The Information Content of Corporate Governance Ratings

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A Thesis

In

The John Molson School of Business

Presented in Partial Fulfillment of the Requirements

for the Degree of Master of Science (MSc.) in Administration - Finance

Concordia University

Montreal, Quebec, Canada

June 2013

CONCORDIA UNIVERSITY

School of Graduate Studies

This is to certify that the thesis prepared

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Entitled: The Information Content of Corporate Governance Ratings and submitted in partial fulfillment of the requirements for the degree of

Master of Science Administration – Finance option

complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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_____ 2011

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ABSTRACT

The Information Content of Corporate Governance Ratings

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Several corporate governance rating agencies in recent years have introduced quantitative measures of corporate governance rating for publicly traded firms. Firms invest significant resources to be rated by such agencies as they anticipate potential benefits for investors. One potential benefit is the reduction in information asymmetry between firms and investors. We examine the cross-sectional relation between commercial corporate governance ratings of firms and their contemporaneous information asymmetry proxies. We use two leading governance rating agencies; Governance Metrics International (GMI) and Institutional Shareholder Services (ISS) and six information asymmetry proxies and find a significant relation between the ratings and several measures of information asymmetry. We, however, find no significant impact on information asymmetry level of firms around the first time they get rated. In addition, contrary to our expectations, we find a negative significant relation between highly rated firms and the cumulative abnormal returns around the announcement date but insignificant relation for low or moderately rated firms. Overall, our results suggest that governance ratings are related to the information environment surrounding a firm.

ACKNOWLEDGEMENTS

I am grateful to Almighty God for making me able to work on and complete this thesis. I would also like to express my sincere acknowledgements to people whose role, direct, or indirect, during the research for this dissertation was valuable.

My thesis supervisor, Dr. Harjeet S. Bhabra, has been very cooperative. Without his support and guidance, this thesis could not have been completed. It was a great learning opportunity for me to have worked under his supervision. During the idea development phase of this thesis, my class-fellow Mukhbir Singh played a key role, which I would like to acknowledge as well.

Finally, my family, especially my husband, has been a great source of support during my research.

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INTRODUCTION

Corporate governance ratings have gained popularity ever since accounting scandals like Enron and WorldCom took place in 2001 and 2002, respectively. Following these incidents, stock markets around the world embarked upon reforms such as the Sarbanes Oxley Act (in US) and the Higgs Report (in UK) to restore investor confidence. Among the leading corporate governance rating agencies, The Corporate Library (hereafter referred to as TCL) in 1999 and Governance Metrics International (hereafter referred to as GMI) in 2000, emerged as the first players in the industry. They were followed by S&P's Standard and Poor) Gamma score and Institutional Shareholder Services' (hereafter referred to as ISS) corporate governance quotient in 2002[1]. Most of the leading governance rating service providers claim to provide a single score, which is a comprehensive measure of the effectiveness and risks associated with governance mechanisms of firms.

In this paper we investigate the usefulness of these ratings. Since firms pay a fee to get rated and disclose their governance related information to the rating agencies, they must have the incentive to disclose this information in terms of a positive signal to the markets. Ratings scores potentially capture the quality of the corporate governance structure of the firm. Good governance, among other things, is related to more transparency in the dissemination of corporate information and better monitoring of corporate activity. We, therefore, believe corporate governance ratings to be related to the firms' information asymmetry. In the governance literature, we observe a gap in terms of examining the link between information asymmetry and governance ratings. For instance, Aggarwal et al. (2006) use ISS data to examine the relationship between firm value and 64 governance related inputs to the ratings. Brown & Caylor (2006) examine the relationship between Tobin's Q and a governance index created by summing 51 governance variables collected by ISS. Their results show that their own governance index was significantly related to

[1] http://www.reuters.com/article/2010/07/22/corporatelibraryidUSN228701820100722

firms' contemporaneous Tobin's Q for the year 2002. Brown & Caylor (2004) report that high ISS corporate governance ratings are associated with higher current stock returns, higher accounting returns, lower volatility, and higher dividends – the study however provides no evidence on the ability of corporate governance ratings to predict future firm outcomes.

Ashbaugh-Skaife & LaFond (2006) examine whether GMI's governance ratings are related to the cost of equity capital in research sponsored by GMI – their results show that higher GMI governance ratings were associated with lower cost of equity capital in 2004. It should be noted that they do not report whether the current ratings *predict* future cost of capital. Similarly, Derwall & Verwijmeren (2007) find that GMI's governance ratings for 2005 are negatively related with cost of equity capital, firm specific and systematic risk. Ertugrul and Hegde (2009) show that commercial ratings by TCL, GMI, and ISS have no predictive power for predicting future firm performance. However, a few sub scores of these ratings are predictive of future firm performance. Their firm performance measure is divided into two broad categories; primary and secondary. Their primary measure includes operating performance and stock returns and their secondary measure relates to four unfortunate corporate events; propensity to delist, likelihood of bankruptcy, exposure to class action lawsuits, and exposure to accounting related SEC enforcement actions.

Ammann, Oesch, and Schmid (2011) use GMI data for firms in 22 developed countries and find a significant positive relation between firm-level governance scores and firm valuation. The most closely related study to our study is the one by Wan (2010). He looks at how corporate governance affects information asymmetry in capital markets through its effect on disclosure method. They find that if the practice of selective disclosure is forbidden, firm-level corporate governance will have minimum effect on firms' information asymmetry. Cai, Lui, and Qian (2009) investigate the effects of information asymmetry on three governance mechanisms; the

intensity of board monitoring, exposure to market discipline, and CEO pay-for performance relationship.

As discussed above, we observe a clear lack of studies relating governance ratings with market micro-structure. Most of the past literature has focussed on the link between governance ratings and firm performance (Aggarwal et. al. 2009), firm valuation (Tobin's Q) (Brown and Caylor, 2006 and Ammann, Oesch, and Schmid, 2011), stock returns, accounting returns, volatility (Brown and Caylor, 2006), cost of equity capital (Ashbaugh-Skaife & LaFond, 2006), risk (Derwall & Verwijmeren, 2007) and the predictive power in terms of stock returns (Daines, Gow, and Larcker, 2010). We believe that the link between governance ratings and information asymmetry holds primary importance as the effects on stock returns, firm valuation, and cost of equity capital will only exist if the market takes ratings information into account. If the ratings information is not assimilated in the market it's impossible for the above mentioned effects to materialize. The link between governance ratings and information asymmetry holds primary importance due to two main reasons; first, governance ratings can affect stock returns only if they affect information asymmetry and second, if ratings information is not assimilated in the market it's impossible for the people to react in any way. Therefore, we got motivated to investigate this '*missing*' link in governance ratings literature. To our knowledge, no other researcher has directly addressed the question of the possible link between governance ratings and information asymmetry.

The purpose of this paper is to investigate the cross-sectional relation between firms' corporate governance ratings and their information asymmetry. We test the usefulness of these ratings for firms by taking a market micro-structure perspective. We believe that in today's environment, information about a firms' governance is very important and rating announcements should affect a firm's information asymmetry.

In the first part of our paper, we investigate the cross-sectional relation between governance ratings by GMI and ISS (index score and industry score) against analyst related (dispersion in analyst forecast, forecast error, normalized forecast error, number of analyst) and market related (bid-ask spread and share turnover) information asymmetry proxies. We also control for firm size, tangibility, leverage, and profitability. In the second part we investigate the effect of initial ratings announcements and if they have any significant cumulative abnormal returns around the event or if there is a significant change in information asymmetry level around the rating announcements.

The thesis is divided as follow; the second sections discusses some of the pertinent literature, section 3 develops the hypotheses tested in the study, section 4 describes the data sources and limitations, section 5 provides a detailed description of the ratings methodology of the commercial rating firms under consideration of this thesis, section 6 explains the methodology employed in this paper, section 7 presents and discusses the empirical results, while the last section concludes the study and presents some new avenues to explore for future research

Chapter 1: Literature Review

Increasing concern about firms' corporate governance led rating agencies to design quantitative measures of corporate governance quality. In addition to the efforts of rating agencies, considerable research has also been done in the area of corporate governance. Ample research provides us with mixed evidence regarding the usefulness of commercial rating agencies. Also, the governance ratings literature has not investigated the link between the governance ratings and information asymmetry measures. A few academic researchers have, however, attempted to combine individual governance elements into a single rating system to determine the overall quality of a firm's governance.

La Porta et al. (1998) create an index of shareholder protection around the world and find that it correlates with economic growth and market capitalization. Their index is also called 'anti-director rights'. Gompers, Ishi, and Metrick (2003) form a governance index (G-Index) to proxy for the level of shareholder rights by using governance factors affecting shareholder rights. They find that a statistically significant 8.5% return is earned if an investor goes short on firms with low shareholder rights and long on firms with stronger shareholder rights. They also find correlations between the G-Index and stock returns, firm characteristics (book-to-market ratio, firm size, share price, monthly trading volume, Tobin's *Q*, dividend yield, S&P 500 inclusion, past five-year stock return, past five-year sales growth, percentage of institutional ownership), and firm's operating performance. Bebchuk, Cohen & Ferrell (2009) come up with an E-Index that constitutes six components of the G-Index. Brown and Caylor (2006) create a governance index created by summing 51 governance variables collected by ISS.

Subsequent researchers have bought the usefulness of the above mentioned indices into question. Core, Guay & Rusticus (2006) provide evidence that the G-Index is not related to superior firm

performance. On the contrary, Bebchuk, Cohen & Ferrell (2009) find that large abnormal returns are generated if investments are benchmarked by six components of the G-Score (called the E-index). However, recent research by Johnson, Moorman & Sorescu (2009) demonstrates that no abnormal returns are generated by the use of G-Index or E-Index when the benchmark asset-pricing model is adjusted for industry clustering.

Ample research has also been done on ratings provided by commercial governance rating agencies. Various researchers have related these indices to firm performance or firms' stock market performance. Linden & Matolcsy (2004), claim that corporate governance ratings have no significant relationship with a firm's financial performance. They also find that these ratings are positively related to firm size. On the contrary, Durie (2003) showed that corporate governance ratings are relatively good indicators of future firm performance. Various researchers such as Larcker, Richardson & Tuna (2007) and Grundy et al. (2003), are unconvinced by the claims of usefulness of such governance indices. Turnbull (2001) has highlighted the importance of considering governance strengths, weaknesses, opportunities, and threats when analyzing the usefulness of corporate governance ratings. Daines, Gow, and Larcker (2010) evaluate the usefulness of commercial corporate governance ratings by examining GMI, ISS, TCL, and Audit Integrity (Accounting and governance risk). They find that these ratings are of no good to investors as they don't have a significant relation with firms' future performance nor do they have economically significant predictive ability. Black, Jang, and Kim (2006) show a positive relationship between corporate governance and firm valuation for Korea. Koehn & Ueng (2005) examine a sample of 106 large U.S. firms and find no statistically significant relationship between corporate governance ratings and Audit Integrity's measure of earnings quality. Yeh, Lee, and Koh (2002) find that firms with good corporate governance show good operating performance and commit less fraud.

Brown and Caylor (2006) provide five internal governance provisions that significantly matter for firm valuation. They examine the relationship between Tobin's Q and an index created by summing 51 governance variables collected by ISS. Their results showed that their own index was significantly related to the contemporaneous Tobin's Q for 2002. Aggarwal et al. (2006) create an index based on governance attributes that targeted post-SOX regulations to capture how corporate governance affects different firm attributes. They use 64 governance attributes used by ISS in their governance ratings. They find a positive relation between firm value and their governance index. Brown & Caylor (2004) report results associating high ISS corporate governance ratings with higher current stock returns, higher accounting returns, lower volatility, and higher dividends; the study however provides no evidence on the ability of corporate governance ratings to predict future firm outcomes. Gupta, Kennedy, and Weaver (2009) investigate Canadian capital markets and find no association between Globe and Mail`s governance sub-category ratings and measures of firm value. They examine S&P/TSX firms. Ammann, Oesch, and Schmid (2011) use GMI data for firms in 22 developed countries and find a significant positive relation between firm-level governance scores and firm valuation.

Ashbaugh-Skaife & LaFond (2006) examine whether GMI's governance ratings are related to the cost of equity capital in research sponsored by GMI; their results show that higher GMI governance ratings were associated with lower cost of equity capital in 2004. It should be noted that they do not report whether the current ratings *predict* future cost of capital. Similarly, Derwall & Verwijmeren (2007) find that GMI's governance ratings for 2005 are negatively related with cost of equity capital, firm specific and systematic risk.

The issue of predictability of commercial corporate governance ratings has also been addressed by many. TCL analysts avoid data checklists and rely instead on their experience and private assessment of a firm's governance quality. Bhagat, Bolton & Romano (2007) examine several

ratings from TCL (The Corporate Library). Using multivariate analysis and simultaneous equations, they report mixed evidence about its ability to predict future operating performance and share price appreciation. Ertugrul and Hegde (2009) show that commercial ratings by TCL, GMI, and ISS have no predictive power for predicting future firm performance. However, a few sub scores of these ratings are predictive of future firm performance. Their firm performance measure is divided into two broad categories; primary and secondary. Their primary measure includes operating performance and stock returns and their secondary measure relates to four unfortunate corporate events; propensity to delist, likelihood of bankruptcy, exposure to class action lawsuits, and exposure to accounting related SEC enforcement actions. Erickson, Hanlon & Maydew (2006), show that accounting restatements are positively associated with poor governance. In contrast though, Larcker, Richardson & Tuna (2007) are unable to find this relationship with their data.

The phenomenon of information asymmetry has long been researched and is well-accepted now. It plays an important role especially in understanding capital market's micro-structure. Moreover, various signalling theories have been put forward to explain the behavior of security prices to various different pieces of information. Information asymmetry exists in markets where sellers and buyers have different levels of information; hence their information is asymmetric. Ross (1977) and Spence (1973) were among the earliest researchers to show that investors rely on information to value a firm. Recently, LaFond & Watts (2008) studied the information role of conservatism and show how information in financial statements reduces information asymmetry and increase equity value. This is another example of how an information source reduces information asymmetry in capital markets. We can expect the same effect from corporate governance ratings. Healy and Palepu (2001) provide an excellent review of research done related to corporate disclosure and how it affects information asymmetry in capital markets. They show

that firms communicate information about governance and firm performance to outside investors through financial reporting.

Previous research, including Leland & Pyle (1977), Thakor (1982) Campbell & Heinkel(1984), has identified a number of signaling alternatives that firms employ to resolve or alleviate the asymmetric information problem, and rating agencies (which give an overall rating for a firm's stock) are one of them. Hsueh & Liu (1992) and Dichev & Piotroski (2001) have noted that smaller firms in the market are less closely followed by market analysts and thus face more serious information asymmetry problem. Botosan (1997) provides evidence of a significant relationship between firm disclosure and its stock returns. Corporate governance rating also represents disclosure and therefore conveys different signals to the market. Hseuh, Chang, and Lee (2007) find that the effect of initial credit rating announcements on information asymmetry is significant and that it results in positive stock returns or favourable reaction by markets only for smaller sized firms in the Taiwanese capital market. Barron, Clare & Thomas (1997) however do examine the impact of initial rating announcement effects on a sample of UK firms but do not observe any stock price reaction to corporate governance rating announcements.

A related study was done by Chiang (2005) which shows a relationship between information transparency (reduced information transparency) and better governance practice for Taiwanese high-tech firms. The measure for transparency adopted in their study is the Standard and Poor`s transparency criteria. Their study also looks at the relationship between governance indicators and operating performance of firms and if these governance indicators have predictive power for future operating performance. By transparency, they refer to transparency of ownership structure, investor relations, financial transparency, information disclosure, transparency of board ownership structure and processes. Corporate transparency is shown to have a significant positive relationship with operating performance and that companies with good corporate governance

have good operating performance. Cai, Lui, and Qian (2009) investigate the impact of firms' information asymmetry on their choice of governance mechanism. They test three governance mechanisms; the intensity of board monitoring, exposure to market discipline, and CEO pay-for performance relationship. Their findings suggest that firms with higher information asymmetry tend to chose less intensive board monitoring and greater alignment of CEO incentive with performance. The most closely related study to our thesis is the one by Wan (2010). He looks at how corporate governance affects information asymmetry in capital markets through its effect on disclosure method. They find that if the practice of selective disclosure is forbidden, firm-level corporate governance will have minimum effect on firms' information asymmetry.

Therefore, there is mixed evidence about the usefulness and predictability of governance ratings. From the review of past literature above, we can clearly observe a gap in literature as no researcher has yet addressed the question of how these ratings are affecting firms' information asymmetry and motivation of firms to get rated.

Chapter 2: Hypothesis development

From the preceding discussion on related literature, we can clearly observe a lack of focus on the relationship between firms' governance ratings and their contemporaneous information asymmetry in capital markets. In our opinion, this is an important link that needs to be established and it is both imperative and crucial to understand the motivation of firms to get subscribed with commercial rating agencies. Since the firms pay a heavy fee to get rated, there must be some benefit that they seek to gain through their governance ratings. Basically, what is in it for firms to subscribe to these ratings? The answer simply lies in the very reason these commercial rating agencies came into existence; to increase the firms' credibility among investors. Therefore, firms pay to get rated and share their governance-related information willingly to reduce their information asymmetry and increase their credibility among investors. In order for this to be an incentive, firms expect ratings to be a positive signal for the market. Firms may also feel the need to be more transparent when a firm decides to launch its equity offering in the near future or if it perceives that its equity is under-valued. All of the above mentioned benefits for firms can be materialized only if there is a significant cross-sectional relationship between a firms' corporate governance rating and their contemporaneous information asymmetry. More specifically, we believe that firms with high governance rating will have low contemporaneous information asymmetry. Since firms with better governance are more transparent, therefore their information asymmetry is less as compared to firms which are poorly governed. We also hypothesis that a firm with high governance *quality* should be associated with more transparency and low information asymmetry problems. Therefore, we expect the governance quality, measured by governance ratings, to affect information asymmetry negatively. We state our first hypothesis as follows:

Hypothesis 1: There exists a significant cross-sectional relation between a firms' governance rating and its information asymmetry. Specifically, we predict an inverse relation between firms' governance quality, measured by governance ratings, and measures of information asymmetry.

Theoretical literature on information asymmetry has established that more information is inversely proportional to information asymmetry and therefore, we hypothesize that as ratings information comes to the market, it will reduce information asymmetry level. For firms that get their governance-ratings for the first time, their information asymmetry level should reduce. Therefore, our second hypothesis is as follows;

Hypothesis 2: Initial ratings announcement should lead to reduced levels of information asymmetry in the post-announcement period.

According to information asymmetry theory, capital markets react to any 'new' information. This reaction is well-reflected in security returns. Therefore, we hypothesize that if people react to information on governance ratings, then good rated firms should earn higher cumulative abnormal returns and firms with low ratings should be penalized in terms of low cumulative abnormal returns. This forms our third hypothesis:

Hypothesis 3: High-rated firms earn higher cumulative abnormal returns and low rated firms earn low or negative cumulative abnormal return around the first time when firms get their governance rating.

Next, we proceed with the details of our data collection.

Chapter 3: Data and summary statistics

We use ratings data of two leading governance rating agencies; the GMI (Governance Metrics International) and ISS (International Shareholder Services). We use data for only U.S. firms for both rating agencies. The U.S. sample of GMI firms consists of all the firms that subscribed with GMI from December 2002 to February 2009. List of firms subscribed with GMI is obtained from their official website[2]. The ratings data for GMI firms' overall global ratings for the sample period are obtained from Bloomberg. Ratings data for GMI firms was only available for the overall global rating from August 2005 to February 2009, as this dataset was discontinued on Bloomberg from March 2009. Due to these limitations, our sample years for GMI are limited to 2005 to 2009. For the ISS ratings, we also use Bloomberg as our source. Ratings data for ISS was available on a monthly frequency as opposed to the quarterly frequency for GMI ratings data. The sample period for ISS ratings is from October 2005 through 2011 since Bloomberg's dataset for ISS ratings starts from October 2005. We use two main scores from ISS; the overall index rating and the overall industry rating. For ISS sample firms, ISS rates all U.S. firms on the indices S&P 400, S&P 500, S&P 600 and Russell 3000. Therefore, ratings data used consist of all firms that were on their respective indices on a given date. To avoid missing observations, our sample consists of firms which remain a part of their respective indices from 2005 through 2011.

For calculating information asymmetry proxies and controls, data is obtained through WRDS (Wharton Research Database Services). For both GMI and ISS, closing bid price, closing ask price, closing price, trading volume, and number of shares outstanding is obtained from CRSP Monthly Stock file. Data on analyst earning per share forecasts, actual earnings per share, and number of analyst data is obtained from I/B/E/S database. For calculating controls, data for total

[2] http://www.gmiratings.com/RatingProcess.aspx

assets, total property, plant, and equipment, book price of stock, market price of stock, total number of shares outstanding, and operating income before depreciation is obtained from Compustat Fundamental North America file. To test the third hypothesis, Eventus[3] (on WRDS) is used to run an event study for GMI firms with initial ratings available.

Table I: Summary Statistics – GMI and ISS Ratings

Panel A. Governance Metrics International (GMI) Rating

Year	N Obs	Mean	Std Dev	Minimum	Maximum	N
2005	1254	6.9880	1.4194	1.00	9.50	1254
2006	3897	7.0547	1.4476	1.00	9.50	3897
2007	5573	7.1092	1.4457	1.00	9.50	5573
2008	5972	7.1168	1.5643	1.00	9.50	5972
2009	1571	7.1048	1.6284	1.00	9.50	1571

Panel B. International Shareholder Service (ISS) Index Rating

Year	N Obs	Mean	Std Dev	Minimum	Maximum	N
2005	7644	51.8489	28.4211	0.08	100.0	6276
2006	30587	52.5841	28.1999	0.05	100.0	23999
2007	20391	52.8661	28.5893	0.05	100.0	17127
2008	20384	52.4111	28.4847	0.20	100.0	18228
2009	17842	51.9290	28.6434	0.10	100.0	16918
2010	22932	50.4259	27.6715	0.10	100.0	15488
2011	22932	49.9125	27.5342	0.10	100.0	19375

Panel C. International Shareholder Service (ISS) Industry Rating

Year	N Obs	Mean	Std Dev	Minimum	Maximum	N
2005	6276	60.8718	26.3140	0.3000	100.00	6276
2006	23999	62.0600	25.9881	0.2500	100.00	23999
2007	17127	63.1256	25.9296	0.2000	100.00	17127
2008	18228	63.8902	25.4464	0.7000	100.00	18228
2009	16918	63.7663	25.2389	0.9000	100.00	16918
2010	15548	62.4388	24.6312	0.6000	100.00	15548
2011	19375	62.6900	24.6432	0.6000	100.00	19375

[3] http://wrds-web.wharton.upenn.edu/wrds/ds/eventus/index.cfm

We also analyze summary statistics of ratings data which are presented in Table 1 above. Panel A describes the GMI ratings data. GMI rates companies on a scale of 1-10, as reflected in the minimum and maximum values. For GMI firms, the average rating, minimum, maximum, and standard deviation are almost the same across the sample period but the number of observations are different. This is due to the fact that our sample of GMI firms consists of firms which subscribed to GMI ratings from December 2002 to February 2009. If we consider the number of observations for 2006, it includes firms which subscribed from January 2006 to December 2006 in addition to the observations for 2005. Another reason for this difference in the number of observations is limitations in data availability. On Bloomberg, GMI ratings are available for only one quarter of the year 2005. Differences in number of observations for the years 2006, 2007, and 2008 also arise as the number of firms subscribing or un-subscribing with GMI changes. The average rating for GMI firms is approximately 7, which is quite high.

Panels B and C present summary statistics for ISS index rating and ISS industry ratings data. ISS rates companies on a percentile basis from 0 - 100. Ratings for index and industry scores for ISS have similar number of observations as the same sample was used. As for the number of observations in each sample year for ISS index and industry ratings, we see a huge difference from year to year. The difference in number of observations for different years in the sample period is due to the fact that ISS rates all companies on S&P 400, 500, and 600 and Russell 3000 if they are on the index on a particular date. Therefore companies coming off the index will not have ratings anymore, and companies that remain on the index for consecutive years will remain a part of the sample. Other than that, firms on the index will have as many ratings as the number of times ISS rates companies. ISS ratings data is of monthly frequency with the exception of few months when ratings were not provided, especially in the later years of our sample period. The index ratings have a relatively low mean rating and higher standard deviation as compared to the

industry ratings. This is attributable to the nature of an index and industry rating scores. Index score is based on the percentile score assigned when comparison is based on an index, similarly, industry score is assigned on the basis of how a firm performed among its industry peers. Index constituents change often whereas industry participants do not get changed that often, therefore the standard deviation of ISS index ratings is higher than that of ISS industry rating. The mean ratings for ISS index score remains close to 50, but the mean rating for ISS industry score remains around 60 or even slightly above that. This is worth noticing as firms tend to get highly rated on average on industry score as compared to the index score.

Having discussed the data collection and some characteristics of our ratings data, we now proceed to our research design.

Chapter 4: Description of Corporate Governance Ratings

For the purpose of our research, understanding of the rating methodology used by GMI and ISS is crucial. Therefore we begin by explaining the methodology employed by rating agencies to calculate firm's rating scores.

ISS Corporate Governance Quotient metric was established in June 2002. ISS reports the governance scores in proxy voting reports for its client and these proxy analysis reports are widely disseminated and they find a way into public domain[4]. Firms are allowed to register with ISS to review the information used by ISS to calculate the score; however, the score is not revealed to the firms. Firms are also encouraged to input data on their own on ISS's website. Among the U.S. firms, ISS rates entire indices such as; S&P 400, S&P 500, S&P 600, and Russell 3000. ISS provides its corporate governance quotient score on a relative percentile basis ranging from 0 to 100. The two main 'raw' scores are derived from 61 governance variables[5] which arise from eight core governance topics; (i) board structure and composition, (ii) charter and bylaw provisions, (iii) audit issues, (iv) anti-takeover practices, (v) executive and director compensation, (vi) progressive practices such as board performance review, (vii) director and officer stock ownership, and (viii) director's education. The 'raw' scores from these categories are used to calculate two main scores and four sub-scores. The two main scores are CGQ_Index and CGQ_Industry, where CGQ refers to the corporate governance quotient. CGQ_Index is a percentile score that rates companies relative to other firms' raw score that forms their respective index, whereas, CGQ_industry rates companies relative to the raw scores of firms in the same industry. Industry classification employed by ISS is the S&P 24 sector groupings, also known as GICS (Global Industry Classification Structure). These 24 sub groups are formed within ten

[4] Drake (2002)
[5] For a detailed list of these 61 variables that form eight core topics, please refer to Appendix A.4, for extra details on ISS methodology, please refer to A.1

industry groupings by MSCI and S&P[6]. Each of the four sub scores is a quintile ranking provided by ISS to deal with different areas of governance which are the Board, Audit, Compensation/ Ownership, and Takeover Defenses. These sub-scores represents quintile rankings, therefore a firm with a score of 5 on any of the sub-score would mean that that company was among the 20% highest score firms.

Governance Metrics International (GMI) was established in 2000. In 2010, it got merged with The Corporate Library and Audit Integrity to form 'GMI Ratings'. GMI overall global rating is derived from 600 variables[7], extracted from securities regulations, various codes of best practices, and exchange listing requirements. GMI generates a basic rating for all subscribed companies. The 600 variables are objectively structured to generate a yes, no, or undisclosed as possible answers. Information is gathered from public sources such as regulatory filings, company websites, news services, certain specialised websites and the Dow Jones Global Industry Classification System. The GMI rating methodology gathers information about a firm across seven categories; board accountability, financial disclosure and internal controls, executive compensation, market for control and ownership base, reputational and socially responsible investment issues, corporate behaviour, and shareholder's rights. These categories are further divided into subsections and each individual metric is assigned a numerical value[8]. The collected data becomes an input for a relational database from where GMI sends the data entry reports to subscribed companies for a final accuracy check. The last step is to use company-adjusted data to run a propriety scoring model which calculates the ratings. The scoring model assigns ratings from 1 (lowest) to ten (highest). GMI scores are also assigned relatively. GMI ratings are relative to the entire GMI universe and also against other firms in the same country. A total of fourteen scores are assigned to each firm. For each of the seven categories discussed above, GMI assigns

[6] For details of 24 sub groups and 10 major industries, please refer to Appendix A.3
[7] Drake (2002)
[8] For details on the subsections and variables for GMI that form each category, please refer to the Appendix A.2

two ratings; one is the global rating and second is a separate score for each category. Due to limitations of data availability, we only use overall global ratings in our analysis.

Chapter 5: Research Design

Now we turn to the research methodology employed in our paper. Hypothesis 1 states that a significant cross-sectional relationship exists between a firms' corporate governance rating and its information asymmetry. We measure information asymmetry using six proxies; bid-ask spread, share turnover, number of analysts following, dispersion in analyst forecasts, forecast error, and normalized forecast error. Bid-ask spread is calculated simply by taking the difference between closing bid and ask for the preceding month. Share turnover is calculated by dividing the total trading volume by total number of outstanding shares for the preceding month as of the rating announcement date. Number of analysts is simply the number of analyst EPS (earning per share) forecasts available for the most recent quarter. Following Dorbetz et al. (2010), dispersion in analyst forecast is calculated as the standard deviation of all EPS forecasts available for the most recent quarter. We take the logarithm (base 10) of dispersion. Forecast error is measured as the difference between actual EPS and average EPS forecast. We also take the absolute value of forecast error. Normalized forecast error, as the name implies is forecast error adjusted for volatility in earnings. Therefore we divide absolute forecast error by moving standard deviation of the past three years earning per share values. We also introduce four different controls. Firm size is shown to have a significant relationship with governance ratings as in Linden & Matolcsy (2004) and information asymmetry as in Hsueh & Liu (1992) and Dichev & Piotroski (2001). We use log of total assets as a measure of firm size. Firms with different financing needs might differ in terms of their willingness to share information, therefore we also use leverage ratio as a control. Leverage ratio is calculated as total long term liabilities to total market and book value. We also use tangibility as a control. Tangibility ratio is calculated by dividing total property, plant, and equipment value by total assets. We also introduce ROA (return on assets) as a control. Return on assets is calculated by dividing total operating income before depreciation by total assets of a firm.

To test our first hypothesis, each rating for each date is used as one data point. This means that if a GMI firm had four ratings for the year 2006, they will be treated as four different observations. We use a simple Ordinary Least Squares regression technique by using firms' governance ratings as dependent variable and their contemporaneous information asymmetry proxies as independent variables. This procedure is done for all our ratings data, i.e., GMI overall global ratings, ISS index score, and ISS industry score. The regression model for the above regressions is as follows:

$$Rating_t = \alpha + \beta_1(bdspread)_t + \beta_2(Shturnover)_t + \beta_3(dispersion)_t + \beta_4(Numanalyst)_t + \beta_5(ferror)_t + \beta_6(Normferror)_t$$

where:

$Rating_t$ – Rating at time t

Bdspread – bid ask spread at time t,

Shturnover – Share turnover at time t,

Dispersion – dispersion in analysts' forecasts at time t,

Numanalyst – Number of analysts following a firm at time t

Ferror – Forecast error in earnings per share at time t, and

Normferror – Normalized forecast error at time t.

Next, we use the same procedure along with controls to investigate if any of the control variables are affecting the cross-sectional relationship between firm's governance ratings and their information asymmetry measures. The model below was used for all three ratings. The model used with controls is as follows:

$$Rating_t = \alpha + \beta_1(bdspread)_t + \beta_2(Shturnover)_t + \beta_3(dispersion)_t + \beta_4(Numanalyst)_t + \beta_5(ferror)_t + \beta_6(Normferror)_t + \gamma_1(firmsize)_t + \gamma_2(leverage)_t + \gamma_3(tangibility)_t + \gamma_4(ROA)_t$$

where:

Bdspread – bid ask spread at time t,

Shturnover – Share turnover at time t,

Dispersion – dispersion in analysts' forecasts at time t,

Numanalyst – Number of analysts following a firm at time t,

Ferror – Forecast error in earnings per share at time t,

Normferror – Normalized forecast error at time t,

Firmsize – firm size measured by log of total assets at time t,

Leverage – leverage ratio at time t,

Tangibility – tangibility ratio at time t, and

ROA – return on assets at time t.

Next, in order to be sure that our results are not driven by any sub-period and/or year in our sample period, we also divide the ratings data by year and then run the regressions with information asymmetry proxies and controls. We use the same models discussed above. Since information for information asymmetry variables and controls are not available for the exact same day as the ratings announcement, we use data for the most recent month (for bid ask spread and share turnover) and the most recent quarter (for number of analyst, dispersion in analyst forecasts, forecast errors, and normalized forecast errors) as contemporaneous data.

To further check for robustness of our results, we also perform OLS regressions using the three commercial governance ratings by splitting them by each year as dependent variable and each information asymmetry as independent variable along with controls. For this purpose, we use the following models:

$$Rating_t = \alpha + \beta_1(bdspread)_t + \gamma_1(firmsize)_t + \gamma_2(leverage)_t + \gamma_3(tangibility)_t + \gamma_4(ROA)_t$$

$$Rating_t = \alpha + \beta_1(Shturnover)_t + \gamma_1(firmsize)_t + \gamma_2(leverage)_t + \gamma_3(tangibility)_t + \gamma_4(ROA)_t$$

$$Rating_t = \alpha + \beta_1(dispersion)_t + \gamma_1(firmsize)_t + \gamma_2(leverage)_t + \gamma_3(tangibility)_t + \gamma_4(ROA)_t$$

$$Rating_t = \alpha + \beta_1(Numanalyst)_t + \gamma_1(firmsize)_t + \gamma_2(leverage)_t + \gamma_3(tangibility)_t + \gamma_4(ROA)_t$$

$$Rating_t = \alpha + \beta_1(ferror)_t + \gamma_1(firmsize)_t + \gamma_2(leverage)_t + \gamma_3(tangibility)_t + \gamma_4(ROA)_t$$

$$Rating_t = \alpha + \beta_1(Normferror)_t + \gamma_1(firmsize)_t + \gamma_2(leverage)_t + \gamma_3(tangibility)_t + \gamma_4(ROA)_t$$

In order to test the second hypothesis, we use the same sub-sample with GMI firms that received their first rating. Due to data limitations, the subscription dates for firms is only known for GMI sample. In this way, we know for sure that the rating right after a firm gets rated is the initial rating for that firm. In order to test if information asymmetry reduced after the first governance rating announcement, we use this sample and for all event dates, we calculate the pre- and post-information asymmetry measures; bid-ask spread, share turnover, dispersion in analyst forecasts, forecast error, and normalized forecast error. We average the change in information asymmetry level for the entire sample and test for their significance. We also divide the sample into three terciles based on ratings and then repeat the analysis. We do not use number of analyst as a proxy for information asymmetry for this analysis as the number of analyst do not change from quarter to quarter when 'new' information like governance ratings comes to the market.

We test the third hypothesis by employing the event study methodology. In order to observe how the market reacts to ratings announcement, we calculate cumulative abnormal returns in the pre- post- and around- announcement windows; (-20, -5), (-5, -2), (-2, 0), (-1, 0), (-1, 1), (-2, 2), (-5, 5), (0, 1), (0, 2), (2, 5), and (5, 20). We also divide the initial rating firms into terciles on the basis of rating and then repeat the analysis. The three terciles formed were; (i) low-rated ($1 \leq$ rating < 4), (ii) moderately rated ($4 \leq$ rating < 7), and (iii) highly rated firms ($7 \leq$ rating ≤ 10)

Chapter 6: Empirical results

A. Cross-sectional relationship between governance ratings and firms' contemporaneous information asymmetry

To examine the cross-sectional relationship between governance ratings and information asymmetry, we employ three different ratings (GMI global rating, ISS index score, and ISS industry score), six information asymmetry proxies (bid ask spread, share turnover, number of analysts, dispersion in analyst forecast, forecast error, and normalized forecast error), and four controls (firm size, tangibility, leverage, and profitability). We present and analyse the results for all three governance ratings separately. Results for regressions with all ratings data points as dependent and information asymmetry proxies as independent variables for GMI overall global ratings are presented in table II on page 25. Results for similar regressions with controls are presented in table III on page 26.

For GMI ratings in table II, results show that bid-ask spread, share turnover, number of analyst, forecast error, and normalized forecast error are all significant at 1% but dispersion in analyst forecast is significant at 10%. This supports our hypothesis 1. However the signs indicate that firms with low bid-ask spreads (low IA – information asymmetry), low share turnover ratio (high IA), high dispersion in analyst forecast (high IA), low normalized forecast errors (low IA), high forecast errors (high IA), and high number of analyst (low IA) have better governance ratings. Thus, we see that the results for the direction of this significant cross-sectional relationship are mixed. The positive sign on forecast errors justifies our use of normalized forecast errors as it is not intuitively appealing that firms with high forecast errors (high information asymmetry) are more likely to get higher rating. All other proxies, apart from high forecast error and low share turnover supports that a negative and significant cross-sectional relationship exists between GMI global ratings and their contemporaneous information asymmetry. Therefore, for GMI ratings, we

conclude support for hypothesis 1 and a negative relationship, that is, firms with high governance rating have low information asymmetry.

TABLE II: Pooled regression: GMI Firms Ratings & Information Asymmetry

The following table presents results for OLS regressions using GMI overall global ratings as dependent variable for the sample period Aug 2005 –Feb 2009. All information asymmetry proxies are used as independent variables. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts during the last quarter, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. Each number in the parameter estimate column are reported with their respective t-values in a separate column. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%

	Parameter Estimate	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	6.90075***	0.02863	241.00	<.0001
Bid ask spread	-0.02920**	0.01149	-2.54	0.0110
Share turnover	-0.25670***	0.03396	-7.56	<.0001
Dispersion	0.9283*	0.01783	-1.82	0.0690
Number of analyst	0.00553***	0.00018	31.12	<.0001
Forecast error	0.04225***	0.01093	3.86	0.0001
Normalized forecast error	-0.00118***	0.00034	-3.48	0.0005
No. of observations	58441			
R^2	0.0169			
Adj R^2	0.0168			
p-value	.0001			

TABLE III: Pooled regression: GMI Firms Ratings & Information Asymmetry with Controls

The following table presents results for OLS regressions using GMI overall global ratings as dependent variable for the sample period Aug 2005 –Feb 2009. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts during the last quarter, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. The controls introduced are; (i) firm size as log of total assets, (ii) tangibility ratio calculated by total tangible assets (Property, Plant, and equipment) to total firm assets, (iii) leverage ratio calculated as total long term liability divided by total market and book value of a firm, and (iv) Return on assets calculated by operating income before depreciation to net assets of a firm. Each number in the parameter estimate column are reported with their respective t-values in a separate column. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%

	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	2.75782***	0.11846	23.28	<.0001
Bid ask spread	-0.02071*	0.01189	-1.74	0.0814
Share turnover	0.03337	0.03819	0.87	0.3822
Dispersion	0.7127***	0.02048	7.18	<.0001
Number analyst	0.00211***	0.00021853	9.67	<.0001
Forecast error	0.03069**	0.01385	2.22	0.0267
Normalized forecast error	-0.00103*	0.00038055	-2.72	0.0066
Firm size	2.6650***	0.01203	35.39	<.0001
Leverage ratio	0.00209	0.00256	0.82	0.4142
Tangibility ratio	0.00806	0.02995	0.27	0.7879
ROA	1.49844***	0.24371	6.15	<.0001
No. of observations	51759			
R^2	0.0402			
Adj R^2	0.0400			
p-value	<0.0001			

When we look at the results of regressions when controls are introduced in table III, it becomes clear that the cross-sectional relationship between GMI ratings and their contemporaneous information asymmetry are not affected by leverage and tangibility of a firm. However, firm size and profitability (ROA) are positively related to ratings. When controls are introduced, some proxies change signs too like share turnover, which had a negative sign in the last regression

becomes positive. Therefore, we can confidently state that even when we controls for firm size, leverage, tangibility, and profitability, we find strong support for hypothesis 1. Firm size (measured by log of total assets) and firm's profitability (measured as return on assets) have a positive relationship with ratings, that is, bigger firms with high profitability tend to have high governance scores on GMI governance ratings. Regression results for ISS index rating with information asymmetry variables and with information asymmetry proxies and controls are presented in tables IV and V respectively.

Pooled regressions for ISS index ratings (results presented on page 28) show that higher rating on ISS index main score is associated with high bid-ask (high IA), higher share turnover (low IA), higher dispersion in analyst forecast (high IA), lower number of analyst (high IA) and lower normalized forecast error (low IA). Forecast error yields non-significant results. From these results, we can draw support for hypothesis 1 for sure as most of the proxies are significant. However, if we consider the direction of this relationship, we observe a positive and significant relationship between firms' ISS index ratings and their contemporaneous information asymmetry measures. This implies that firms with high information asymmetry willingly share their governance-related information with the market to reduce their information asymmetry in the future. Since high information asymmetry is usually associated with smaller firms, our results for ISS index score might be driven by the higher number of small firms in our sample. As previously discussed, ISS firms sample combines firms from S&P 400-, 500-, 600-, and Russell 3000, therefore the higher number of firms would be small firms with higher information asymmetries.

TABLE IV: Pooled regression: ISS Index Ratings & Information Asymmetry

The following table presents results for OLS regressions using ISS index ratings as dependent variable for the sample period Aug 2005 –Feb 2009. All information asymmetry proxies are used as independent variables. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts during the last quarter, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. Each number in the parameter estimate column are reported with their respective t-values in a separate column. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%

	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	56.66853***	0.33567	168.82	<.0001
Bid ask spread	12.78963***	0.85439	14.97	<.0001
Share turnover	3.40695***	0.37249	9.15	<.0001
Dispersion	486.855***	0.20993	13.19	<.0001
Number of analyst	-0.03664***	0.00230	-15.91	<.0001
Forecast error	-0.00120	0.01539	-0.08	0.9378
Normalized forecast error	-0.00743**	0.00333	-2.23	0.0256
No. of observations	106425			
R^2	0.0056			
Adj R^2	0.0056			
p-value	<0.0001			

TABLE V: Pooled regression: ISS Index Ratings & Information Asymmetry with Controls

The following table presents results for OLS regressions using ISS index ratings as dependent variable for the sample period Aug 2005 –Feb 2009. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts during the last quarter, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. The controls introduced are; (i) firm size as log of total assets, (ii) tangibility ratio calculated by total tangible assets (Property, Plant, and equipment) to total firm assets, (iii) leverage ratio calculated as total long term liability divided by total market and book value of a firm, and (iv) Return on assets calculated by operating income before depreciation to net assets of a firm. Each number in the parameter estimate column are reported with their respective t-values in a separate column. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%

	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	34.62094***	1.47713	23.44	<.0001
Bid ask spread	12.97578***	1.02713	12.63	<.0001
Share turnover	1.85565***	0.45384	4.09	<.0001
Dispersion	2.7336	0.27214	1.60	0.1085
Number analyst	-0.05075***	0.00318	-15.94	<.0001
Forecast error	1.35150***	0.18817	7.18	<.0001
Normalized forecast error	-0.01702***	0.00392	-4.34	<.0001
Firm size	110.71***	0.15848	12.90	<.0001
Leverage ratio	0.00034***	0.00005261	6.62	<.0001
Tangibility ratio	1.94421***	0.43784	4.44	<.0001
ROA	-3.59850***	0.76170	-4.72	<.0001
No. of observations	78561			
R^2	0.0073			
Adj R^2	0.0072			
p-value	<0.0001			

When controls are used in addition to information asymmetry variables for ISS index ratings regressions (results are reported above), dispersion in analyst earnings forecast becomes insignificant, while forecast error becomes positive and significant and all controls are significant. Firm size, tangibility ratio, and leverage ratio are positively significant but ROA is negatively

significant. Results show that all of the controls introduced are affecting the relationship between ISS index ratings and their contemporaneous information asymmetry measures. Therefore, firms with larger asset base, more tangible assets, higher leverage ratios, and low return on assets seem to have high rating on ISS index ratings. Forecast error is positively significant as opposed to negatively significant normalized forecast error. From this analysis, we can draw support for hypothesis 1, as most of the information asymmetry proxies are significant with their signs in place even after controls are introduced.

Regression results when using ISS industry ratings with information asymmetry proxies and controls are presented in tables VI (on page 31) and VII (on page 32). These regressions also serve the purpose of controlling for firms in different industries and if that could affect the cross-sectional relationship between ISS governance rating and information asymmetry. Results show that firms with high industry rating have higher bid-ask (high IA), high share turnover (low IA), high dispersion in analyst forecasts (high IA), high number of analyst following (low IA), and high forecast errors (high IA). Normalized forecast errors are insignificant. The results support hypothesis 1 but nothing can be concluded about the direction of this relationship[9]. When controls are introduced, normalized forecast errors become negatively significant at 1%. All control variables (table VII) are positively significant except tangibility. The parameter estimate on leverage ratio is very small and significant which implies that high leverage firms have higher ratings. Therefore, we can conclude support for hypothesis 1 even when controlled for firm size, tangibility, leverage, and ROA.

[9] The analysis was repeated for each rating date and also by taking the average of monthly ratings in a quarter (for ISS). The results are consistent with the ones presented in this paper.

TABLE VI: Pooled regression: ISS Industry Ratings & Information Asymmetry

The following table presents results for OLS regressions using ISS industry ratings as dependent variable for the sample period Aug 2005 –Feb 2009. All information asymmetry proxies are used as independent variables. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts during the last quarter, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. Each number in the parameter estimate column are reported with their respective t-values in a separate column. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%

	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	56.16799***	0.27966	200.84	<.0001
Bid ask spread	17.88044***	0.72231	24.75	<.0001
Share turnover	3.44108***	0.31321	10.99	<.0001
Dispersion	0.3836**	0.17553	2.17	0.0300
Number of analyst	0.17576***	0.00198	88.82	<.0001
Forecast error	0.04016**	0.01308	3.07	0.0021
Normalized forecast error	0.00361	0.00277	1.30	0.1923
No. of observations	107778			
R^2	0.0921			
Adj R^2	0.0921			
p-value	<0.0001			

TABLE VII: Pooled regression: ISS Industry Ratings & Information Asymmetry with Controls

The following table presents results for OLS regressions using ISS industry ratings as dependent variable for the sample period Aug 2005 –Feb 2009. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts during the last quarter, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. The controls introduced are; (i) firm size as log of total assets, (ii) tangibility ratio calculated by total tangible assets (Property, Plant, and equipment) to total firm assets, (iii) leverage ratio calculated as total long term liability divided by total market and book value of a firm, and (iv) Return on assets calculated by operating income before depreciation to net assets of a firm. Each number in the parameter estimate column are reported with their respective t-values in a separate column. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%

	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	-36.92758***	1.19408	-30.93	<.0001
Bid ask spread	15.11294***	0.82374	18.35	<.0001
Share turnover	4.27846***	0.36439	11.74	<.0001
Dispersion	0.0039***	0.21806	11.05	<.0001
Number analyst	0.08439***	0.00261	32.36	<.0001
Forecast error	0.72259***	0.14378	5.03	<.0001
Normalized forecast error	-0.01172**	0.00312	-3.76	0.0002
Firm size	31433***	0.12805	81.98	<.0001
Leverage ratio	0.00025***	0.00004240	6.05	<.0001
Tangibility ratio	-12.98734***	0.35374	-36.71	<.0001
ROA	6.40569***	0.52207	12.27	<.0001
No. of observations	78010			
R^2	0.1831			
Adj R^2	0.1830			
p-value	<0.0001			

B. Cross-sectional relationship between governance ratings and information asymmetry by year

Ratings in each year of the sample period (GMI 2005-2009 and ISS 2005-2011) are grouped together and regressed against all contemporaneous information asymmetry proxies. As discussed in the methodology section, this is done as a robustness check to see if the results in the main regressions are robust to division of the sample by year and that the results are not driven by a single year or a sub-sample. Therefore, we run the same regression model as used for above regressions for all three ratings (GMI overall global rating, ISS index rating, and ISS industry rating) for each year in their respective sample period. The results for GMI ratings with all information asymmetry proxies are presented in table VIII (on page 34) and those with information asymmetry proxies and controls are presented in table IX (on page 35). Results show that only two of the proxies, share turnover and number of analyst, are significant for all the years, therefore, we conclude only weak support for hypothesis 1. Share turnover is consistently negative (high IA) and number of analyst is positive (low IA). When controls are introduced to the same regression along with other information asymmetry proxies, share turnover proxy is not significant for most of the sample period, however, number of analyst proxy remains significant from 2006 through 2009. Among the controls, firm size and return on asset shows positive significant relationship with GMI ratings. From this analysis, we can conclude that large firms with high profitability (ROA) ratios, and high number of analyst following are more likely to get highly rated by GMI. Therefore, when ratings data is divided by year and controls are introduced, we find only weak support for hypothesis 1.

Table VIII: Cross-sectional Relationship: GMI Ratings & Information Asymmetry

The following table presents results for ordinary least squares regressions with GMI governance ratings as dependent variable and all information asymmetry measures as independent variables in each regression. The results are grouped by year (as shown by separate columns), i.e. in each regression, ratings of all firms are used for that respective year. The regression model uses rating value as dependent variable and different information asymmetry proxies as independent variable. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is the forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. Each number without parenthesis represents the parameter estimate and the numbers in parentheses represent their respective t-values. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%.

	Year				
	2005	**2006**	**2007**	**2008**	**2009**
Bid-ask spread	-0.02140	-0.47372***	-0.06544	-0.16902*	-0.42107
	(-0.06)	(-2.52)	(-0.51)	(-1.86)	(-1.53)
Share turnover	-1.13121***	-0.99171***	-0.58275***	-0.41810***	-
	(-3.64)	(-5.82)	(-5.85)	(-4.95)	0.84884***
					(-5.55)
Dispersion in analyst forecast	1.0685	1.3041*	0.8962	0.7619***	0.9821
	(0.23)	(1.82)	(1.02)	(2.83)	(0.11)
Number of analyst	0.00502***	0.00632***	0.00550***	0.00569***	0.00314***
	(2.87)	(7.77)	(10.40)	(12.73)	(4.36)
Forecast error	-0.03017	0.08646	0.02750	0.08013***	0.07181
	(-0.25)	(1.12)	(0.69)	(2.39)	(1.44)
Normalized forecast error	0.000501	-0.00560***	-0.00073	-0.00156	0.000536
	(0.21)	(-2.70)	(-0.30)	(-0.94)	(0.37)
Number of observations	925	3204	6645	10122	4285
R^2	0.0192	0.0302	0.0182	0.0167	0.0105
Adjusted R^2	0.0128	0.0284	0.0173	0.0162	0.0091
P-value	0.0066	<0.0001	<0.0001	<0.0001	<0.0001

Table IX: Cross-sectional Relationship: GMI Ratings & Information Asymmetry with Controls

The following table presents results for OLS regressions with GMI governance ratings as dependent variable and all information asymmetry measures and four controls as independent variables in each regression. The results are grouped by year (as shown by separate columns), i.e. in each regression, ratings of all firms are used for that respective year. The regression model uses rating value as dependent variable and different information asymmetry proxies as independent variable. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is the forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. The controls introduced are; (i) firm size as log of total assets, (ii) tangibility ratio calculated by total tangible assets (Property, Plant, and equipment) to total firm assets, (iii) leverage ratio calculated as total long term liability divided by total market and book value of a firm, and (iv) Return on assets calculated by operating income before depreciation to net assets of a firm. Each number without parenthesis represents the parameter estimate and the numbers in parentheses represent their respective t-values. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%.

	Year				
	2005	**2006**	**2007**	**2008**	**2009**
Bid-ask spread	-0.66414	-0.04263	-0.05795	-0.14223	-0.09657
	(-1.52)	(-0.22)	(-0.31)	(-0.75)	(-0.2)
Share turnover	0.10565	0.09107	-0.01297	-0.10410	-0.24352
	(0.29)	(0.51)	(-0.11)	(-0.99)	(-1.15)
Dispersion in analyst forecast	0.9777	0.786	0.5307***	0.6960***	0.7750
	(0.08)	(1.46)	(4.34)	(2.92)	(1.13)
Number of analyst	0.00069	0.003***	0.0021***	0.003***	-0.0005
	(0.34)	(2.61)	(2.89)	(4.54)	(-0.54)
Forecast error	-0.06326	0.04233	0.01837	0.03973	0.01047
	(-0.49)	(0.55)	(0.36)	(0.98)	(0.11)
Normalized forecast error	-0.00422	-0.00126	0.00008	0.00016	0.00183
	(-1.50)	(-0.34)	(0.04)	(0.13)	(0.47)
Firm size	2.74***	2.38***	2.6726***	2.538***	3.262***
	(5.35)	(8.78)	(11.37)	(12.95)	(8.92)
Leverage ratio	0.01051	0.00103	0.00101	0.00595	-0.00004
	(0.17)	(0.23)	(0.18)	(0.76)	(-0.00)
Tangibility ratio	0.482**	-0.06397	0.03699	-0.029	0.232
	(2.33)	(-0.57)	(0.40)	(-0.38)	(1.58)
Return on asset	2.107	1.796**	2.198***	2.167***	0.658
	(1.20)	(2.07)	(2.73)	(3.35)	(0.82)
Number of observations	814	3362	5012	7730	2462
R^2	0.0663	0.0389	0.0436	0.0402	0.0417
Adjusted R^2	0.0547	0.0360	0.0417	0.0389	0.0378
P-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Yearly regressions for ISS index ratings against information asymmetry proxies (presented in table X on page 37), show that bid ask spread is positively significant (high IA) at 1 % level for all the years. Share turnover is also significant for 2005, 2006, 2009, 2010, and 2011. However, it changes sign from negative in 2005 and 2006 to positive from 2009 through 2011. Dispersion in analyst forecast is also significant and positive (high IA) for the whole sample, that is from 2005 through 2011. Number of analyst is negatively significant (high IA) for the period from 2008 through 2011. Normalized forecast error also shows negatively significant (low IA) for the years 2008 through 2010. This means that at least for the period from 2008 - 2011, higher bid-ask spreads (high IA), higher share turnover (low IA), high dispersion in analyst forecast (high IA), low number of analysts (high IA), and low normalized forecast errors (high IA) are related to high ISS index ratings. Different information asymmetry proxies point to different directions in terms of the relationship, therefore, no definite conclusion can be reached about the direction but we can conclude that there exists substantial evidence for the relationship between ISS index ratings and information asymmetry proxies. Thus we find support for hypothesis I. When controls are introduced (results in table XI on page 38), share turnover changes sign, dispersion and the number of analyst proxy do not change sign. As for controls, tangibility and leverage are insignificant for most of the sample period but firm size has positive and ROA has negative relationship with ratings. Therefore, we can conclude evidence for hypothesis 1 even when controls are introduced and the sample is divided by year.

Table X: ISS Cross-sectional Relationship: ISS Index Ratings & Information Asymmetry

The following table presents results for ordinary least squares regressions with ISS governance *index* ratings as dependent variable and all information asymmetry measures as independent variables in each regression. The results are grouped by year (as shown by separate columns), i.e. in each regression, ratings of all firms are used for that respective year. The regression model uses rating value as dependent variable and different information asymmetry proxies as independent variable. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is the forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. Each number without parenthesis represents the parameter estimate and the numbers in parentheses represent their respective t-values. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%.

	Year						
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Bid-ask spread	32.95**	3.485**	3.63***	3.43***	5.13***	11.01***	23.73***
	(2.19)	(2.05)	(2.89)	(2.93)	(2.65)	(4.36)	(10.56)
Share turnover	-26.8**	-6.17***	1.41	-0.93	3.28***	4.08***	-4.31***
	(-1.89)	(-5.11)	(1.08)	(-0.74)	(2.99)	(3.66)	(-3.55)
Dispersion analyst forecast	0.007	14.2**	7.24	243***	9300***	1.25***	$2x10^5$***
	(0.30)	(2.18)	(1.39)	(4.13)	(8.49)	(8.44)	(9.09)
Number of analyst	0.095	0.010	0.0081	-0.04***	-0.06***	-0.093***	-0.04***
	(0.84)	(1.28)	(0.85)	(-4.45)	(-7.76)	(-13.59)	(-6.88)
Forecast error	-17.***	0.023	-0.005	0.15**	0.021	0.047*	0.29**
	(-3.01)	(0.96)	(-0.28)	(2.45)	(0.50)	(1.67)	(2.16)
Normalized forecast error	-0.048	0.005	0.003	-0.010*	-0.041**	-0.038**	0.014
	(-0.89)	(0.84)	(0.62)	(-1.87)	(-2.42)	(-2.18)	(0.07)
Number of observations	123	19822	14505	15362	14181	18756	19281
R^2	0.1896	0.0017	0.0010	0.0033	0.0095	0.0132	0.0109
Adjusted R^2	0.1477	0.0014	0.0006	0.0030	0.0091	0.0129	0.0106
P-value	0.0004	<0.0001	0.0272	<0.0001	<0.0001	<0.0001	<0.0001

Table XI: Cross-sectional Relationship: ISS Index Ratings & Information Asymmetry & Controls

The following table presents results for OLS regressions with ISS governance *index* ratings as dependent variable and all information asymmetry measures and four controls as independent variables. The results are grouped by year (as shown by separate columns), i.e. in each regression, ratings of all firms are used for that respective year. The regression model uses rating value as dependent variable and different information asymmetry proxies as independent variable. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is the forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. The controls introduced are; (i) firm size as log of total assets, (ii) tangibility ratio calculated by total tangible assets (Property, Plant, and equipment) to total firm assets, (iii) leverage ratio calculated as total long term liability divided by total market and book value of a firm, and (iv) Return on assets calculated by operating income before depreciation to net assets of a firm. Each number without parenthesis represents the parameter estimate and the numbers in parentheses represent their respective t-values. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%.

	Year						
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Bid-ask spread	111.8	6.06***	6.6***	5.58***	10.5***	15.2***	27.9***
	(1.66)	(2.77)	(3.78)	(2.57)	(3.69)	(4.40)	(8.85)
Share turnover	-56.5***	-2.51*	5.6***	-0.579	3.09**	2.34	-4.93***
	(-3.40)	(-1.77)	(3.68)	(-0.39)	(2.16)	(1.59)	(-3.45)
Dispersion analyst forecast	0.00	0.9	0.0***	0.042*	93000***	97000***	0.0001***
	(1.39)	(0.06)	(6.09)	(1.74)	(4.96)	(7.22)	(5.39)
Number of analyst	-0.069	-0.003	-0.05***	-0.08***	-0.058***	-0.06***	-0.03***
	(-0.59)	(-0.24)	(-3.89)	(-7.07)	(-5.88)	(-5.91)	(-4.03)
Forecast error	-18.5***	1.2**	1.88***	-0.32	-1.29**	-1.67**	0.70*
	(-2.67)	(2.28)	(4.04)	(-0.74)	(-2.03)	(-2.36)	(1.79)
Normalized forecast error	-0.063	-0.02***	-0.009*	0.0006	-0.0079	0.0034	0.009
	(-1.22)	(-2.91)	(-1.74)	(0.06)	(-0.27)	(0.14)	(0.35)
Firm size	0.0004	3.5***	0.76***	0.002***	5.43	0.005***	2.31
	(0.67)	(6.17)	(12.06)	(9.56)	(1.57)	(5.11)	(0.87)
Leverage ratio	70.9***	-1.28	1.35	2.58**	0.452	0.54	-0.19
	(2.77)	(-1.08)	(0.98)	(2.04)	(0.37)	(0.46)	(-0.17)
Tangibility ratio	-2.509	0.1***	0.08***	-0.013	-0.0015	-0.01	-0.018
	(-0.93)	(2.61)	(3.20)	(-0.83)	(-0.32)	(-1.04)	(-1.22)
Return on asset	-20.86	-3.86*	-0.049	-4.8***	-7.02***	-10.9***	-3.19
	(-0.57)	(-1.28)	(-0.02)	(-3.11)	(-3.52)	(-4.86)	(-1.46)
Number of observations	93	14075	10296	11038	10234	13452	14098
R^2	0.3611	0.0058	0.0201	0.0113	0.0087	0.0155	0.0090
Adjusted R^2	0.2832	0.0051	0.0191	0.0104	0.0077	0.0147	0.0083
P-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Overall industry ratings from ISS are grouped by year and regressed against their contemporaneous information asymmetry proxies and controls. Their results are presented in tables XII and XIII on page 40 and 41 respectively. Controls are also introduced to the same regressions and results are presented in table XI. We can see that significant relationships are observed for bid ask spread, share turnover, number of analysts, dispersion in analyst forecast for all years and with forecast error and normalized error for most of the sample years. Therefore, we conclude strong support for hypothesis 1. Bid ask spread has a consistent positive sign. Share turnover changes sign form negative in the initial sample years to positive in the later part of our sample period. Results for number of analyst, forecast error, and normalized forecast error show positive significance for most of the years in which they are significant. Therefore, no determination of direction of the cross-sectional relationship is possible. When controls are introduced for these yearly regressions with information asymmetry proxies, the results are consistent with those without controls. Among the controls, firm size is positively related to the ratings and leverage ratio is negatively related to ISS industry ratings. This implies that bigger firms with less leverage ratios receive higher overall industry rating by ISS for almost all of the sample years. Thus, we conclude evidence for hypothesis 1.

Table XII: ISS Cross-sectional Relationship: ISS Industry Ratings & Information Asymmetry

The following table presents results for ordinary least squares regressions with ISS governance *industry* ratings as dependent variable and all information asymmetry measures as independent variables in each regression. The results are grouped by year (as shown by separate columns), i.e. in each regression, ratings of all firms are used for that respective year. The regression model uses rating value as dependent variable and different information asymmetry proxies as independent variable. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is the forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. Each number without parenthesis represents the parameter estimate and the numbers in parentheses represent their respective t-values. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%.

	Year						
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Bid-ask spread	49.**	6.76***	3.45***	2.83**	4.74***	13.2***	22.5***
	(2.48)	(4.02)	(2.83)	(2.51)	(2.70)	(4.81)	(9.73)
Share turnover	-36.3*	-11.6***	-1.71	4.11***	9.24***	2.66**	-11.2***
	(-1.93)	(-9.77)	(-1.36)	(3.40)	(9.28)	(2.18)	(-8.97)
Dispersion analyst forecast	0.00	0.0004***	0.0006***	0.08*	27.09***	125***	9.37*
	(0.73)	(6.45)	(5.29)	(1.95)	(2.70)	(3.17)	(1.64)
Number of analyst	0.192	0.27***	0.29***	0.22***	0.16***	0.06***	0.13***
	(1.28)	(34.75)	(32.30)	(25.90)	(23.25)	(8.59)	(20.79)
Forecast error	-15.7**	0.087***	0.033*	0.18*	-0.006	0.045	0.081
	(-2.08)	(3.68)	(1.91)	(2.92)	(-0.15)	(1.47)	(0.58)
Normalized forecast error	-0.068	0.038***	0.011**	-0.007	-0.04***	0.018	0.04*
	(-0.94)	(6.42)	(2.34)	(-1.14)	(-2.66)	(0.97)	(1.93)
Number of observations	123	19822	14505	15632	14181	18756	19281
R^2	0.1770	0.0645	0.0699	0.0517	0.0678	0.0087	0.0296
Adjusted R^2	0.1344	0.0642	0.0695	0.0513	0.0674	0.0084	0.0293
P-value	0.0008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Table XIII: Cross-sectional Relationship: ISS Industry Ratings & Information Asymmetry & Controls

The following table presents results for OLS regressions with ISS governance *industry* ratings as dependent variable and all information asymmetry measures and four controls as independent variables. The results are grouped by year (as shown by separate columns), i.e. in each regression, ratings of all firms are used for that respective year. The regression model uses rating value as dependent variable and different information asymmetry proxies as independent variable. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is the forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. The controls introduced are; (i) firm size as log of total assets, (ii) tangibility ratio calculated by total tangible assets (Property, Plant, and equipment) to total firm assets, (iii) leverage ratio calculated as total long term liability divided by total market and book value of a firm, and (iv) Return on assets calculated by operating income before depreciation to net assets of a firm. Each number without parenthesis represents the parameter estimate and the numbers in parentheses represent their respective t-values. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%.

	Year						
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Bid-ask spread	329***	8.16***	7.5***	6.11***	10.7***	14.9***	20.8***
	(3.89)	(3.86)	(4.67)	(3.08)	(4.31)	(3.93)	(6.47)
Share turnover	-85***	-2.4*	7.56***	8.7***	9.68***	4.94***	-8.5***
	(-4.07)	(-1.74)	(5.45)	(6.40)	(7.73)	(3.04)	(-5.84)
Dispersion analyst forecast	0.0**	0.0002***	0.0***	0.00***	0.0	57.46**	1.97
	(2.04)	(5.0)	(11.94)	(7.81)	(0.68)	(1.92)	(0.39)
Number of analyst	-0.12	0.17***	0.15***	0.12***	0.09***	0.05***	0.09***
	(-0.83)	(16.05)	(12.83)	(10.83)	(10.04)	(4.66)	(10.36)
Forecast error	-30***	-0.66	1.7***	-0.17	-1.27**	-2.03***	0.41
	(-3.51)	(-1.30)	(3.98)	(-0.44)	(-2.28)	(-2.60)	(1.02)
Normalized forecast error	-0.06	0.016**	-0.007	-0.01	-0.03	0.05**	-0.013
	(-0.99)	(2.04)	(-1.43)	(-1.13)	(-1.22)	(1.98)	(-0.49)
Firm size	318	37388***	$6x10^7$***	$5x10^5$***	182***	954***	0.02***
	(0.39)	(26.42)	(31.03)	(28.51)	(20.2)	(6.08)	(12.53)
Leverage ratio	81.6**	-11.29***	-10.8***	-11***	-12.7***	-8.6***	-12***
	(2.54)	(-9.89)	(-8.61)	(-9.54)	(-11.82)	(-6.67)	(-10.67)
Tangibility ratio	2.78	0.052	0.056**	-0.007	-0.003	-0.015	-0.04***
	(0.82)	(1.41)	(2.37)	(-0.48)	(-0.66)	(-1.36)	(-2.73)
Return on asset	-18.3	7.5***	11.09***	0.529	2.42	-4.15*	3.7*
	(-0.40)	(3.78)	(4.75)	(0.38)	(1.28)	(-1.68)	(1.64)
Number of observations	93	14075	10296	11038	10234	13452	14098
R^2	0.4498	0.1231	0.1784	0.1360	0.1206	0.0173	0.0540
Adjusted R^2	0.3827	0.1225	0.1776	0.1352	0.1198	0.0166	0.0533
P-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

C. Cross-sectional relationship between governance ratings and information asymmetry by each proxy

To further investigate the cross-sectional relationship, we also run yearly regressions with each governance rating observation against each information asymmetry proxy with all four controls. This procedure is repeated for all three ratings; GMI rating, ISS index rating, and ISS industry rating. Controls are used as independent variables along with each information asymmetry variable in all regressions. Results for GMI overall global ratings are presented in table XIV (on page 44). It can be easily observed that none of the information asymmetry proxies were significant for the sample period except number of analysts. However, among the controls, firm size remained significant throughout the sample period 2005 -2009 and return on assets remained significant at 1% for 2006, 2007, and 2008. All of the regressions had a very low p-value showing that their regression results were valid and that no significant relationship holds between GMI governance ratings and information asymmetry proxies. These results show that firms with high GMI rating were followed by a larger number of analysts, and that they were larger and more profitable firms. These results are not consistent with our previous findings and we observe that our hypothesis 1 does not hold under this analysis.

When ISS index ratings are used as dependent variable, the results (presented in table XV on page 46) show a significant relationship between ISS index ratings and most of information asymmetry proxies for most of the sample period (2005 – 2011). For ISS index ratings, bid-ask spread, share turnover, number of analyst, and dispersion in analyst forecasts show a significant relationship with ISS index ratings for most or the entire sample period. Forecast error and normalized forecast error are not significant for most of the years. However, the sign of parameter estimates change often. Among the controls, firm size and return on assets show significance for most of the years. However, no definite direction for this relationship can be concluded as the

controls, firm size and return on assets change sign. Therefore, our results are consistent with the previous results for ISS index ratings.

When we use ISS industry ratings, results (table XVI on page 48) show significant relationship with bid-ask spread, share turnover, number of analyst following, and dispersion in analyst forecasts. Results show a positive significant bid-ask spread, positive dispersion in analysts forecast, and positive number of analyst variable. Other proxies; forecast error and share turnover change signs during the sample period, therefore no absolute direction of relationship can be concluded. Among the controls, firm size, tangibility, and return on assets show significant relationships with ISS industry ratings for almost all of the years. A key point to note is that tangibility ratio is highly negatively significant for all the years. This shows that firms that had more tangible assets like property plant and equipment were the ones with low ISS industry rating, i.e. poor governance. Firm size is highly significant and positive for all the sample years. Return on assets is mostly significant with a positive sign. This implies that large players from each industry with higher firm size, higher profits, and low tangible assets score high on governance. From the above analysis, we see that the results for ISS industry ratings are consistent with the past results and there is evidence to support hypothesis 1 but determination of direction was not possible given the frequent changes in sign on parameter estimates of information asymmetry proxies.

Table XIV: GMI Governance Index Ratings & Information Asymmetry with Controls

The following table presents results for ordinary least squares regressions with GMI ratings as dependent variable and each information asymmetry proxy with four controls. The results are grouped by year (as shown by separate columns), i.e. in each regression, multiple ratings for the same firm are used for that respective year. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts during the last quarter, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. The controls introduced are; (i) firm size as log of total assets, (ii) tangibility ratio calculated by total tangible assets (Property, Plant, and equipment) to total firm assets, (iii) leverage ratio calculated as total long term liability divided by total market and book value of a firm, and (iv) Return on assets calculated by operating income before depreciation to net assets of a firm. Each number without parenthesis represents the parameter estimate and the numbers in parentheses represent their respective t-values. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%.

	Year				
	2005	**2006**	**2007**	**2008**	**2009**
Panel A					
Bid-ask spread	-0.78274**	-0.07637	-0.04746	-0.15589	-0.26174
	(-2.21)	(-0.44)	(-0.34)	(-0.89)	(-0.54)
Firms size	2.7367***	2.689***	2.9532***	2.7448***	2.7203***
	(6.19)	(11.69)	(17.14)	(16.29)	(8.31)
Leverage ratio	0.01378	0.00105	-0.00104	0.00585	0.00372
	(0.23)	(0.24)	(-0.19)	(0.75)	(0.21)
Tangibility ratio	0.47276***	-0.10617	-0.00984	-0.00934	-0.00669
	(2.39)	(-1.0)	(-0.13)	(-0.12)	(-0.05)
Return on assets	2.05058	2.48420***	3.26686***	3.02968***	0.89028
	(1.22)	(2.99)	(4.93)	(4.90)	(1.17)
No. of observations	826	3405	7350	7824	2027
R^2	0.0651	0.0388	0.0395	0.0341	0.0334
Adj R^2	0.0594	0.0374	0.0389	0.0335	0.0310
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Panel B					
Share turnover	0.22584	0.19486	0.07938	0.02071	0.24290
	(0.69)	(1.22)	(0.83)	(0.22)	(1.29)
Firms size	2.8817***	2.7394***	2.9804***	2.7466***	2.7161***
	(6.39)	(11.72)	(16.97)	(16.15)	(8.3)
Leverage ratio	0.01340	0.00106	-0.00109	0.00592	0.00399
	(0.22)	(0.24)	(-0.2)	(0.76)	(0.22)
Tangibility ratio	0.47256***	-0.10779	-0.01087	-0.01023	-0.01934
	(2.38)	(-1.02)	(-0.14)	(-0.13)	(-0.13)
Return on assets	1.63158	2.35669***	3.28062***	3.01634***	0.89943
	(0.96)	(2.83)	(4.95)	(4.88)	(1.19)
No. of observations	826	3405	7350	7824	2027
R^2	0.0600	0.0392	0.0396	0.0340	0.0341
Adj R^2	0.0543	0.0378	0.0389	0.0334	0.0317
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Panel C					
Number of analyst	0.00105	0.00247***	0.0009***	0.00334***	0.00278**
	(0.56)	(2.73)	(2.71)	(3.92)	(2.03)
Firms size	2.7079***	2.4405***	1.1009***	2.1644***	2.1439***

	(5.64)	(9.65)	(9.98)	(8.05)	(4.14)
Leverage ratio	0.01479	0.00097736	0.00597	0.01338	0.02347
	(0.24)	(0.22)	(0.11)	(1.20)	(0.73)
Tangibility ratio	0.45125**	-0.11422	0.10721	-0.05557	-0.06675
	(2.25)	(-1.05)	(0.92)	(-0.5)	(-0.32)
Return on assets	1.74897	1.88865**	0.95404***	2.62322***	0.63647
	(1.02)	(2.21)	(3.36)	(3.03)	(0.76)
No. of observations	817	3371	3479	3734	984
R^2	0.0594	0.0412	0.0423	0.0338	0.0332
Adj R^2	0.0536	0.0398	0.0409	0.0325	0.0283
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Panel D					
Dispersion in analyst forecast	0.9193	0.8956	0.5945***	0.8083	0.7827
	(0.31)	(0.76)	(3.46)	(1.48)	(0.9)
Firms size	2.8272***	2.7205***	2.9996***	2.5568***	2.5541***
	(6.33)	(11.67)	(12.26)	(10.39)	(5.36)
Leverage ratio	0.01220	0.00105	0.00013	0.01215	0.02077
	(0.20)	(0.24)	(0.02)	(1.09)	(0.64)
Tangibility ratio	0.47494**	-0.07828	0.00765	0.01308	0.03446
	(2.33)	(-0.71)	(0.07)	(0.12)	(0.16)
Return on assets	1.890	2.414***	3.325***	3.035***	0.31688
	(1.11)	(2.9)	(3.54)	(3.50)	(0.36)
No. of observations	817	3371	3479	3734	984
R^2	0.0591	0.0393	0.0435	0.0304	0.0299
Adj R^2	0.0533	0.0378	0.0422	0.0291	0.0250
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Panel E					
Forecast error	-0.00969	-0.06016	-0.00131	-0.04221	-0.08068
	(-0.07)	(-1.01)	(-0.03)	(-1.16)	(-0.69)
Firms size	2.8699***	2.7505***	2.8680***	2.6077***	2.4313***
	(6.37)	(11.92)	(11.89)	(10.78)	(5.19)
Leverage ratio	0.01025	0.00095822	-0.00092865	0.01233	0.02278
	(0.17)	(0.22)	(-0.16)	(1.11)	(0.7)
Tangibility ratio	0.44064**	-0.09240	-0.07515	-0.05359	0.04163
	(2.20)	(-0.87)	(-0.71)	(-0.49)	(0.2)
Return on assets	1.80433	2.43192***	3.76026***	3.30333***	0.54779
	(1.06)	(2.95)	(4.05)	(3.92)	(0.66)
No. of observations	815	3403	3518	3757	993
R^2	0.0600	0.0403	0.0402	0.0322	0.0282
Adj R^2	0.0542	0.0389	0.0389	0.0309	0.0233
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Panel F					
Normalized forecast error	-0.00469*	-0.00101	-0.000448	0.000505	0.00158
	(-1.71)	(-0.29)	(-0.21)	(0.46)	(0.42)
Firms size	2.8151***	2.6871***	2.9168***	2.5205***	3.1549***
	(6.37)	(11.66)	(12.12)	(10.6)	(7.41)
Leverage ratio	0.00809	0.00109	-0.00108	0.01118	0.00426
	(0.13)	(0.25)	(-0.18)	(1.01)	(0.13)
Tangibility ratio	0.47376***	-0.10969	-0.07312	-0.01583	0.37345*
	(2.39)	(-1.03)	(-0.69)	(-0.15)	(1.88)
Return on assets	1.96761	2.48754***	3.69880***	3.37796***	0.67554
	(1.17)	(3.0)	(4.01)	(4.07)	(0.78)
No. of observations	823	3397	3511	3840	1484
R^2	0.0623	0.0387	0.0415	0.0312	0.0411
Adj R^2	0.0565	0.0373	0.0402	0.0299	0.0379
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Table XV: ISS Governance Index Ratings & Information Asymmetry with Controls

The following table presents results for ordinary least squares regressions with ISS *index* ratings as dependent variable and each information asymmetry proxy with four controls. The results are grouped by year (as shown by separate columns), i.e. in each regression, multiple ratings for the same firm are used for that respective year. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts during the last quarter, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. The controls introduced are; (i) firm size as log of total assets, (ii) tangibility ratio calculated by total tangible assets (Property, Plant, and equipment) to total firm assets, (iii) leverage ratio calculated as total long term liability divided by total market and book value of a firm, and (iv) Return on assets calculated by operating income before depreciation to net assets of a firm. Each number without parenthesis represents the parameter estimate and the numbers in parentheses represent their respective t-values. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%.

	Year						
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Panel A							
Bid-ask spread	-4.1***	-3.55**	6.3***	1.99229	11.558***	12.638***	17.1***
	(-2.95)	(-1.89)	(3.87)	(1.49)	(6.26)	(4.01)	(5.76)
Firms size	146***	174.1***	8035***	219***	0.9667	0.0019***	0.8854
	(7.10)	(6.56)	(9.87)	(6.24)	(0.4)	(7.65)	-0.16)
Tangibility ratio	4.09***	1.98*	-1.06	0.44	-0.55564	1.06391	0.643
	(3.95)	(1.79)	(-0.84)	(0.37)	(-0.48)	(0.94)	(0.61)
Leverage ratio	0.14***	0.008	0.009*	-0.02***	-0.00405	-0.00648	-0.013
	(6.05)	(0.83)	(1.67)	(-2.8)	(-1.01)	(-0.65)	(-0.89)
Return on assets	-1.98	-3.9***	6.4***	-1.405	-3.02**	-10.6***	-3.83*
	(-1.43)	(-2.49)	(2.99)	(-1.07)	(-2.36)	(-5.27)	(-1.78)
No. of observations	18910	15733	11477	11965	10843	14023	14471
R^2	0.0055	0.0032	0.0121	0.0045	0.0043	0.0082	0.0026
Adj R^2	0.0052	0.0029	0.0116	0.0041	0.0038	0.0078	0.0023
p- value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Panel B							
Share turnover	-6.6***	-8.1***	2.73**	-2.89**	2.66373**	2.93**	-4.01***
	(-5.8)	(-6.46)	(1.97)	(-2.16)	(2.07)	(2.18)	(-3.08)
Firms size	84.5***	93***	7534***	271***	0.6666	0.0017***	1.2955
	(6.30)	(5.74)	(9.79)	(6.45)	(0.46)	(7.67)	(0.33)
Tangibility ratio	4.2***	2.03*	-1.068	0.573	-0.61041	0.82940	1.1
	(4.11)	(1.83)	(-0.84)	(0.48)	(-0.52)	(0.73)	(1.03)
Leverage ratio	0.15***	0.007	0.009*	-0.02***	-0.00397	-0.00613	-0.01
	(6.30)	(0.80)	(1.68)	(-2.8)	(-0.99)	(-0.62)	(-0.92)
Return on assets	-1.36	-2.83*	5.9***	-1.359	-3.18***	-10.8***	-4.1**
	(-0.98)	(-1.79)	(2.77)	(-1.04)	(-2.49)	(-5.39)	(-1.90)
No. of observations	18910	15733	11477	11965	10843	14023	14471
R^2	0.0069	0.0056	0.0111	0.0047	0.0011	0.0074	0.0010
Adj R^2	0.0067	0.0053	0.0107	0.0043	0.0006	0.0070	0.0006
p- value	<0.0001	<0.0001	<0.0001	<0.0001	0.0403	<0.0001	0.0146
Panel C							
Number of analyst	-0.04*	-0.001	-0.03***	-0.08***	-0.039***	-0.042***	-0.035***
	(-1.75)	(-0.13)	(-2.52)	(-7.31)	(-4.02)	(-4.62)	(-4.30)
Firms size	184***	626***	0.024***	0.015***	21.88***	0.024***	11.83***
	(4.16)	(7.22)	(11.48)	(9.43)	(2.99)	(3.78)	(2.61)
Tangibility ratio	4.56**	-0.578	-1.023	1.84	0.067	1.6	0.77

	(1.89)	(-0.51)	(-0.77)	(1.48)	(0.06)	(1.38)	(0.72)
Leverage ratio	-0.002	0.02***	0.09***	-0.009	-0.002	-0.009	-0.016
	(-0.02)	(1.90)	(3.36)	(-0.61)	(-0.35)	(-0.91)	(-1.15)
Return on assets	-11.1**	-6.13**	2.1	-4.31***	-8.5***	-13.1***	-3.6*
	(-2.39)	(-3.11)	(0.84)	(-2.94)	(-4.36)	(-5.86)	(-1.65)
No. of observations	3362	14535	10573	11169	10390	13586	14107
R^2	0.0072	0.0049	0.0144	0.0092	0.0034	0.0095	0.0017
Adj R^2	0.0058	0.0045	0.0139	0.0088	0.0029	0.0091	0.0013
p- value	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003
Panel D							
Dispersion analyst forecast	0.35	1.41	0.0004***	0.003***	878***	25700***	1419***
	(0.35)	(0.23)	(4.41)	(3.57)	(4.08)	(5.89)	(4.59)
Firms size	489***	578***	0.14***	1077***	0.70***	0.0005***	0.5148
	(3.78)	(7.86)	(12.21)	(7.48)	(0.37)	(8.76)	(0.82)
Tangibility ratio	4.169*	-0.65	-0.031	1.24519	-1.27761	0.02052	-0.842
	(1.69)	(-0.56)	(-0.02)	(1.0)	(-1.06)	(0.02)	(-0.77)
Leverage ratio	-0.001	0.018**	0.089***	-0.012	-0.00156	-0.00843	-0.01384
	(-0.01)	(1.90)	(3.37)	(-0.75)	(-0.34)	(-0.84)	(-0.96)
Return on assets	-12.1***	-6.11***	-0.04	-5.37***	-7.07***	-12.58***	-3.933*
	(-2.59)	(-3.10)	(-0.02)	(-3.60)	(-3.59)	(-5.64)	(-1.81)
No. of observations	3362	14535	10573	11169	10390	13586	14107
R^2	0.0064	0.0049	0.0156	0.0056	0.0035	0.0104	0.0018
Adj R^2	0.0049	0.0045	0.0151	0.0052	0.0030	0.0101	0.0015
p- value	0.0007	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Panel E							
Forecast error	0.878	0.45	0.69*	0.68814**	-0.51555	-0.47162	0.67073*
	(1.32)	(1.06)	(1.74)	(2.08)	(-1.14)	(-0.82)	(1.87)
Firms size	159***	305***	0.02***	0.0459***	2.0928	0.0029***	1.3749
	(3.14)	(7.12)	(10.13)	(6.75)	(0.81)	(6.92)	(0.40)
Tangibility ratio	4.23*	0.296	-0.711	-0.71133	0.28550	1.25444	0.03053
	(1.78)	(0.26)	(-0.54)	(-0.78)	(0.24)	(1.09)	(0.03)
Leverage ratio	0.028	0.016*	-0.016	-0.01650	-0.00140	-0.00629	-0.01441
	(0.38)	(1.74)	(-1.01)	(-0.90)	(-0.30)	(-0.63)	(-0.99)
Return on assets	-13.8***	-4.9***	-0.56	-0.56***	-9.81***	-11.8***	-4.12**
	(-2.95)	(-2.57)	(-0.23)	(-3.79)	(-5.14)	(-5.74)	(-1.91)
No. of observations	3385	14664	10736	11299	10504	13691	14247
R^2	0.0063	0.0040	0.0108	0.0049	0.0027	0.0072	0.0006
Adj R^2	0.0048	0.0037	0.0104	0.0044	0.0022	0.0069	0.0002
p- value	0.0007	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.1378
Panel F							
Normalized forecast error	-0.08	-0.017**	-0.0004	-0.00571	-0.01696	-0.01830	0.02544
	(-1.50)	(-2.29)	(-0.09)	(-1.11)	(-0.69)	(-0.88)	(0.99)
Firms size	0.001	341***	9975***	226***	1.04***	0.002***	2.4***
	(0.64)	(7.16)	(9.56)	(6.02)	(0.04)	(7.29)	(1.12)
Tangibility ratio	21.65	-1.17	0.27	0.86480	0.639	1.31510	-0.07533
	(1.05)	(-1.02)	(0.20)	(0.70)	(0.53)	(1.13)	(-0.07)
Leverage ratio	-5.72**	0.056	0.0014	-0.01509	-0.0013	-0.00698	-0.01287
	(-2.54)	(1.51)	(0.27)	(-0.97)	(-0.28)	(-0.70)	(-0.89)
Return on assets	-38.2	-4.1**	0.46	-5.4***	-10.4***	-13.9***	-4.48**
	(-1.10)	(-2.05)	(0.19)	(-3.55)	(-5.40)	(-6.28)	(-2.08)
No. of observations	96	14284	10487	11171	10366	13637	14310
R^2	0.0973	0.0040	0.0093	0.0040	0.0030	0.0081	0.0005
Adj R^2	0.0471	0.0036	0.0088	0.0035	0.0025	0.0077	0.0001
p- value	0.0955	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.229

Table XVI: ISS Governance Industry Ratings & Information Asymmetry with Controls

The following table presents results for ordinary least squares regressions with ISS *industry* ratings as dependent variable and each information asymmetry proxy with four controls. The results are grouped by year (as shown by separate columns), i.e. in each regression, multiple ratings for the same firm are used for that respective year. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Number of analyst is simple the total number of analysts following a company as of most recent quarter, (iv) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts during the last quarter, (v) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (vi) Normalized forecast error is forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. The controls introduced are; (i) firm size as log of total assets, (ii) tangibility ratio calculated by total tangible assets (Property, Plant, and equipment) to total firm assets, (iii) leverage ratio calculated as total long term liability divided by total market and book value of a firm, and (iv) Return on assets calculated by operating income before depreciation to net assets of a firm. Each number without parenthesis represents the parameter estimate and the numbers in parentheses represent their respective t-values. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%.

	Year						
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Panel A							
Bid-ask spread	3.15**	3.08*	9.35***	5.88***	16.4***	16.98***	15.9***
	(1.92)	(1.60)	(6.18)	(4.81)	(10.06)	(4.92)	(5.24)
Firms size	$2x10^6$***	$3x10^6$***	$1.5x10^9$***	$2x10^7$***	$1x10^5$***	0.057***	88.6***
	(39.35)	(35.69)	(41.42)	(38.85)	(34.13)	(12.19)	(23.03)
Tangibility ratio	-3.21***	-5.89***	-11.51***	-9.78***	-11***	-7.2***	-10.5***
	(-3.03)	(-5.60)	(-9.79)	(-8.94)	(-10.68)	(-5.80)	(-9.73)
Leverage ratio	0.11***	0.00181	0.0029	-0.005	-0.004	-0.015	-0.04***
	(4.66)	(0.18)	(0.59)	(-0.83)	(-1.29)	(-1.40)	(-2.86)
Return on assets	6.58***	4.63***	17.98***	3.65***	1.61	-2.04	6.98***
	(4.62)	(2.87)	(9.12)	(3.05)	(1.43)	(-0.93)	(3.17)
No. of observations	18910	15733	11477	11965	10843	14023	14471
R^2	0.0833	0.0816	0.1551	0.1285	0.1152	0.0146	0.0450
Adj R^2	0.0830	0.0814	0.1548	0.1282	0.1148	0.0142	0.0446
p-value	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0001
Panel B							
Share turnover	-0.26	-2.67**	11.8***	13.55***	15.01***	9.07***	-2.37*
	(-0.22)	(-2.07)	(9.22)	(11.12)	(13.24)	(6.15)	(-1.78)
Firms size	$2x10^6$***	$3x10^6$***	$1.8x10^9$***	$1x10^4$***	$9x10^3$***	0.03***	120.2***
	(39.25)	(35.37)	(41.7)	(37.83)	(24.47)	(11.47)	(23.08)
Tangibility ratio	-3.2***	-5.9***	-11.6***	-10***	-12.1***	-7.96***	-10.2***
	(-3.03)	(-5.17)	(-9.90)	(-9.35)	(-11.75)	(-6.37)	(-9.39)
Leverage ratio	0.11***	0.0016	0.00321	-0.005	-0.004	-0.014	-0.04***
	(4.62)	(0.17)	(0.63)	(-0.88)	(-1.17)	(-1.33)	(-2.87)
Return on assets	6.48***	4.87***	16.49***	2.9**	1.52	-2.4	6.7***
	(4.65)	(3.01)	(8.37)	(2.43)	(1.36)	(-1.09)	(3.04)
No. of observations	18910	15733	11477	11965	10843	14023	14471
R^2	0.0831	0.0817	0.1586	0.1358	0.1212	0.0156	0.0434
Adj R^2	0.0829	0.0815	0.1582	0.1354	0.1208	0.0152	0.0430
p-value	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0001
Panel C							
Number of analyst	0.143***	0.16***	0.17***	0.128***	0.12***	0.06***	0.08***
	(7.39)	(16.51)	(14.87)	(12.66)	(14.23)	(6.38)	(9.69)
Firms size	40200***	60400***	$6x10^6$***	$1x10^5$***	239***	1502***	0.06***

	(14.17)	(28.81)	(29.63)	(27.20)	(21.32)	(6.76)	(13.78)
Tangibility ratio	-10.4***	-12.69***	-14.2***	-12.34***	-13.7***	-8.5***	-12.6***
	(-4.52)	(-11.61)	(-11.63)	(-10.86)	(-13.07)	(-6.68)	(-11.43)
Leverage ratio	-0.02523	0.00651	0.061***	-0.0017	-0.003	-0.015	-0.04***
	(-0.35)	(0.72)	(2.53)	(-0.12)	(-0.81)	(-1.38)	(-2.67)
Return on assets	11.17**	6.74***	15.51***	2.29*	2.8*	-5.02**	4.71**
	(2.52)	(3.54)	(6.76)	(1.70)	(1.65)	(-2.06)	(2.12)
No. of observations	3362	14535	10573	11169	10390	13586	14107
R^2	0.1242	0.1236	0.1687	0.1327	0.122	0.0156	0.0500
Adj R^2	0.1229	0.1233	0.1683	0.1323	0.1215	0.0152	0.0497
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Panel D

Dispersion in analyst forecast	0.001***	0.0054***	0.000***	0.0085***	5.49***	38.2***	4.7
	(2.39)	(3.58)	(6.17)	(3.20)	(1.16)	(1.92)	(0.96)
Firms size	$2x10^7$***	$5.04x10^7$***	$1.3x10^6$***	$5.6x10^7$***	$1x10^5$***	0.03***	0.09***
	(19.57)	(40.00)	(41.11)	(36.86)	(30.74)	(10.82)	(22.12)
Tangibility ratio	-6.7***	-10.425***	-10.714***	-9.76***	-12***	-7.96***	-11.2***
	(-2.87)	(-9.22)	(-8.51)	(-8.52)	(-11.27)	(-6.22)	(-10.09)
Leverage ratio	-0.03184	0.00598	0.06165**	-0.00	-0.004	-0.0173	-0.04***
	(-0.44)	(0.66)	(2.51)	(-0.00)	(-0.98)	(-1.58)	(-3.01)
Return on assets	12.6***	8.86***	16.96***	1.91895	2.82	-3.5	6.6***
	(2.80)	(4.61)	(7.30)	(1.40)	(1.62)	(-1.43)	(2.96)
No. of observations	3362	14535	10573	11169	10390	13586	14107
R^2	0.1115	0.1080	0.1543	0.1210	0.1050	0.0129	0.0437
Adj R^2	0.1101	0.1077	0.1539	0.1206	0.1045	0.0125	0.0434
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Panel E

Forecast error	-0.53	-1.36***	0.02539	-0.84***	-1.18***	-1.28**	0.028
	(-0.83)	(-3.27)	(0.07)	(-4.05)	(-3.66)	(-2.03)	(0.08)
Firms size	$7x10^6$***	$3.2x10^7$***	$2x10^9$***	$3x10^7$***	$2x10^5$***	0.09***	147***
	(19.03)	(39.82)	(40.02)	(37.52)	(33.36)	(12.34)	(23.33)
Tangibility ratio	-7.4***	-10.7***	-12.14***	-10.073***	-11***	-7.13***	-10.6***
	(-3.23)	(-9.84)	(-9.96)	(-8.91)	(-10.48)	(-5.63)	(-9.76)
Leverage ratio	0.003	0.00561	0.02813*	-0.00135	-0.004	-0.015	-0.05***
	(0.05)	(0.62)	(1.85)	(-0.09)	(-0.96)	(-1.42)	(-3.07)
Return on assets	13.4***	9.9***	16.69***	2.067	0.018	-3.14	4.93**
	(2.98)	(5.25)	(7.40)	(1.48)	(0.01)	(-1.40)	(2.23)
No. of observations	3385	14664	10736	11299	10504	13691	14247
R^2	0.1046	0.1073	0.1486	0.1198	0.1036	0.0129	0.0441
Adj R^2	0.1033	0.1070	0.1482	0.1194	0.1032	0.0125	0.0438
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Panel F

Normalized forecast error	-0.09	0.02***	0.0004	-0.013***	-0.08***	0.007	-0.04
	(-1.22)	(2.59)	(0.09)	(-2.80)	(-3.64)	(0.31)	(-1.59)
Firms size	1652	$1x10^7$***	$1.5x10^9$***	$1x10^7$***	$9x10^4$***	0.05***	174***
	(0.49)	(37.89)	(39.37)	(36.51)	(31.99)	(11.96)	(23.82)
Tangibility ratio	8.15	-11.7***	-11.98***	-10.5***	-10.7***	-7.1***	-10.5***
	(0.29)	(-10.52)	(-9.79)	(-9.27)	(-10.09)	(-5.60)	(-9.71)
Leverage ratio	-2.05	0.02	0.003	-0.003	-0.004	-0.02	-0.04***
	(-0.66)	(0.65)	(0.67)	(-0.21)	(-0.94)	(-1.46)	(-3.22)
Return on assets	-35.34	10.9***	18.6***	2.516*	-0.095	-4.09*	2.28401
	(-0.73)	(5.57)	(8.08)	(1.81)	(-0.06)	(-1.69)	(1.04)
No. of observations	96	14284	10487	11171	10366	13637	14310
R^2	0.0379	0.1040	0.1467	0.1156	0.0969	0.0123	0.0444
Adj R^2	-0.0155	0.1037	0.1463	0.1152	0.0964	0.0120	0.0441
p-value	0.6179	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

D. Change in information asymmetry level around initial ratings announcement:

In order to test hypothesis 2, we use data for only GMI firms as initial ratings announcement dates are available for GMI only. Table XVII presents (on page 52) the results for change in information asymmetry level for these firms. We can observe that none of the mean differences in pre- and post- information asymmetry levels is significant except dispersion (at 10% level) when we do the analysis for the whole sample of firms with initial ratings data. This implies that the average difference in dispersion in analyst forecast is significant and therefore information asymmetry in the post-announcement period is lower than that in pre-announcement period. To make the analysis more meaningful, we repeat the analysis by dividing initial rating firms into terciles according to their rating. The three terciles formed are; (i) tercile 1 ($1 \leq$ rating < 4), (ii) tercile 2 ($4 \leq$ rating < 7), and (iii) tercile 3 ($7 \leq$ rating ≤ 10). All three terciles show insignificant results, therefore we conclude that the results provide no support for our second hypothesis and therefore when GMI firms get rated for the first time, no significant impact is observed on their information asymmetry level.

E. Market's reaction to initial ratings announcement

To test our third hypothesis, we use a sub-sample of GMI firms for which initial ratings data is available. We capture the market's reaction to ratings announcements through firms' cumulative abnormal returns. We observe the effect of initial ratings announcement on cumulative abnormal returns in the pre-, post-, and around- announcement windows; (-20, -5), (-5, -2), (-2, 0), (-1, 0), (-1, 1), (-2, 2), (-5, 5), (0, 1), (0, 2), (2, 5), and (5, 20) Eventus is employed to run the basic daily event study and the results are reported in table XVIII on page 53. We divide the sample into terciles according to firms' governance rating; (i) Low rated ($1 \leq$ rating < 4), (ii) Moderately rated ($4 \leq$ rating < 7), and (iii) High rated ($7 \leq$ rating ≤ 10). Results (presented in table XVII on page

45) for ‘all firms’ group showed that high rated firms have significantly low cumulative abnormal returns around announcement dates. When we observe the results of different terciles, it becomes clear that results for ‘all firms’ group are largely driven by ‘high-rated firms’ group as low-rated and moderately –rated terciles had non-significant results mostly. However, results for moderately-rated tercile shows positive significant cumulative abnormal returns for the window (2, 5) but negative significant results for (-2, 0) and (5, 20). Contrary to our expectations, firms in the high-rated tercile have significantly negative cumulative abnormal returns especially in the pre- and around- announcement windows; (-20, -5), (-2, 0), (-1, 0), (-1, 1), (-2, 2), implying that some information was ‘leaked’ well before the announcement date. One possible explanation for this is that the ratings announcement of firms with good ratings was taken as a negative signal by the market as information about these firms’ governance practices was well-known, so there was no ‘new’ information (in governance ratings) for the market. So the market penalizes high-rated firms for using the valuable shareholder resources to pay for getting rated for something that was already known. Another possible explanation for these results could be that the market does not consider governance ratings announcements as ‘new’ information since the information used to rate firms’ governance is already well-known and there is no uncertainty involved. Therefore, the market had already incorporated the information about firms’ governance factors in equity valuation and prices even without the use of these governance ratings. Our results for the previous section, where we observe no significant change in information asymmetry level, are also consistent with the possibility that governance ratings are not any ‘new’ information for the market even when they are announced for the very first time for a firm. Thus, we find no support for hypothesis 3 which states that markets reward firms with good ratings and punish firms with bad ratings.

TABLE XVII: Information Asymmetry level - GMI Firms with Initial Rating Announcements

The following table presents the results for change in information asymmetry around first rating received after having subscribed with GMI. Change in information asymmetry is calculated as the difference between pre- and post-information asymmetry proxies for the following and most recent period available. For bid-ask and share turnover, monthly data is used and for dispersion, forecast error, and normalized forecast error, quarterly data is used. Information asymmetry proxies are calculated in the following manner; (i) bid-ask spread as the difference between closing bid and closing ask for the most recent month available, (ii) share turnover ratio is the ratio of total trading volume during the most recent month available to number of shares outstanding, (iii) Dispersion in analyst forecast is calculated as the standard deviation of all available earnings forecasts, (iv) Analyst forecast error is the difference between actual earnings per share value and average earning per share forecast, and (v) Normalized error is the forecast error divided by average earnings volatility of firms quarterly earnings during the last three years. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%.

	N	Mean	Max	Min	Range	Std Dev	t Value	Pr > |t|
All firms								
Δ Bid ask spread	239	-0.001	0.47	-0.62	1.09	0.09	-0.13	0.89
Δ Share turnover	239	0.006	1.03	-0.76	1.79	0.19	0.50	0.62
Δ Dispersion	224	0.04*	0.98	-1.07	2.05	0.34	1.79	0.07
Δ Forecast error	233	0.17	37.88	-5.43	43.3	2.57	1.01	0.31
Δ Normalized error	197	-1.86	52.08	-179.7	232	17.8	-1.5	0.14
Low rated (1 ≤ rating < 4)								
Δ Bid ask spread	7	-0.04	0.09	-0.36	0.45	0.146	-0.78	0.4666
Δ Share turnover	7	0.09	0.29	-0.05	0.34	0.122	1.90	0.1057
Δ Dispersion	4	0.02	0.31	-0.65	0.95	0.457	0.12	0.9130
Δ Forecast error	5	1.51	7.18	-0.06	7.24	3.172	1.06	0.3473
Δ Normalized error	4	3.11	9.39	-0.29	9.69	4.31	1.44	0.2451
Moderate rate (4 ≤ rate < 7)								
Δ Bid ask spread	84	-0.006	0.20	-0.6	0.82	0.094	-0.57	0.5730
Δ Share turnover	84	-0.018	0.45	-0.76	1.20	0.162	-1.04	0.2995
Δ Dispersion	76	0.06	0.98	-1.05	2.03	0.382	1.45	0.1511
Δ Forecast error	82	0.38	37.9	-5.43	43.3	4.256	0.81	0.4199
Δ Normalized error	75	0.004	52.1	-15.6	67.7	7.830	0.00	0.9966
High rated (7 ≤ rating ≤ 10)								
Δ Bid ask spread	92	-0.003	0.2	-0.41	0.61	0.085	-0.33	0.741
Δ Share turnover	92	-0.001	1.03	-0.61	1.64	0.187	-0.03	0.979
Δ Dispersion	89	0.04	0.73	-1.03	1.76	0.322	1.14	0.255
Δ Forecast error	91	0.02	1.27	-0.55	1.82	0.281	0.67	0.507
Δ Normalized error	76	-1.88	16.9	-179.7	196	21.42	-0.77	0.44

TABLE XVIII: Cumulative Abnormal Returns - GMI Firms with Initial Rating Announcements

The table below presents average of daily value-weighted cumulative abnormal returns for GMI firms. Daily (basic) event study methodology was employed for GMI firms with initial rating announcements and abnormal returns were calculated using rating announcement date as the event date. The numbers in the table represent the average value weighted cumulative abnormal returns of initial rating firms. The columns represent results for the whole sample and also for low-rated, moderately-rated, and high rated firms. The sample was divided into terciles based on firms' first governance rating. The numbers in parentheses below each CAR (cumulative abnormal return) represent the respective p-values. Finally, asterisks (***) represents significance at 1%, (**) represents significance at 5%, and (*) represents significance at 10%.

	All firms	**Low rated firms (1 ≤ rating < 4)**	**Moderate rated firms (4 ≤ rating < 7)**	**High rated firms (7 ≤ rating ≤ 10)**
Pre-announcement value-weighted CARs				
(-20, -5)	-1.03%	0.80%	-1.99%	-1.15%*
t-value	(-0.1299)	(0.6705)	(-0.2122)	(-0.0837)
positive : negative	139:153	4:5	51:45	42:56
generalized sign z	-0.049	-0.230	1.020	-0.926
(-5, -2)	-0.35%	-1.48%	-0.44%	-0.53%
t-value	(-0.7736)	(-0.3007)	(-0.8575)	(-0.4049)
positive : negative	135:157	3:6	44:52	45:53
generalized sign z	-0.518	-0.898	-0.410	-0.319
Around announcement CARs				
(-1, 1)	-0.49%**	0.43%	-0.54%	-0.70%**
t-value	(-0.0296)	(0.9355)	(-0.2285)	(-0.0476)
positive : negative	128:164	2:7	43:53	44:54
generalized sign z	-1.338	-1.565	-0.614	-0.522
(-2, 2)	-0.87%***	-0.15%	-0.77%	-1.31%***
t-value	(-0.0043)	(-0.5119)	(-0.1124)	(-0.0086)
positive : negative	119:173<	3:6	45:51	35:63<
generalized sign z	-2.392	-0.898	-0.206	-2.342
(-5, 5)	-0.60%	-3.36%	0.14%	-0.94%
t-value	(-0.4748)	(-0.1647)	(0.2077)	(-0.2593)
positive : negative	133:159	3:6	49:47	41:57
generalized sign z	-0.752	-0.898	0.611	-1.129
(-2, 0)	-0.90%***	-0.75%	-0.77%*	-1.58%***
t-value	(<.0001)	(-0.3361)	(-0.0679)	(<.0001)
positive : negative	123:169(	2:7	45:51	41:57
generalized sign z	-1.924	-1.565	-0.206	-1.129
(-1, 0)	-0.33%**	-0.67%	-0.09%	-0.72%**
t-value	(-0.0299)	(-0.3588)	(-0.6535)	(-0.0114)
positive : negative	121:171<	1:8<	45:51	38:60(
generalized sign z	-2.158	-2.232	-0.206	-1.735
(0, 2)	-0.04%	0.36%	-0.06%	0.31%

t-value	(-0.7935)	(0.8142)	(-0.4268)	(0.3123)
positive : negative	140:152	2:7	49:47	46:52
generalized sign z	0.068	-1.565	0.611	-0.117
(0, 1)	-0.22%	0.85%	-0.52%	0.06%
t-value	(-0.2309)	(0.6968)	(-0.1167)	(0.4906)
positive : negative	138:154	3:6	44:52	38:60(
generalized sign z	-0.166	-0.898	-0.410	0.49
Post-announcement value-weighted CARs				
(5, 20)	-0.91%**	-1.69%	-1.42%**	-0.94%*
t-value	(-0.0277)	(-0.9539)	(-0.0308)	(-0.0904)
positive : negative	137:155	4:5	44:52	49:49
generalized sign z	-0.284	-0.23	-0.410	0.490
(2, 5)	0.23%	-2.31%	1.13%**	0.29%
t-value	(0.3240)	(-0.2304)	(0.0134)	(0.2693)
positive : negative	139:153	2:7	52:44	49:49
generalized sign z	-0.049	-1.565	1.224	0.490
No. of observations	292	9	96	98

Chapter 7: Conclusion

In this paper, we attempt to fill a gap in governance ratings literature by investigating different aspects of cross-sectional relationship between commercial governance ratings and information asymmetry in capital markets. Our results can be divided into four parts. First, we find strong support for the relationship between ISS index and industry ratings and firms' contemporaneous information asymmetry proxies even when we control for firm size, tangibility, leverage, and profitability. Analysis is also performed on a yearly basis to check for robustness of this relationship. For GMI, weak evidence is found for the relationship between governance ratings and information asymmetry proxies, especially when the analysis is performed on yearly basis. Second, the direction of this cross- sectional relationship could not be determined. Third, we do not find significant support for change (reduction) in firms' information asymmetry level when GMI firms get their very first rating. Fourth, cumulative abnormal returns around the ratings announcement s are negatively related to ratings for firms which get rated for the first time. This implies that the market punishes firms with high governance ratings and rewards firms with low ratings. This finding was contrary to our third hypothesis. Our investigation of the possible relation between corporate governance ratings announcements and contemporaneous information asymmetry proxies yields some meaningful results and also opens up many possibilities for future research. We find that ISS index and industry main scores are significantly related to analyst-related and market-related information asymmetry proxies for the sample period from 2005 through 2011. We also find weak support for this relationship for GMI's overall global score. For both GMI and ISS, firm size and profitability are significantly positively related to governance ratings. Going forward, we believe that this topic deserves more attention from fellow researchers so that effectiveness of governance ratings could be understood from a market micro-structure too. Understanding of this concept is crucial to improve the effectiveness and usefulness of commercial corporate governance ratings.

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APPENDICES

A.1 ISS Ratings methodology details[10]

Executive and Director Compensation: Executive and director compensation are considered by ISS while calculating their governance scores. They consider if an option plan requires a shareholders' approval or not and option plan's dilution cost is calculated by using SVT (Shareholder value transfer) and VPD (voting power dilution). They also consider if a company has a history of re-pricing stock options with sharheolders' approval. Compensation paid to outside directors and existence of a pension plan for nonemployee directors ia also considered as a part of ISS scores.

Director and Officer Ownership: Stock ownership among directors and the amount of stock owned by directors after one year of service are considered while the corporate governance quotient is calculated. ISS also considers the percentage of company shares of the total outstanding shares are owned by officers and Directors. Whether a firm enforces any form of guidelines for stock ownership of officers and directors is also considered while calculating the corporate governance quotient.

Board Structure and Composition: Many board practices are also considered by ISS which include; number of directors on the board, changes in board size if any, number of board on which the CEO or other directors are serving at the same time, and if any of the former CEOs can be a part of the board. There is a negative association between the number of board the directors are serving at one time and if the former CEO is allowed to be a part of the board. ISS score is positively affected if the positions of CEO and chairman are separated. Various other practices relating to board structure and its composition which are considered by ISS are as follows:

[10] http://www.globalcorporategovernance.com/n_namericas/080_093.htm

- Cumulative voting
- Board guidelines
- Responses to shareholder proposals

Director's Education: ISS has also come up with its list of 'accredited' director education programs, for which if a Director qualifies, would affect the ISS corporate governance quotient positively.

Qualitative Factors: A unique feature of ISS corporate governance quotient that it also uses some qualitative factors while calculating the governance score. Following are the qualitative factors that positively influence the corporate governance quotient:

- Mandatory retirement for board members
- Board performance review
- CEO succession plan
- Outside advisors available to the board
- Directors resign upon change in status

A.2 GMI ratings methodology details[11]

Topics Related to Executive and Director Compensation:

GMI considers a few variables which tell if the board is performing its duties with regards to executive compensation. These categories are enlisted below:

- Remuneration committee
- Remuneration disclosure
- CEO incentive pay
- Senior management incentives
- CEO remuneration disclosure
- Board remuneration
- Stock ownership guidelines
- Director stock ownership
- Cost of stock options
- Potential dilution

Analysis of compensation practices of a firm are also judged by the following points:

- Is the remuneration committee wholly composed of non-executive board members?
- Does the company disclose specific performance benchmarks?
- Within the last three years, has the company either re-priced outstanding executive stock options or used a stock option exchange program in which senior management was allowed to participate?
- Was the CEO's last annual bonus cut or capped in response to a decline in earnings or a loss?

[11] http://www.globalcorporategovernance.com/n_namericas/080_093.htm

- Are there stock ownership guidelines for the CEO and the other members of the senior management team?
- Are a portion of executive stock options granted with exercise prices set 5% or more above market value at the time of grant, or does the company require that executives already holding a certain amount of company stock pay a premium to exercise additional stock options?
- Has the number of company shares held by the senior management decreased by 10 percent or more over the last twelve months?
- Does every board member own stock in the company?
- What is the potential dilution as a result of stock options and related awards outstanding?
- What is the total potential dilution as a result of stock options and related awards outstanding, plus options and other equity-based awards approved for grant but not yet granted?

Topics Related to Board Structure and Practices

Board accountability is evaluated using the following categories:

- Board leadership
- Board composition
- Board elections
- Pursuit of shareholder value
- Review of corporate strategy
- CEO evaluation
- Succession planning
- Governance committee
- Corporate governance policies

- Board evaluations
- Board meetings
- Board procedures
- Code of ethics
- Scrutiny of related-party transactions

Analysis of board practices is performed by GMI by using the following categories:

- Does a committee of the board evaluate the performance of the board on a regular basis?
- Does each board committee undertake an evaluation of its own performance on a regular basis?
- Do board members undertake self-evaluations or evaluations of other board members on a regular basis?
- Is training required for new board members?
- Is there a limit to the total number of years an individual is able to serve as a board member, or
- Is there a limit to the number of times a director is allowed to be re-elected to the board?
- Have any directors served on the board for fifteen years or more?
- Does the board have a policy concerning directors whose principal occupation has changed?
- Has there been a related-party transaction involving the Chairman, CEO, President, COO or CFO or a relative of the Chairman, CEO, President, COO or CFO within the last three years?

A.3 Industry Classification system used by ISS

MSCI and Standard & Poor's (S&P), have introduced the GICS (The Global Industry Classification System) in joint collaboration. These standards were developed as a standard industry classification for use by the financial community throughout the world. The GICS consists of 10 sectors, 24 industry groups, 68 industries, and 154 sub-industries. This system of classification is along the same lines as ICB (Industry Classification Benchmark) maintained by Dow Jones Indices and FTSE Group. Following are listed the 10 sectors and 24 sector groupings of the GICS[12]:

Code	Sector	Sub code	Industry Groups
10	Energy	1010	Energy
15	Materials	1510	Materials
		2010	Capital Goods
20	Industrials	2020	Commercial & Professional Services
		2030	Transportation
		2510	Automobiles and Components
25	Consumer Discretionary	2520	Consumer Durables and Apparel
		2530	Consumer Services

[12] http://en.wikipedia.org/wiki/GICS

		2540	Media
		2550	Retailing
		3010	Food & Staples Retailing
30	Consumer Staples	3020	Food, Beverage & Tobacco
		3030	Household & Personal Products
		3510	Health Care Equipment & Services
35	Health Care		
		3520	Pharmaceuticals, Biotechnology & Life Sciences
		4010	Banks
		4020	Diversified Financials
40	Financials		
		4030	Insurance
		4040	Real Estate
		4510	Software & Services
45	Information Technology	4520	Technology Hardware & Equipment
		4530	Semiconductors & Semiconductor Equipment
50	Telecommunication Services	5010	Telecommunication Services

55	Utilities	5510	Utilities

A.4 ISS 61 governance variables used[13]

Board

1 Board Composition

2 Nominating Committee

3 Compensation Committee

4 Governance Committee

5 Board Structure

6 Board Size

7 Changes In Board Size*

8 Cumulative Voting

9 Boards Served On – CEO

10 Boards Served On – Other Than CEO*

11 Former CEO's

12 Chairman/CEOs Separation

13 Board Guidelines

14 Response To Shareholder Proposals

15 Board Attendance*

16 Board Vacancies*

17 Related Party Transactions*

Audit

18 Audit Committee

19 Audit Fees*

[13] http://www.jonesday.com/files/News/50c73b9e-ac03-4a23-9c4c-226b2fc83841/Presentation/NewsAttachment/43340150-dc3a-4eeb-9375-ad5e4f990bf7/CGQ%20ppt_total.pdf

20 Auditor Rotation*

21 Auditor Ratification*

Charter/Bylaws

22-27 Features of Poison Pills

28-29 Vote Requirements

30 Written Consent

31 Special Meetings

32 Board Amendments

33 Capital Structure

State of incorporation

33-40 Takeover Provisions Applicable Under State Law - Has Company Opted Out?

Executive and Director Compensation

41 Cost of Option Plans

42-43 Option Re-pricing

44 Shareholder Approval of Option Plans

45 Compensation Committee Interlocks

46 Director Compensation

47 Pension Plans For Non-Employee Directors

48 Option Expensing*

49 Option Burn Rate*

50 Corporate Loans*

Qualitative factors

51 Retirement Age for Directors

52 Board Performance Reviews

53 Meetings of Outside Directors

54 CEO Succession Plan

55 Outside Advisors Available to Board

Ownership

56 Directors resign upon job change

57 Director Ownership

58 Executive Stock Ownership Guidelines

59 Director Stock Ownership Guidelines

60 Officer and Director Stock Ownership

Director Education

61 Director Education