agency costs by Jensen and Meckling (1976) lies at the basis of the study of the presumed relationship between the quality of internal governance of a company and its decision to publish a PW when overvalued. Executives in this case may be tempted to profit from information asymmetry that characterizes this agency situation in order to maintain the illusion of growth. According to Jensen (2005), only good governance and in particular, an effective BoD, can reduce agency costs associated with stock market overvaluation by motivating management to admit that they do not see the company being in a position to attain expected results. Jensen contended that the mechanisms of governance that use market indicators in their operation, such as the granting of options or shares, are ineffective when a company is overvalued.

To verify this argument, our study proceeded from the measures of the quality of governance proposed by the GMRB, and took into account other factors related to the context and characteristics of companies that in theory are also likely to influence this voluntary disclosure decision. Our study is based on a sample of Canadian companies for the period between 2000 and 2004.

The results only weakly corroborate Jensen's theory of governance and his argument (2005) that only a good system of governance can cause the management of a company to alert the market in the event of overvaluation. However, our findings do support his argument completely in showing that when overvaluation comes from the market, the mechanisms of governance, which use market value to align executives and directors' interests with those of shareholders, tend to have the opposite effect. In fact, it appears that the greater the executives' and the directors' equity share, the less interest they have in publishing a PW that might lead to a devaluation of their holdings.

In the case where analysts were the ones to overvalue a company, as represented by the interaction between the quality of the BoD and the magnitude of overvaluation, there was a weak association that was positive and significant at 10% between this variable and the decision to issue a PW. Therefore, we found that the source of overvaluation would have an effect on the decision to issue a PW. If executives believed that analysts were getting carried away with the company's outlook for the future, they may have attempted to temper their expectations by issuing a PW. On the other hand, if overvaluation came from the market, they let it be. This said, the variables drawn from the literature on voluntary disclosure (area of activity, debt levels, and company size) appear to better explain the decision to publish a PW.

Contribution to Scholarship

This study makes several contributions to the existing literature. First, it shows that the practice of PWs is not widely used in Canada (7.7% of our sample). Further, it offers an empirical test of the theoretical proposition developed by Jensen (2005) following recent financial scandals and contributes to the literature on the phenomenon of PW simultaneously from the standpoint of agency, governance, and voluntary disclosure theories. Previous research had looked at PWs mainly from the standpoint of their information content. Our study did not focus on the market reaction to the informational content of PWs, but rather sought to determine the governance mechanisms associated with the decision to voluntarily warn the market when a firm is overvalued. Finally, our findings are in line with Erhard, Jensen, and Zaffron's (2007, revised 2008) work on the presumed causal link between integrity and value-creation for all entities.

Applied Implications

This research has direct managerial implications in so far as it reveals the importance of being forthcoming in the event of equity overvaluation. Executive officer and directors are in the best position to know if their company is overvalued. Our findings show that when overvaluation comes from the market, governance mechanisms such as options plans and multiple votes per share tend to mitigate their incentive to warn the market of the overvaluation by publishing a PW. Practitioners who design these governance mechanisms should take this possibility into consideration.

Limitations and Future Research Directions

Our sample includes only large companies appraised by the GMRB in connection with the quality of their governance. Companies targeted by GMRB are part of

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the S&P-TSX index. This type of limitation is inherent in all studies that make use of a governance index. Moreover, our control variables are evaluated on an annual basis. The use of quarterly accounting data may produce more precise measures. Unfortunately, however, a database of this type with information on a large number of Canadian corporations is not available.

As for possible avenues of research, it would be interesting to reproduce the study in the context of other financial markets where the practice of issuing PWs and the regulatory framework might be different.

Notes

1 The results of the literature on "earnings management," describing in particular strategic decisions on mergers and acquisitions (Erickson & Wang 1999), on leverage or management buy outs (Perry & Williams 1994), on initial public offerings (Aharony, Lin, & Loeb 1993; Friedlan 1994; Teoh, Welch, & Wong 1998; Teoh, Wong & Rao 1998; Yoon & Miller 2002) or companies in difficulty (Beneish 1997), lead us to believe that this opportunistic behaviour by executives under the right circumstances is an integral part of their job description.

2 Canadian companies are obligated to declare "any material change to their situation." However, the legislation on securities (art. 7.1, Regulation 51-102 of the Securities Act) authorizes them to maintain the confidentiality of information when its publication would bring needless injury to their interests (Rousseau, 2004).

3 See the studies by Kasznik and Lev (1995), Soffer et al. (1998), Libby and Tan (1999), Clare (2001), Kearns and Whitley (2002), and Jackson and Madura (2003). Note, however, that before the mid-1990s, sources on the topic of voluntary disclosure were not very interested in specific cases of PWs because of the very small number of companies that used them (Jackson & Madura, 2003).

4 According to the Canadian regulations on disclosure of information (NI 51-201), a fact is considered "important" or material: (a) when it has a significant effect on the price or the value of the securities of the issuer, or (b) when it is reasonable to expect that it will have such an effect.

5 The Canadian authorities reacted strongly by creating on July 17, 2002 the Canadian Public Accountability Board, just five days before the creation of the US Public Company Accounting Oversight Board (PCAOB), to supervise the accounting profession, thus tightening up the regulations regarding the transparency of financial information, the independence of auditors, the role of administrators in governance, and so forth. The European Community proved resistant to this reform at first, with several countries making reference to the quality of their systems and the conflicts with their laws or legal systems. Nonetheless, it came on board with this international movement, specifically by modifying in 2006 the eighth directive to enjoin its member states to create an independent body similar to the PCAOB to supervise auditors. As of today, the United Kingdom, France, Germany, and Ireland have created their own supervisory bodies.

6 The exercise price is the price at which the underlying asset of an option can be bought or sold.

7 Evaluation of the quality of governance by the GMRB is increasingly being used in research on the governance of Canadian companies, as evidenced by the recent studies by Foerster and Hune (2004), Klein, Shapiro, and Young. (2005) and Gupta, Kennedy, and Weaver (2006). This evaluation began in 2002. Therefore, we had to use governance grades from 2002 for 2000 and 2001. This bias should be minimal since we can assume relative stability for company governance variables before the reform that was instituted at the end of 2001.

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