Two essays on stock market consequence of earnings quality

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TWO ESSAYS ON STOCK MARKET CONSEQUENCE OF EARNINGS QUALITY

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DISSERTATION SUMMARY

This dissertation investigates whether earnings quality affects firm's cost of equity or expected stock returns. The first essay extends prior U.S. studies to examine whether the association between earning quality and cost of capital exists in emerging markets. Specifically, the first essay investigates whether earnings quality affects a firm's cost of equity capital in the Chinese stock market, one of the world's largest and fastest growing emerging markets. Measuring earnings quality as unsigned abnormal accruals and unsigned abnormal non-operating earnings, I find that higher quality of earnings is associated with lower cost of equity in the China's stock market, based on a large sample of partially privatized firms during the period of 1994-2004. In addition, I find that the enacting of the Securities Law of China in 1999 enhances the association between earnings quality and cost of equity capital. This might imply that Securities Laws promote higher level of legal protection, which makes it a more effective way to lower cost of financing by increasing earnings quality.

The second essay intends to provide corroborating evidence on the pricing of earnings quality by the stock market. Specifically, I investigate whether a recently discovered stock market anomaly can be explained by an information risk factor that is based on earnings quality. This article shows that the findings of prior research that abnormal returns for firms with strong shareholder rights

are greater than for firms with weak shareholder rights can be explained by information risk. Specifically, after controlling for information risk, I find that the abnormal return difference between strong shareholder rights firms and weak shareholder rights firms is insignificantly different from zero. The results also suggest that the differences in information risk between the extreme portfolios are caused by differences in firms' characteristics such as: firm age, institutional ownership, and shareholder rights. Moreover, I find empirical evidence that shareholder rights are *positively* and significantly associated with information risk. Finally, there is strong evidence that institutional ownership is negatively and significantly associated with information risk, and there is no consistent evidence to show that analysts' coverage is negatively related to information risk.

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PART I

**EARNINGS QUALITY AND
COST OF CAPITAL
IN EMERGING MARKETS-THE ROLE OF
SECURITIES LAW**

Earnings Quality and Cost of Capital in Emerging Markets-The Role of Securities Law

Abstract This paper investigates whether earnings quality affects a firm's cost of equity capital in the Chinese stock market, one of the world's largest and fastest growing emerging markets. Measuring earnings quality as unsigned abnormal accruals and unsigned abnormal non-operating earnings, I find that higher quality of earnings is associated with lower cost of equity in the China's stock market, based on a large sample of partially privatized firms during the period of 1994-2004. Moreover, I find that the enacting of the Securities Law of China in 1999 enhances the association between earnings quality and cost of equity capital. All the above results are robust to controls for firm-level governance effects.

Keywords

Earnings quality, Cost of capital, Emerging market, Securities law, China

Earnings Quality and Cost of Capital in Emerging Markets-The Role of Securities Law

In this paper, I investigate the relation between earnings quality and cost of equity capital for emerging markets. This is motivated by recent theoretical research that shows that the quality of accounting information can influence the cost of capital (e.g. Easley and O'Hara, [2004]; Lambert et al. [2006]). Several studies have provided empirical evidences in support of this theoretical relation using U.S. data (Francis et al. [2004, JAE2005]; Aboody et al. [2005]). However, the empirical findings based on U.S. markets do not necessarily generalize to emerging markets, where the legal and financial systems are very different. For example, the weak legal protection for investors in emerging markets could result in financial reports being viewed as not credible and as such investors do not rely on the earnings information that is disclosed (Fan and Wong, [2002], Francis, Khurana and Pereira [2005]). Thus, weak legal protection might lead to no association between earnings quality and expected returns.

I further investigate whether the effectiveness of high quality earnings in reducing firm's cost of capital can be enhanced by the introduction of securities laws. La Porta et al. (2006) indicates that securities laws can benefit the stock

market by improving the legal protection of the markets. Hail and Leuz (2006) using a cross-country approach show that stronger securities regulation can lower firm's cost of capital through its expanded disclosure requirements. My study is different from that of Hail and Leuz in that I examine the effect of securities laws on cost of capital through its impact on the effectiveness of accounting earnings in reducing cost of capital in a single country. The securities law improves the markets legal protection level and increases the perceived reliability of accounting earnings and thus increases their usage in investing decisions. This should strengthen the relationship between earnings quality and cost of capital. Chen et al. (2004) and Francis et al. (2005) examine legal protection's effect on the usefulness of voluntary disclosure in reducing cost of capital using cross-country data. My thesis is different from those of Chen et al. and Francis et al. in that I focus on information quality and I employ time-series analysis using a single country data. To the best of my knowledge, this study is the first one that examines the association between earnings quality and cost of capital for emerging markets, and the role of securities law (legal protection) in enhancing this association.

I conduct my investigation of earnings quality's effect on cost of capital using data of the Chinese stock markets. There are several reasons for choosing this market. First, given China's status as one of the most important economies in today's world (Allen et al. 2005) and its equity market as one of the largest and fastest growing markets, no study has been taken to examine financial

disclosure's capital market consequences in this market. Second, the Chinese government is taking an ongoing reform of its financial system and the related legal systems. One of the most important events during this reform is that the government enacts the Securities Law of People's Republic of China in 1998¹, which is supposed to strengthen the disclosure requirements and related legal liabilities by the listed firms. The Law is considered as one of the most important securities regulations in the regime and should have a significant impact on its equity market and legal protection level. Taking advantage of this, I am able to investigate the second issue of this study, which is whether the introduction of securities law would affect the capital market consequences of earnings' quality.

In this study, I employ two measures of earnings quality to investigate the association between accounting earnings quality and firms' cost of equity capital in Chinese markets. I find that both earnings quality measures are associated with firms' cost of equity capital, as captured by industry-median adjusted E/P ratios. Moreover, I observe significant positive loadings on the portfolio mimicking earnings quality factors. The evidence suggests that higher earnings quality firms in the Chinese market enjoy lower cost of equity capital. Moreover, I show that the Securities Law of China enhances the effectiveness of high quality financial accounting information in reducing firms' cost of capital. Specifically, the asset-pricing results show that the loadings on earnings

¹ The Law becomes effective from July 1999.

quality factors are significantly positive only in the post-law period.

This study has several contributions to the accounting and finance literature. First, this paper provides the first piece of empirical evidence that earnings quality is related to the cost of capital in emerging markets. Second, this paper is related to the recent important studies on the role of securities laws. La Porta et al. (2006) examine the effect of securities laws on stock market development in 49 countries. They find strong evidence that securities laws' mandating disclosure and liability standards benefit stock market by relating their self-composed measures of securities laws and a number of macro indicators of stock market development. In this study, I show that the enacting of China's 1998 Securities Law strengthen the effectiveness of high quality earnings in reducing firms' cost of equity capital. Thus, this study indicates one possible specific channel through which securities laws benefit stock market. In addition, previous studies (e.g. Chen et al. 2004; Francis et al [TAR2005]) find inconsistent evidence regarding the legal protection's effect on disclosure's effectiveness. This study employs a refined time-series approach to prove legal system's role in effecting the relation between information and cost of capital. Third, this study complements the voluntary disclosure literature. Francis et al (TAR2005) examine the impact of voluntary disclosure level on the cost of external financing for non-U.S. firms. This study is different from that of Francis et al (TAR, 2005) in that I focus on the impact of the quality of earnings. Finally, although not central to this study, I find that while market and size

factor in the three-factor model explain return variations in Chinese stock markets, the book-to-market factor (HML) is not very helpful, which is inconsistent with the findings from the U.S. and other international markets, where the value factor is normally the most significant one.

The rest of the paper is organized as follows. Section I reviews the theoretical works on information's role in reducing cost of capital, extant empirical findings about the relation between disclosure and cost of capital, and develops the basic hypotheses of this study. Section II describes the research design choices. Data and summary statistics are presented in Section III. I examine the relation between cost of equity and earnings quality in Section IV. Section V investigates the impacts of the 1998 Securities Law of China on the stock market. Section VI discusses some robustness concerns. Section VII concludes and suggests future research opportunities.

I. Literature Review and Hypotheses

Easley and O'Hara (EO, 2004) develop a multi-asset rational expectations model in which both private versus public information affect asset returns. Their analytical results show that more private and less public information (assuming the total information set is constant) increases required returns and the quality of information (both public and private information) reduces required returns. EO explicitly note an important role of the quality of accounting information in reducing cost of capital by decreasing the systematic

risk of stock to (uninformed) investors. Lambert, Leuz and Verrecchia (LLV, 2006) demonstrate that the quality of accounting information can influence the cost of capital, both directly and indirectly. The direct effect occurs because higher quality disclosures reduce the firm's assessed covariances with other firms' cash flows (which is non-diversifiable) and the indirect effect occurs because higher quality disclosures affect a firm's real decisions, which likely changes the firm's ratio of the expected future cash flows to the covariance of these cash flows with the sum of all the cash flows in the market.

In the U.S. context, Francis et al. (2004) examine the relation between the cost of equity capital and seven attributes of earnings: accrual quality, persistence, predictability, smoothness, value relevance, timeliness, and conservatism. They find that firms with the least favorable values of each attribute, considered individually, generally experience larger cost of equity than firms with the most favorable values, which supports the negative association between information quality and cost of equity suggested by theoretical models. In a follow-up study, Francis et al. (JAE2005) find that investors price securities in a manner that reflects their awareness of accruals quality: lower-quality accruals are associated with higher costs of debt, smaller price multiples on earnings, and larger equity betas. Moreover, they find that their earnings quality measure loads as a separate factor in explaining variation in excess returns when added to both the one- and three-factor asset-pricing models.

Evidences from the above U.S. research support the theoretical prediction that higher earnings quality is associated with lower cost of capital. However, the empirical findings based on U.S. markets do not necessarily generalize to emerging markets, because institutional differences in legal and financial systems could limit the effectiveness of high quality earnings in reducing firm's cost of capital. Financial reports may not be viewed as credible in a country with weak protection for investors from its legal system and investors might simply do not use earnings information in their investment decisions. Thus, whether earnings quality is associated with cost of capital in emerging markets is an empirical question.

In my study, I focus on the Chinese stock market to investigate the aforementioned empirical question. Besides the reason that China's stock market is the largest emerging market, I intend to utilize the unique nature of China's market to rule out several alternative explanations for the earnings quality-cost of capital relation, which is very difficult to address using data from markets without such a feature: there are basically no large institutional investors in the Chinese stock markets.

In the U.S. stock market, prior research (e.g. Healy et al. 1999) report that increases in disclosure quality result in higher level of institutional ownership. Specifically, Diamond and Verrechia (1991) show that revealing public information can reduce a firm's cost of capital by attracting increased demand from large institutional investors due to increased liquidity of its securities.

Thus, the documented negative association between disclosure quality and cost of capital by prior U.S. studies might be due to the influence of institutional investors. One intention of my thesis is to rule out the Diamond and Verrecchia's mechanism of disclosure's effect on cost of capital through institutional investors and confirm the effectiveness of high quality information in a stock market dominated by small individual investors. China's stock market provides me such a unique setting in that this market does not have large institutional investors. Put another way, I want to see whether there is a direct link between earnings quality and cost of capital without the liquidity supplying effect of institutional investors².

In addition, prior studies (e.g. Rajgopal et al. [1999]) find that institutional ownership can act as an external governance mechanism and reduce earnings management behavior by management. Thus, it is also possible that the documented association between earnings quality and cost of capital is due to the fact that higher institutional ownership constrains earnings management and at the same time it provides liquidity to the firm's stock. With the China dataset, I can rule out this possible alternative explanation.

² High quality information may lower the cost of capital of a firm by attracting more institutional investors who are less risk averse. This argument is based on three lines of previous literature: 1) Easley and O'Hara (JF2004, p. 1576) show that investors' level of risk aversion enters into the determination of risk premium. Specifically, higher level of risk aversion will lead to higher risk premium demanded by investors; 2) Prior literature shows that institutional investors are less risk-averse. For example, Falkenstein (1996) and Gompers and Metrick (2001) show that institutional investors prefer risky stocks with high return volatility, ceteris paribus. 3) Prior literature has also established that institutional investors tend to invest in firms with better disclosure (e.g. Bushee and Christopher, 2000). Thus, if the arguments of above three streams of research are true, we can easily reason that high quality disclosure can lower a firm's cost of capital by attracting more institutional investors who have lower level of risk aversion, regardless of the arbitraging activities of institutional investors. This argument is another alternative explanation for the earnings quality-cost of capital relation, which I want to rule out with my study using China data where large institutional investors are not present.

Hypothesis 1: There is no difference in the costs of equity of firms with low reported earnings quality and firms with high reported earnings quality in China's stock market.

I next investigate whether improved legal protection can enhance the effectiveness of high quality earnings in reducing cost of capital.

For the purpose of standardizing the issuing and trading of securities, protecting the lawful rights and interests of investors, and safeguarding the economic order and promoting the development of the stock markets, China enacted and promulgated the Securities Law³ on December 29, 1998 and the law went into effect from July 1, 1999. Among others, the law dictates the disclosure requirements of public offerings and listed firms' periodic disclosure responsibilities and prohibits insider trading. The last part of law states the standards of liabilities. The enacting of the Securities Law strengthens the legal protection of investors in Chinese stock market to some extent.

The Securities Law is intended to promote high quality financial disclosures and restrict inside trading activities and specify the legal punishments for violation. La Porta, Lopez-de-Silanes, and Schleifer (LLS, 2006) suggest that securities laws matter because they facilitate private contracting rather than

³ The 1998 Securities Law is the first version of Securities Law of the country. The Law contains clauses about investors' rights to sue listed companies for publishing fake information, for insider trading, among others. The China Securities Regulations Commission (CSRC) is in charge of the enforcement of the Law. Violation of the Law involves penalties such as fines and criminal sanctions. For example, CSRC fined Yinguanxia (a company listed on Shanghai Stock Exchange) 600,000 yuan because the company boosted their sales for 1.05 billion yuan more than the real figure from 1998 to 2001, which lead to a false profit of 771.57 million yuan more than the reality.

provide for public regulatory enforcement. Specifically, they find that public enforcement, such as having an independent and/or focused regulator or criminal sanctions, is not a necessary condition for the law to be effective. In contrast, both extensive disclosure requirements and standards of liability facilitating recovery of losses are associated with larger stock markets.

Using LLS's dataset, Hail and Leuz (2006) examines international differences in firms' cost of equity capital across 40 countries. They find that firms from countries with more extensive disclosure requirements, stronger securities regulation, and stricter enforcement mechanisms have significantly lower cost of capital. While the above studies examine the direct association between securities regulation and cost of equity, my study examine whether the securities regulations have an effect on the effectiveness of high quality disclosure in reducing cost of capital in China. I reason that the Securities Law should improve the markets' legal protection level and increase the perceived reliability of accounting earnings, and thus increases their usage in investing decisions by the investors in the market. I then posit that the enacting of the Securities Law of China should strengthen the relationship between earnings quality and cost of capital in this market.

Hypothesis 2: The association between earnings quality and cost of capital is stronger in the post-law period than that in the pre-law period.

Two related studies examine the legal protection's role in the context of

quantity of information. Chen et al. (2004) argue that weak legal protection compromise disclosure's role in reducing a firms' cost of equity and they find that disclosure does not affect cost of capital in emerging markets. Francis et al. (TAR2005) find that firm-level voluntary disclosure lowers cost of capital across their sample firms with different legal and financial system. Thus, Francis et al. show that disclosure matters to cost of capital in both mature and emerging markets. Both of the above studies do not find direct evidence that legal protection can affect the relation between disclosure and cost of capital.

My study is different from Chen et al. (2004) and Francis et al. (TAR2005) in the following ways: first, both Chen et al. and Francis et al. focus on voluntary disclosure. Both studies employ a third-party survey score as their explanatory variable. My thesis focuses on earnings quality and my earnings quality measures are calculated based on prior accounting literature. Second, Chen et al. and Francis et al. rely on some country-level survey data to create their data variation in legal protection level. For example, Francis et al. use the anti-director rights' index developed by La Porta et al. (1997, 1998) to capture the effect of a country's legal environment with respect to investor protection. Chen et al. use law enforcement indices (e.g. La Porta, [2003]). My thesis captures the investor protection effect by a major improvement of China's legal and financial system – the introduction of the 1998 Securities Law. My design does not suffer from the potential noise introduced by the legal protection indices. In addition, my study is not affected by confounding factors like

country-level economic and political factors that may influence the results of cross-country studies (e.g. Ball et al. 2000).

II. Research Design

Measures of Earnings Quality

In this study, I design two measures of earnings quality (EQ) for Chinese firms. The first one is unsigned abnormal accruals used in many prior studies (e.g. Francis et al., [2005]; Ashbaugh et al., [2005]). Following Francis et al. (2005), higher absolute abnormal accruals signal lower earnings quality. Considering the relatively shorter history of the Chinese stock market, I use the cross-sectional modified Jones model⁴ (Dechow, Sloan and Sweeney, [1995]) to estimate abnormal accruals.

Following Haw et al. (2005), I first calculate total accruals (TACC) for each firm-year (firm and year subscripts are omitted):

$$TACC = EARN - CFO \quad (1)$$

or

$$TACC = (\Delta CA - \Delta CASH - \Delta STLEND) - (\Delta CL - \Delta STLOAN - \Delta ACTAX - CDEBT) - DEPR - AMORT \quad (2)$$

where *TACC* is total accruals, *EARN* is operating earnings, *CFO* is operating

⁴ Francis et al. (JAE 2005) report their main results based on a time-series method of estimating abnormal accruals, however, this method requires at least seven years of time series data to estimate the accrual quality for one cross section. Francis et al. suggest the methodology used in my study as one alternative (alternative 3, page 235) way of measuring accruals quality, and they show that the empirical performance of this alternative measure is similar to that of their main measure. Moreover, in a recent study by Haw et al. (CAR 2005), they measure earnings management for Chinese firms using the cross-sectional Jones (1991) model.

cash flows, *CA* is current assets, *CASH* is cash, *STLEND* is short-term lending, *CL* is current liability, *STLOAN* is short-term borrowing, *ACTAX* is accrued income taxes, *CDEBT* is current portion of long-term debt, *DEPR* is depreciation expense, and *AMORT* is amortization expense. Δ is first-order difference operator. If there are *CFO* data, I use the first equation to calculate *TACC*, else *TACC* is calculated using the second equation. The results are robust if I only use the second equation to calculate *TACC*.

My first earnings quality measure (*ABACC*) is the absolute value of abnormal accruals:

$$ABACC = |TACC - \hat{b}_0 - \hat{b}_1(SALES - AR) - \hat{b}_2PPE| \quad (3)$$

where *SALES* is total net sales, *PPE* is property, plant, and equipment. $\hat{b}_0$, $\hat{b}_1$, and $\hat{b}_2$ are estimated from cross-sectional regressions within industry groups (industry is defined according to China Securities Regulatory Commission (CSRC) 13-industry classification) of the following model:

$$TACC = b_0 + b_1 \times SALES + b_2PPE \quad (4)$$

All variables are scaled by beginning-of-the-year total assets.

The second measure of earnings quality is unsigned abnormal non-operating income. Chen and Yuan (TAR, 2004) use industry adjusted non-operating income (non-core earnings) as their measure of earnings management. The components of non-operating income, such as profits from the sale of fixed assets or investments income or loss, have been shown to be tools of earnings management in China (Chen and Yuan, [2004], Haw et al., [2005], see

Appendix 1 for an example of a standard income statement of Chinese firms). These “special items” are also found to be tools of earnings management in U.S. (Bartov, [1993]; McVay, [2004]) and other countries (Herrmann et al. [2003]; Poitras et al. [2001]). My second earnings quality proxy is the absolute value of industry-median adjusted non-core earnings (ABNOC) for each firm-year observation (firm and year subscripts are omitted):

$$ABNOC = |NOC - IndNOC| \quad (5)$$

where *NOC* is non-operating income net of tax, and *IndNOC* is industry-median *NOC*. Industry classification is based on the CSRC 13-industry definition.

Cost of Equity Proxy: Earnings-price ratios

Following Francis et al. (2005), I use industry-adjusted earnings-price ratio as a simple measure of cost of equity. Price multiple attached to earnings can be viewed as a short-hand valuation (Liu et al., [2002]), which places a price on each dollar of earnings. A higher P/E ratio implies a lower cost of equity in that investors pay more for a given dollar of earnings (Francis et al., [2005]). The industry-adjusted EP (IndEP) is calculated as the difference between a firm’s EP and the median industry EP in a given year. Only firm-year observations with positive earnings are included in the calculation. The definition of industry classification is based on China Securities Regulatory Commission (CSRC) 13 industries definitions. If earnings quality is negatively associated with the cost of equity, I expect that higher values of the earnings quality measures (higher

ABACC/ABNOC, lower earnings quality) are associated with higher industry-adjusted EP ratios. Throughout the paper, I report the results from the cross-sectional time-series *IndEP-EQ* regressions coefficients, with yearly fixed effects included in the regressions. The t-statistics are calculated based on the standard errors clustered by firms (Petersen, [2006])⁵.

Factor loadings in one-factor and three-factor asset-pricing models

Following Francis et al. (2005), I also investigate the effect of earnings quality on the cost of equity capital, as manifested in the factor loadings of one-factor and three-factor asset-pricing models. This methodology uses average ex-post returns realizations to proxy for the cost of equity. Specifically, I construct and add an earnings quality factor to the traditional CAPM model and the three-factor asset pricing model developed by Fama and French (1993). My earnings quality factors capture the differences in realized return between firms with low earnings quality (high value of ABACC/ANOC) versus firms with high earnings quality (low value of ABACC/ANOC). I estimate the following Fama-MacBeth (1973) firm-specific time-series regressions:

$$R_{i,m} - R_{F,m} = \alpha_i + \beta_i(R_{M,m} - R_{F,m}) + \lambda_j EQfactor_m + \varepsilon_{j,m}. \quad (6)$$

and

⁵ Petersen (2006) reports that standard errors based on this method is the most accurate among the various techniques used in the finance and accounting literature. Other standard errors calculation methods (White (1984), Newey-West (1987), Fama-MacBeth (1973), Random effect models, etc.) are also used and not reported in the paper. For almost all of regression models, the reported standard errors for the coefficients of interested independent variables in the paper are the highest among the different methodologies (lowest t-statistics). Regression results tables based on other regression/standard error calculation methods are readily available upon request.

$$R_{i,m} - R_{F,m} = a_i + b_i(R_{M,m} - R_{F,m}) + s_iSMB_m + h_iHML_m + e_iEQfactor_m + \varepsilon_{j,m}. \quad (7)$$

where $R_{i,m}$ is firm i 's raw return in month m ; $R_{F,m}$ is the risk free rate; $R_{M,m}$ the market return in month m ; SMB_m is the month m 's size risk premium defined as the return of small stocks minus the returns of large stocks in month m ; HML_m is the month m 's book-to-market risk premium defined as the returns of low market-to-book stocks minus high market-to-book stocks in month m ; $EQfactor_m$ ($FABACC$ and $FABNOC$, respectively, denotes each of the two earnings quality measure) is equal to the monthly returns difference between low earnings quality and high earnings quality portfolios, where low and high is defined by the tertile rank of the earnings quality measures ($ABACC$ or $ABNOC$). Specifically, for each month, I rank the firms according to the nearest available $ABACC$ ($ABNOC$) measures into tertiles. The monthly earnings quality measure $FABACC$ ($FABNOC$) is the difference of average returns of firms in the tertile with highest $ABACC$ ($ABNOC$) and the average returns of firms in the tertile with lowest $ABACC$ ($ABNOC$). The procedure of constructing factor-mimicking portfolios is similar to that used by Carhart (1997). I run firm-specific time-series regressions, and calculate the mean regression coefficients. The standard errors are based on the variation of the firms-specific regression coefficients. I use this firm-specific Fama-MacBeth procedure to allow for firm-specific loadings and to mitigate concerns of cross-sectional dependencies arising from pooled regressions (Peterson, 2006). If higher earnings quality is related to lower cost of equity capital, I expect the

average loadings on *FABACC* or *FABNOC* factor to be positive and statistically significant.

III. Sample, Data and Descriptive Statistics

I include in the main sample all the non-financial firms with A-shares listed on Shanghai Stock Exchange and Shenzhen Stock Exchange during 1994-2004⁶. I then exclude firm-year observations with negative book values, observations with missing data on price, return, or current and lag accounting variables. Price, return, financial, and ownership structure data are obtained from the China Stock Market and Accounting Research (CSMAR, available in WRDS) database. Table 1 gives the sample description. The main sample includes 8,186 firm-year observations, of which, 7,315 reported positive net incomes. The average total assets for these sample firms are 1,890 millions Chinese *Yuan* and the average book to market ratio is 35%. The earnings price ratios have an obvious declining trend. During the early years (1994-1995) of the stock market, the ratio is around 5%. During the period from 1996 to 1998, the ratio is around 1.6%; during the years after 1999, the ratio is around 1%. The enacting of Securities Law in 1998 might be one of the reasons for the declining EP ratios. Hail and Leuz (2006) show that stronger securities regulation is related to lower cost of capital. Therefore, if the EP ratio indicates cost of equity to some extent,

⁶ 1994 is the first year that I can obtain more than 100 usable observations. 2004 is the latest year in CSMAR database as at October 2006.

the observation here is consistent with Hail and Leuz findings. Table 2 shows the descriptive statistics for the positive earnings sub-sample, which is my main sample to conduct the various regressions tests. Table 2 shows that the average value of absolute abnormal accruals for Chinese firms during 1994-2004 is about 7% (median 4%) of total assets, which is economically large. The average value of absolute abnormal non-operating earnings is about 1% (median 0.6%) of total assets. The average total asset for this positive earnings sample is 2,271 million *Yuan*, which is greater than the average for the full sample. The mean book-to-market ratio of the positive earnings sub-sample is similar to that of the full sample. The mean leverage is about 68.61% for this sample of firms. The mean industry-median adjusted EP ratio is 0.0025.

IV. Earnings Quality and Cost of Equity

Earnings-price ratios

This section examines the association between earnings quality and the proxy for cost of equity capital, as captured by industry-adjusted earnings-price ratios.

Table 3 reports the coefficient estimates and t-statistics from estimating the following equations:

$$IndEP_{j,t} = a_0 + a_1 ABACC_{j,t} + a_2 Beta_{j,t} + a_3 LEV_{j,t} + a_4 LTMV_{j,t} + a_5 LBTM_{j,t} + \varepsilon_{j,t}, \quad (8)$$

$$IndEP_{j,t} = a_0 + a_1 ABNOC_{j,t} + a_2 Beta_{j,t} + a_3 LEV_{j,t} + a_4 LTMV_{j,t} + a_5 LBTM_{j,t} + \varepsilon_{j,t},$$

(9)

where $IndEP_{j,t}$ is industry-median adjusted EP ratio for firm j in year t ; $ABACC_{j,t}$ and $ABNOC_{j,t}$ are the earnings quality measures as defined previously. $Beta_{j,t}$ is the estimated coefficient of the market model using daily returns during the year ending one month before the year-end; $LEV_{j,t}$ is the interest-bearing debt divided by book value of equity; $LTMV_{j,t}$ is the logarithm of total market value at the end of year; $LBTM_{j,t}$ is the logarithm of book to market ratio. The univariate and multivariate results in table 3 show that both (inverse) measures of earnings quality are positively associated with $IndEP$ ⁷. The results indicate that as the quality of earnings decreases (ABACC or ABNOC increases), the amount investors are willing to pay for a dollar of earnings decreases ($IndEP$ increases), which implies higher cost of equity⁸.

Asset Pricing Tests

I next use firm-specific asset-pricing regressions to test the effect of earnings quality on the cost of equity capital. I begin by calculating the monthly factors returns for size, book-to-market, and our earnings quality measures. At June 30

⁷ The coefficients on beta and market value are in unexpected signs. However, the result for beta is consistent with U.S. studies (Francis et al., 2005). The unexpected sign of coefficient on the size variable is probably due to the difficulty of measuring the market value of Chinese firms. A large proportion of shares of Chinese firms cannot be traded freely in the stock markets and therefore do not have market prices. Since there is no consensus exists about how to compute the total market value of firms with a substantial percentage of non-tradable shares, I use four methods to calculate the total market value (size): the total market value of tradable shares, the total market value of tradable shares plus the product of market price and non-tradable shares, the total market value of tradable shares plus the 70% of the product of market price and non-tradable shares, and the total market value of tradable shares plus 80% of the product of market price and non-tradable shares. The last two measures are used in some previous valuation studies in China (e.g. Chen and Xiong, [2002], Bai et al. [2004]). However, the empirical results on the interested variables in this study are qualitative same across all the four measures of market value of total equity.

⁸ The unreported diagnostics results show that the variance inflation factors (VIF) for all of the coefficients in equation 8 and 9 are only slightly greater than 1 (range from 1.02-1.14), which suggests that multicollinearity should not be a problem here. I also try to include a square term for the earnings quality measure in the regressions; however, the unreported results show no clues for non-linear relationship.

of each year, I sort all stocks in our sample by size (total market value), book-to-market, and the two earnings quality measures (ABACC/ABNOC) into tertiles. The sorting variables are measured at the end of the previous (fiscal) year-end⁹. The portfolio ranks created are then assigned to the next twelve months in calculating monthly factor returns. Therefore, the portfolios for each factor are rebalanced in June each year. The monthly portfolio returns are the weighted average raw return of the firms in the portfolio. The weight for each firm each month is the market value of tradable shares at the end of the previous month. The monthly factor excess returns are calculated as the return differential between the average monthly portfolio returns of top tertile and the average monthly returns of the bottom two tertile. The size factor is calculated as small stock portfolio returns minus big stock portfolio returns; the book-to-market and earnings quality measure returns are calculated as using high ranking variable value (high BM/ABACC/ABNOC) portfolio returns minus low ranking value portfolio returns. With the monthly factor returns, I then load them in the traditional one-factor model and 3-factor asset pricing models to test the hypothesized association of the study. The monthly market portfolio returns are the current value weighted monthly return of A-share market, which are taken from CSMAR monthly trading database. The monthly market risk premium is the monthly market return minus the risk-free rate. The monthly excess return for each firm is the monthly raw return minus the

⁹ All Chinese firms have Dec 31 fiscal year ends.

monthly risk-free rate. The risk-free rate in the regressions is the latest annual bank current savings rate divided by twelve. I label the market risk premium as RMRF, the size factor as SMB, the value factor as HML, the earnings quality factor as FABACC for the unsigned abnormal accruals based factor, and FABNOC for the unsigned abnormal non-core earnings based factor.

Models 1-3 of table 4 report the mean factor loadings, the Fama-MacBeth t-statistics, and average adjusted R^2 from estimating the firm specific time-series regressions of the one-factor models augmented by my earnings quality factors. As expected, both earnings quality factors have positive and significant loadings in the one-factor model, with a mean loading of 0.18 for FABACC (FM t-statistic: 5.22), and a mean loading of 0.20 for the FABNOC (FM t-statistic: 7.27). The adjusted R^2 increases from 40.1% to 41.7% (40.8%).

Models 4-6 of table 4 report the results from the 3-factor base model regressions. The results show that SMB factor has average positive and significant loadings in the models. The average loadings for the HML factor has negative average loadings, which is not significantly different from zero in the earnings quality factor augmented models. This may indicate that the book-to-market factor is somewhat useless in explaining the return variations in the Chinese stock markets. This finding is consistent with that of Wang and Xu (2004). The earnings quality measures continue to have positive and significant loadings in the augmented 3-factor asset pricing models. However, the magnitude of the coefficients for the FABNOC factor drop dramatically to

0.043 (FM t-statistics: 1.62), which might indicate that the FABNOC factor returns have significant overlaps with the size effects. Generally, the results from the regressions of one-factor and three-factor asset pricing models confirm the earnings quality's influences on firms' cost of equity capital.

Summary of Results

To summarize, both ABACC and ABNOC are significantly and positively associated with cost of equity in the Chinese market. The results might imply that increasing earnings quality could be an effective way of gaining access to lower cost of external financing even in emerging markets. The findings here supplement Francis et al. (TAR, 2005), which shows that the higher quantity of public disclosure reduces cost of capital around the world.

V. Earnings Quality and Cost of Equity-the Role of the 1998 Securities Law of China

In this section, I investigate whether legal protection level has an effect on the relation between earnings quality and cost of capital.

I partition the sample into two sub-samples: the Pre-SL (Pre Securities Law: before 1999) sample and the Post-SL (Post Securities Law, after 1999) sample. Table 5 repeat the regression analysis based on the partitioned samples. The results indicate that the significance levels of the earnings quality effects are higher in the post-law period than those in the pre-law period. In table 6, I

report the regression results for various models which include an indicator variable ENACT (1 for the Post-SL observations, 0 otherwise), and an interaction term between ENACT and the variable of interest (ABACC/ABNOC). All the regression models include the conventional control variables as in previous sections. Model 1 of table 6 shows that the cost of equity is significantly lower in the post-law period than that in the pre-law period, after controlling for other determinants cost of equity. The consistent signs for the earnings quality measures (model 2 and model 3) and their interaction terms indicate that the enacting of the Securities Law of China enhances the earnings quality's effect on cost of equity. However, this effect is only significant for my second earnings quality measure.

Table 7 repeats the asset pricing tests of table 4 for the two sub-samples. The results indicate that the loadings for both earnings quality factors are much more significant in the post-law period than those in the pre-law period, which confirm the results from table 6 that the enacting of the Securities' Law in China significantly enhances the effectiveness of higher quality financial information in reducing the cost of equity capital.

To summarize, the empirical evidence in this section indicates that the Securities Law of China reduces average cost of capital for the listed firms, and enhances the effectiveness of high quality financial information in reducing cost of capital. The results are consistent with the predication that the enacting of the Securities Law increases the level of legal protection of China's stock market,

and the level of legal protection impacts the effectiveness of disclosure in reducing cost of external financing. Francis et al (TAR, 2005) also predict that legal protection level affect the effectiveness of disclosure. However, their empirical results do not support this prediction. I argue that one possible reason for the different results between my study and that of Francis et al. (TAR, 2005) might be the time-series analysis of this study is more powerful.

One difficulty faced by this part is the possible confounding effects from the accounting system revisions in 1998. The revisions are supposed to improve the relevance of the accounting reports. The new accounting system gives management more discretion in estimating operating accruals, such as bad debt expenses. These changes might introduce some noise in the earnings quality measures, which might make the earnings quality measures before and after the reform non-comparable. It might be helpful to identify the accounting change dates and to compare the cost of equity effect by controlling the accounting reform effect. Unfortunately, the accounting reform is in 1998, and the affected financial reports would be released in 1999, which leaves me too few time-series observations to conduct the empirical tests if I partition the sample further. However, since the accounting reform affects the operating (core) earnings only and not the non-operating earnings (non-core earnings), I expect that the earnings quality measure based on abnormal non-core earnings should not be affected by these changes. Chen and Yuan (2004) suggest that Chinese firms might manage their earnings mainly through non-core earnings, which

provides additional justification for using abnormal non-core earnings measure.

The results based on non-core earnings tests are similar to those based on core-earnings tests, which addresses the confounding effects from accounting reform properly.

VI. Limitations and Robustness

Effect of Corporate Governance

Chen et al. (2004) show that the disclosure's effect on cost of equity can be subsumed by their corporate governance effects in emerging stock markets. They then argue that disclosure is of secondary importance relative to corporate governance. In this part, I run some robustness tests controlling for some corporate governance variables that are shown by prior research to be correlated with firm value. Specifically, I include ownership structure variables as controls in appendix 2, table A. See Sun and Tong (2003), Wei et al. (2005) among others for the validity of including these variables as additional controls. The results in appendix 2 show that the earnings quality effect on cost of equity is robust to these corporate governance variables. Table B displays the results with some additional interaction terms included. Appendix 2 table C shows the results with more governance variable controls. Because of data availability, the observations in table B are a subset of the sample in table A. Table B show that the results are similar after controlling for all the known corporate governance variables. Therefore, I conclude that the earnings quality's effects on cost of

capital are not subsumed by firm-level corporate governance.

The EP and Earnings Quality Measures

In the current asset pricing literature, there are generally two approaches to test the determinants of expected returns. One approach is to use realized returns as the proxy for expected returns (e.g. Fama and French, 1993). The asset pricing tests of my study utilizes this methodology. The other method is to calculate implied cost of capital by employing some valuation model. In addition, this method need stock prices and contemporaneous analysts' earnings forecasts data (e.g. Botosan and Plumlee [2002]). Due to the unavailability of analysts' earnings forecast data in China, this study follows Francis et al. (2005) to use industry-adjusted E/P ratio as a simple proxy for expected return. Easton and Monahan (2005) find that this measure of expected return (the inverse of price to forward earnings) contains no more, and often less, measurement error than the remaining proxies based on analysts' forecasts. The traditional method of estimating firm's cost of capital is to use CAPM. However, in the context of this research, I cannot use this method, since the underlying assumption is that CAPM is an incomplete model and the study is trying to explore additional stock pricing factors in additional to market beta.

I believe that none of the empirical tests in the literature are perfect in the sense of conducting cost of capital research, I use all available tests based on the dataset and the consistent results might provide somewhat comfortable

triangulation of evidences.

In the cost of equity and earnings quality regressions, the dependant variable is earnings scaled by stock price, and the earnings quality measures are based on abnormal accruals (abnormal non-operating earnings). Effectively, the EP is an inverse measure of the price of each dollar of earnings. It is not expected to have any mechanical relationships to abnormal accruals, which by design has screened out the earnings rankings. However, in robustness tests, I include earnings (scaled by total assets) as one of the right hand side variable to control for any normal earnings effect. The unreported results show that the coefficient of earnings quality measure is robust to this control.

VII. Concluding Remarks

In this paper, I examine the association between earnings quality and a firm's cost of equity capital in the emerging markets of China. Extant theories posit that an increased quality of public financial accounting information reduces firms' cost of capital. Several recent U.S. studies provide evidence that is consistent with the theoretical prediction. Specifically, they find that investors price securities in a manner that reflects their awareness of the earnings quality measures: lower-quality earnings quality is associated with higher cost of capital, smaller price multiples and larger implied cost of equity capital. Moreover, they find that earnings quality loads as a separate factor in

explaining variation in excess returns when added to the asset-pricing models. Given the theory and empirical findings in the U.S. market, this study is intended to investigate whether the same “earnings quality effect” exists in an emerging market, whose legal systems and institutional settings are very different from those of the United States. I develop two measures of earnings quality based on previous studies that investigate the earnings management phenomenon in China: unsigned abnormal accruals and unsigned abnormal non-operating earnings. My results show that both earnings quality measures are negatively associated with firms’ cost of equity in Chinese markets: higher earnings quality is associated with lower industry-median adjusted earnings-price ratios and both of the earnings quality factors have an expected positive and significant loadings in both one-factor and three-factor asset-pricing regressions. The results are robust to the inclusion of corporate governance mechanisms as control variables and consistent across various estimation procedures. More importantly, I find that the enacting of the Securities Law of China enhances the earnings quality’s effect on cost of equity capital.

An obvious future research avenue is to extend this study to a cross-country research. Specifically, future studies could investigate the securities regulation’s effect on the relation between disclosure and cost of capital using a cross-country approach.

Appendix 1

Standard Income Statement of China

Income Statement
Sales revenue
<u>Minus: Sales returns and discounts</u>
<u>Net sales revenue</u>
Minus: COGS
Sales-related taxes
<u>Main operating income</u>
Plus: Other operating income
Minus: Sales expenses
Administrative expenses
<u>Financial expenses</u>
<u>Operating income</u>
Plus: Investment income (loss)
Subsidy income
Non-operating income
<u>Minus: non-operating expenses</u>
<u>Total income</u>
Minus: Income tax expense
<u>Minority income</u>
<u>Net income</u>

Notes:

Investment income includes income from short-term and long-term investments in stocks, bonds, and other companies' equity.

Subsidy income includes subsidy received from the government for policy-related loss as well we tax reductions.

Non-operating income (expenses) does not directly relate to a company's operating activities; it includes gain/loss from disposing fixed asset, assets revaluation, debt restructuring, donation, and fines.

Also see appendix 1 of Haw et al. (2005) for more examples.

Appendix 2

Robustness Tests with Corporate Governance Controls

Appendix2-TABLE A					
Regressions of Industry-adjusted EP ratio on Earnings Quality Measures with Ownership Structure Controls, 1994-2004					
Variable	Pred. sign	Model 1	Model 2	Model 3	Model 4
ABACC	+	0.023*** (5.94)	0.023*** (6.06)		
ABNOC	+			0.063** (1.99)	0.064** (2.01)
ST	?	-0.003** (-1.98)		-0.003*** (-2.40)	
LP	?		0.000 (0.17)		0.000 (0.56)
FRN	?	-0.028*** (-7.31)	-0.027*** (-7.03)	-0.028*** (-7.15)	-0.028*** (-6.80)
Beta	+	-0.008*** (-6.55)	-0.008*** (-6.57)	-0.009*** (-7.03)	-0.009*** (-7.03)
LEV	+	0.000*** (8.27)	0.000*** (8.38)	0.000*** (7.72)	0.000*** (7.82)
LTMV	-	0.008*** (13.78)	0.008*** (13.43)	0.008*** (13.35)	0.008*** (12.91)
LBTM	+	0.010*** (13.49)	0.010*** (13.39)	0.011*** (13.67)	0.011*** (13.53)
Clusters		1,256	1,256	1,266	1,266
N		7,088	7,088	7,258	7,258
Adj. R ²		18.00%	17.88%	17.95%	17.79%

Notes:

1. Ownership Structure Variables: Calculated from CSMAR Trading Database (Change in Share Outstanding File, WRDS file name: csmar.csmar_t_capchg); For firm-year observations with no share-change data, I use the number of the nearest previous change data)

ST: the percentage of firm shares owned by the government;

LP: the percentage of firm shares owned by the legal persons;

A: tradable common shares available to local Chinese investors;

FRN: the percentage of firm shares owned by foreign investors.

Definitions of other variables are same as in table 2.

2. The coefficients are estimated using OLS regressions and the t-statistics are based on standard errors calculated using Rogers (1993) procedure clustered by firm. Yearly fixed effects are included in the model estimations and not reported in the table.

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3. The t-statistics are in parenthesis; * denotes 10% significant level; ** denotes 5% significant level; *** denotes 1% significant level or better.
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Appendix 2-TABLE B
Regressions of Industry-adjusted EP ratio on Earnings Quality
Measures with Ownership Structure Controls with Interaction Terms,
1994-2004

	Pred. sign	Model 1	Model 2	Model 3	Model 4
ABACC	+	0.020*** (3.16)	0.025*** (4.56)		
ABNOC	+			0.048 (1.33)	0.114*** (5.04)
ST		-0.003** (-1.98)		-0.004** (-2.44)	
ST*ABACC		0.009 (0.59)			
ST*ABNOC				0.065 (0.85)	
LP			0.001 (0.44)		0.002 (1.41)
LP*ABACC			-0.007 (-0.43)		
LP*ABNOC					-0.110* (-1.65)
FRN		-0.030*** (-7.09)	-0.029*** (-6.83)	-0.033*** (-7.30)	-0.031*** (-6.80)
FRN*ABACC		0.035 (0.82)	0.032 (0.75)		
FRN*ABNOC				0.370** (2.40)	0.287** (1.85)
Beta		-0.008*** (-6.53)	-0.008*** (-6.55)	-0.009*** (-7.14)	-0.009*** (-7.15)
LEV		0.000*** (8.24)	0.000*** (8.36)	0.000*** (7.84)	0.000*** (7.93)
LTMV		0.008*** (13.76)	0.008*** (13.41)	0.008*** (13.40)	0.008*** (12.92)
LBTM		0.010*** (13.49)	0.010*** (13.40)	0.011*** (14.36)	0.011*** (14.49)
<i>Clusters</i>		1256	1256	1266	1266
<i>N</i>		7088	7088	7258	7258
<i>Adj. R²</i>		0.1802	0.179	0.1813	0.1807

All variables are as defined in table Appendix 1-A.

Appendix2-TABLE C
Regressions of Industry-adjusted EP ratio on Earnings Quality
Measures with Corporate Governance Controls, 1999-2002

Variable	Pred. sign	Model 1	Model 2	Model 3	Model 4
ABACC	+	0.0128*** (2.31)	0.0130*** (2.37)		
ABNOC	+			0.0245*** (3.40)	0.0245*** (3.43)
ST	-	-0.0013 (-1.04)		-0.0015 (-1.23)	
LP			-0.0002 (-0.18)		-0.0000 (-0.02)
FRN	-	-0.0210*** (-5.75)	-0.0209*** (-5.64)	-0.0216*** (-6.03)	-0.0214*** (-5.90)
DIRECTOR		-0.0001 (-0.44)	-0.0001 (-0.40)	-0.0000 (-0.33)	-0.0000 (-0.29)
EXT_DIR	-	0.0024 (0.62)	0.0025 (0.64)	0.0030 (0.79)	0.0031 (0.81)
SUPER	-	-0.0005*** (-2.23)	-0.0006*** (-2.32)	-0.0005*** (-2.20)	-0.0006*** (-2.30)
DUALITY	+	-0.0004 (-0.68)	-0.0004 (-0.67)	-0.0003 (-0.50)	-0.0003 (-0.49)
BETA	+	-0.0062 (-4.54)	-0.0063 (-4.56)	-0.0061 (-4.49)	-0.0061 (-4.50)
LEV	+	0.0001 (8.34)	0.0001 (8.38)	0.0001 (8.12)	0.0001 (8.16)
LTMV	-	0.0063 (8.64)	0.0062 (8.52)	0.0062 (8.66)	0.0062 (8.52)
LBTM	+	0.0096 (12.37)	0.0100 (12.23)	0.0094 (12.10)	0.0094 (11.93)
<i>Clusters</i>		1,024	1,024	1,034	1,034
<i>N</i>		2,815	2,815	2,845	2,845
<i>Adj. R²</i>		23.73%	23.67%	23.50%	23.42%

Notes:

1. Variable definitions for the additional corporate governance variables (see CSRC 2002 for more information on these variables).

Director: number of directors;

External: number of external directors on the board;

Ext_dir: percentage of external directors;

Super: number of supervisors;

Duality: an indicator variable that takes the value of 1 when the CEO is also the chairman of the board of directors, 0 otherwise.

2. The coefficients are estimated using OLS regressions and the t-statistics are based on standard errors calculated using Rogers (1993) procedure clustered by firm. Yearly fixed effects are included in the model estimations and not reported in the table.

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TABLE 1
Sample Description by Year

Year	Obs	# pos. ni	SHSE	SZSE	EP	Assets	TMV	BTM
1994	175	172	100	75	0.055	1,186	1,508	0.46
1995	282	265	167	115	0.045	1,257	1,194	0.55
1996	306	275	182	124	0.015	1,440	2,332	0.33
1997	508	469	285	223	0.017	1,298	2,488	0.27
1998	710	629	369	341	0.015	1,410	2,428	0.28
1999	808	738	417	391	0.016	1,552	2,955	0.26
2000	902	821	461	441	0.012	1,792	4,646	0.18
2001	1,031	897	548	483	0.008	1,949	3,609	0.25
2002	1,104	956	625	479	0.009	2,530	3,345	0.33
2003	1,154	1,032	680	474	0.011	2,963	3,510	0.41
2004	1,206	1,061	743	463	0.008	3,412	3,013	0.51
Total	8,186	7,315	4,577	3,609	0.019	1,890	2,821	0.35

Notes:

The initial sample includes all firms in the CSMAR (available in WRDS) Annual Financial database (WRDS file: csmar.csmar_a), except for financial industry firms, firms with negative book value, and firms that do not have previous year financial statement variables in CSMAR financial database. 1994 is the first year that I can obtain more than 100 usable observations. 2004 is the latest year in CSMAR database as at October 2006.

Pos. ni: number of firms with positive net income;

SHSE: number of firms listed on Shanghai Stock Exchange;

SZSE: number of firms listed on Shenzhen Stock Exchange;

EP: earnings-price ratio, net income divided by total market value at year end;

Assets: total assets from CSMAR financial database ;

TMV: total market value from CSMAR monthly trading database (WRDS file name: csmar.csmar_t_mnth), measured at the year end (all the Chinese firms have fiscal year end at Dec 31);

BTM: book value of equity to total market value.

TABLE 2
Descriptive Statistics of Select Variables, 1994-2004

VARIABLE	MEAN	STD	PERCENTILES					N
			10%	25%	50%	75%	90%	
<i>Earnings Quality Measures</i>								
ABACC	0.0669	0.0810	0.0078	0.0196	0.0438	0.0860	0.1465	7,097
ABNOC	0.0122	0.0276	0.0008	0.0023	0.0057	0.0130	0.0281	7,267
<i>Financial Variables</i>								
ASSETS(m)	2,271	9,179	418	690	1,198	2,262	4,227	7,315
TMV(m)	3,327	8,595	810	1,269	2,068	3,461	5,993	7,306
NI(m)	104	535	7	19	42	89	187	7,315
BTM	0.3458	0.1931	0.1388	0.2053	0.3067	0.4430	0.6101	7,306
LEV	0.6861	8.1472	0.0481	0.1826	0.4048	0.7412	1.2199	7,315
IndEP	0.0025	0.0198	-0.0182	-0.0097	0.0000	0.0105	0.0240	7,258

Notes:

1. The sample contains 7,315 firm-year observations over 1994-2004 with CSMAR positive net income. Financial firms and firm-year observations with negative book values are excluded from the sample. Financial variables are calculated using data obtained from the CSMAR Annual Report Files.

2. Earnings Quality Measures:

ABACC: the absolute abnormal accruals estimated from the modified Jones model (Dechow et al., 1995), the predicting model coefficients are estimated by cross-sectional OLS regressions within industry groups. The industry classification is according to the first character of CSMAR Industry Code B (13 industries, the industry information is from the WRDS file: csmar.csmar_t_company). I require at least 10 observations in each industry each year to estimate the predicting model coefficients.

Details for ABACC calculation:

Total accruals (TACC) = for year 1998-2004, total accrual is the differential of operating net income and operating cash flows; for year 1994-1997 total accrual is computed following Haw et al. (CAR, 2005): $TACC = (\Delta \text{ Current assets} - \Delta \text{ Cash} - \Delta \text{ Short-term lending}) - (\Delta \text{ Current liability} - \Delta \text{ Short-term borrowing} - \Delta \text{ Accrued income taxes} - \Delta \text{ Current portion of long-term debt}) - \text{Depreciation expense} - \text{Amortization expense}$; Δ is the first-order difference operator.

$ABACC = \text{abs}(TACC - \hat{b}_0 - \hat{b}_1 * (\Delta \text{ Sales} - \Delta \text{ Accounts receivable}) - \hat{b}_2 * \text{PPE})$, where $\hat{b}_0, \hat{b}_1, \hat{b}_2$ are estimated from cross-sectional regressions with industry groups of the equation: $TACC = b_0 + b_1 * \Delta \text{ Sales} + b_2 * \text{PPE}$. Sales are net sales; PPE is property, plant, and equipment. All variables are scaled by beginning-of-the-year total assets.

ABNOC: the absolute abnormal non-core earnings defined as the absolute value of the differential between a firm's non-core earnings (net of tax) and industry-median non-core earnings (Chen and Yuan, 2004). I require at least 5 observations in a firm's industry (excluding the firm itself) each year to estimate the industry medians. ABNOC is scaled by beginning-of-year total assets.

3. Financial Variables:

ASSET: total assets, in Chinese Yuan millions;

TMV: total market value, in Chinese Yuan millions;

NI: net income, in Chinese Yuan millions;

BTM: book-to-market ratio, book value of common equity / total market value;

LEV: leverage, (short-term debt + long term debt) / book value of common equity;

EP: earnings-price ratio, EPS / year-end closing price;

IndEP: industry-adjusted EP ratio, my dependent variable (the proxy for cost of equity) in most of the analysis throughout this paper, defined as a firm's EP ratio minus the median EP ratio of its industry. I require at least 5 observations in a firm's industry (excluding the firm itself) each year to calculate the industry-adjusted EP ratio.

TABLE 3
Regressions of Industry-adjusted EP ratio on Earnings Quality Measures
1994-2004

Variable	Pred. sign	Model 1	Model 2	Model 3	Model 4
ABACC	+	0.016*** (3.99)		0.025*** (6.44)	
ABNOC	+		0.036* (1.65)		0.065** (2.02)
Beta	+			-0.008*** (-6.80)	-0.010*** (-7.23)
LEV	+			0.000*** (8.92)	0.000*** (8.35)
LTMV	-			0.007*** (11.31)	0.007*** (10.87)
LBTM	+			0.010*** (13.41)	0.011*** (13.55)
Clusters		1,256	1,266	1,256	1,266
<i>N</i>		7,088	7,258	7,088	7,258
<i>Adj. R</i> ²		1.92%	1.11%	16.19%	16.12%

Notes:

4. See table 2 for variable definitions, LTMV is the natural logarithm of TMV, LBTM is the natural logarithm of BTM; Beta is estimated by the market model using daily stock returns, I require at least 60 trading days data for the estimation.
5. The coefficients are estimated using OLS regressions and the t-statistics are based on standard errors calculated using Rogers (1993) procedure clustered by firm. Yearly fixed effects are included in the model estimations and are not reported in the table.
6. The t-statistics are in parenthesis; * denotes 10% significant level; ** denotes 5% significant level; *** denotes 1% significant level or better.

TABLE 4
Asset Pricing Tests of Earnings Quality and Stock Returns, 1996-2004

Variable	Pred. sign	Base Model: CAPM			Base Model: FF 3-factor		
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>RMRF</i>		1.011	1.006	0.998	0.967	0.963	0.966
FM-t-stat		137.69	138.78	135.38	129.78	128.66	128.23
<i>SMB</i>					0.327	0.316	0.328
FM-t-stat					20.65	19.41	20.57
<i>HML</i>					-0.047	-0.014	-0.026
FM-t-stat					-2.60	-0.76	-1.38
<i>FABACC</i>			0.176***			0.197***	
FM-t-stat			5.22			6.53	
<i>FABNOC</i>				0.200***			0.043*
FM-t-stat				7.27			1.62
<i>Adj. R²</i>		0.401	0.417	0.408	0.444	0.454	0.452

Notes:

1. This table reports the regression results of firms' monthly excess stock returns on various monthly factor returns. A firm's monthly excess return is calculated as the firm's raw return in a month minus the monthly risk free rate (bank current-account monthly interest rate); *RMRF* is the monthly excess return on the market portfolio; *SMB* is the monthly value-weighted return of small stocks portfolio minus the monthly value-weighted returns of large stocks portfolio; *HML* is the monthly value-weighted return of high book-to-market ratio stocks portfolio minus the monthly value-weighted returns of low book-to-market ratio stocks portfolio; *FABACC* is the monthly value-weighted return of high ABACC stocks portfolio minus the monthly value-weighted returns of low ABACC stocks portfolio; *FABNOC* is the monthly value-weighted return of high ABNOC stocks portfolio minus the monthly value-weighted returns of low ABNOC stocks portfolio; ABACC, ABNOC are defined previously.
2. I conduct firm specific regressions and report the mean coefficient estimates across a sample of 1,352 firms, which have a minimum of 18 months of return data over Jan 1996 to Dec 2004 period; the average return observations is 75 for the sample.
3. The Fama-MacBeth *t*-statistics are reported under the coefficient estimates.

TABLE 5
Regressions of Industry-adjusted EP ratio on Earnings Quality Measures
Partitioned Regressions

Variable	Pred. sign	ABACC		ABNOC	
		<i>Pre_Law</i>	<i>Post_Law</i>	<i>Pre_Law</i>	<i>Post_Law</i>
ABACC	+	0.0244*** (3.16)	0.0254*** (5.71)		
ABNOC	+			0.0285 (0.97)	0.1169*** (7.03)
Beta	+	-0.0137*** (-5.21)	-0.0071*** (-5.66)	-0.0178*** (-6.19)	-0.0075*** (-5.85)
LEV	+	0.0000 (0.04)	0.0001*** (8.27)	0.0002 (0.40)	0.0001*** (7.51)
LTMV	-	0.0042*** (4.90)	0.0081*** (12.54)	0.0041*** (4.82)	0.0078*** (12.33)
LBTM	+	0.0123*** (8.03)	0.0097*** (12.93)	0.0146*** (9.31)	0.0101*** (13.81)
Clusters		796	1237	812	1247
<i>N</i>		2365	4723	2499	4759
<i>Adj. R</i> ²		10.76%	18.76%	12.30%	19.42%

Notes:

7. See table 2 for variable definitions, LTMV is the natural logarithm of TMV, LBTM is the natural logarithm of BTM; Beta is estimated by the market model using daily stock returns, I require at least 60 trading days data for the estimation.
8. The coefficients are estimated using OLS regressions and the t-statistics are based on standard errors calculated using Rogers (1993) procedure clustered by firm. *Pre_Law* indicates observations before fiscal year 1999; *post_law* indicates observations after fiscal year 1999.
9. The t-statistics are in parenthesis; * denotes 10% significant level; ** denotes 5% significant level; *** denotes 1% significant level or better.

TABLE 6
Earnings Quality and Cost of Equity-The Effect of Enacting Securities
Law in July 1999

	Pred. sign	Model 1	Model 2	Model 3
ENACT		-0.008*** (-2.95)	-0.001 (-0.79)	-0.003*** (-3.09)
ABACC	+		0.024*** (3.23)	
ABACC*ENACT	+		0.001 (0.15)	
ABNOC	+			0.026 (0.96)
ABNOC*ENACT	+			0.101*** (3.21)
CONTROLS		Included	Included	Included
<i>Clusters</i>		1,266	1,256	1,266
<i>N</i>		7,258	7,088	7,258
<i>Adj. R²</i>		15.32%	15.40%	15.67%

Notes:

1. ENACT is an indicator variable that takes the value of one for firm-year observations over 2000-2004, and takes the value of zero for firm-year observations over 1994-1999. ABACC*ENACT, ABNOC*ENACT are interaction terms.
2. All the regressions of the table include controls variables for Beta, LTMV, LBTM, and LEV; all variables are defined previously. The t-statistics are reported in parenthesis and are based on Rogers standard errors clustered by firm; Bold face indicates significant at the 0.1 level or better.

TABLE 7
Comparison of Loadings on Earnings Quality Factors
Pre- and Post- Security Law Periods

	Pred. Sign	Base Model: CAPM		Base Model: FF 3-factor	
		<i>Pre_SL</i>	<i>Post_SL</i>	<i>Pre_SL</i>	<i>Post_SL</i>
<i>Fama-MacBeth firm-specific regressions with FABACC factor</i>					
<i>FABACC</i>	+	-0.145	0.766	0.013	0.258
FM-t-stat		-5.03	15.86	0.41	6.22
<i>Fama-MacBeth firm-specific regressions with FABNOC factor</i>					
<i>FABNOC</i>	+	-0.020	0.629	-0.055	0.306
FM-t-stat		-0.53	17.06	-1.54	8.89

Note: this table repeats the asset-pricing tests of TABLE 4 for each of the two sub-periods separately. *Pre_SL*: Jan 1996 to June 2000 (54 months); *Post_SL*: July 2000 to Dec 2004 (54 months). See Table 4 for the detailed description of the regressions and variable definitions. Factor loadings for non-earnings quality factors are omitted from the table for the sake of brevity.

PART II

**INFORMATION RISK AND RETURNS TO
GOVERNANCE-BASED TRADING
STRATEGIES**

Information Risk and the Returns to Governance-Based Trading Strategies

ABSTRACT This article shows that the intriguing findings of prior research (Gompers, Ishii, and Metrick, (2003); Bebchuk, Cohen, and Ferrell, (2006)) that abnormal returns for firms with strong shareholder rights are greater than for firms with weak shareholder rights can be explained by information risk. Specifically, after controlling for information risk, I find that the abnormal return difference between strong shareholder rights firms and weak shareholder rights firms is insignificantly different from zero. The results also suggest that the differences in information risk between the extreme portfolios are caused by differences in firms' characteristics such as: firm age, institutional ownership, and shareholder rights. Moreover, I find empirical evidence that shareholder rights are *positively* and significantly associated with information risk. Finally, there is strong evidence that institutional ownership is negatively and significantly associated with information risk, and there is no consistent evidence to show that analysts' coverage is negatively related to information risk.

Keywords

Corporate governance, shareholder rights, entrenchment, market efficiency, information risk, asset pricing

JEL Classification

D80, G12, G14, G30, G34, M41, M43

Information Risk and the Returns to Governance-Based Trading Strategies

In an important and influential article, Gompers, Ishii, and Metrick (GIM, 2003) report that firms with strong shareholder rights would have earned risk-adjusted returns that are 8.5 percent higher per year than those of firms with weak shareholder rights during the 1990s. They measure shareholder rights using a self-constructed “Governance Index” (G-Index) based on 24 governance provisions^{10,11} tracked by the Investor Responsibility Research Center (IRRC). Bebchuk, Cohen, and Ferrell (BCF, 2006) extend GIM’s study by investigating which of the 24 provisions are the main driving factors that lead to the positive correlation between shareholder rights and abnormal stock returns. Based on their analysis, they identify six provisions¹² from among the 24 IRRC provisions and put forward an entrenchment index (E-Index) based on these six provisions. They find that a strategy of buying firms with a low E-Index (high shareholder rights) and selling firms with a high E-Index (low shareholder rights) could have earned risk-adjusted returns of 13.9% per year

¹⁰ A substantial amount of subsequent research has utilized this index as a measure of the quality of firms’ governance provisions (e.g. Amit and Villalonga (2004); Cremers et al. (2005); Dittmar and Mahrt-Smith (2006); Ferreira and Laux, (2006); Kau et al. (2006); Klock et al. (2005); Litov (2005); Masulis et al. (2006); Yermack (2005)).

¹¹ See Appendix I for detailed explanations for the 24 provisions.

¹² The six provisions include: staggered boards, limits to shareholder bylaw amendments, supermajority requirements for mergers, supermajority for charter amendments, poison pills and golden parachutes. BCF identify these six provisions based on the following evidence: analysis of the potential consequences of each of the IRRC provisions; discussions of the subject with six prominent merger & acquisitions lawyers in leading corporate law firms; existing evidence about the effects of some IRRC provisions; and evidence about the provisions attracting the most widespread opposition from institutional investors voting on precatory shareholder resolutions. See BCF for more details about the formation of entrenchment index.

during the 1990s and 10.1% per year during an extended period from 1990 to 2003. The empirical findings of these studies are puzzling in that although strong shareholder rights might lead to good operating performance, there should exist no relation between shareholder rights and stock returns in an efficient market (Core, Guay, and Rusticus, (2006)).

Generally, once an “anomaly” is found in the stock market, academic researchers tend to explain it by mispricing and/or unknown risk¹³. With respect to mispricing, GIM argue that weak shareholder rights cause agency costs and investors fail to fully anticipate these costs when forming their expectations about future cash flows. Therefore, when the agency costs are realized subsequently, investors lower their expectations about weak shareholder rights firms’ cash flows, which results in stock price declines. Core et al. (2006) examine the mispricing explanation based on the idea that if investors do not understand the implications of shareholder rights for future operating cash flows, they will be surprised when the realized earnings of weak (strong) shareholder rights firms are low (high) relative to their earnings expectations. They find that analysts and investors are not surprised by differences in operating performance between weak shareholder rights firms and strong shareholder rights firms. Therefore, Core et al. find no evidence that mispricing of shareholder rights cause unexpected cash flows, which in turn cause future abnormal stock returns.

¹³ Another potential explanation is data mining, given the relatively short time period of the study. However, the available data does not allow us to investigate this potential problem properly.

The other explanation for the “governance anomaly” is that the documented abnormal returns are due to some omitted risk factor or other factors (which happened to drive stock returns during the sample periods of GIM/BCF) that are correlated (or not correlated) with shareholder rights. Ferreira and Laux (2006) argue that governance policy is related to idiosyncratic risk. Specifically, they show that more openness to the market for corporate control (higher shareholder rights) leads to higher idiosyncratic risk. However, they do not examine whether this differential idiosyncratic risk leads to the documented abnormal returns earned by hedging strategies based on governance indices¹⁴. Actually, a recent study by Bali et al. (2005) indicates that idiosyncratic risk does not matter to expected stock returns¹⁵. Thus, if the unknown risk explanation is true, the important unanswered questions are: what omitted factors drive the abnormal returns to the shareholder rights hedging strategies documented by GIM and BCF? Whether and why are these factors related to shareholder rights?

In this paper, I investigate (1) whether information risk explains the abnormal stock return differences between strong shareholder rights firms and weak shareholder rights firms, as documented by GIM and BCF; (2) If information risk is (one of) the “omitted factor(s)”, whether it is correlated with

¹⁴ In a concurrent working paper by Johnson et al. (2006), they find that the abnormal returns to G-index hedge portfolio in the 1990s can become insignificant in control-firm calendar-time regressions (that is after controlling for industry effects the abnormal returns to G-index hedge portfolio can become insignificant). While the risk factors in the existing asset pricing models may incorporate differences in industry risks, my study is different from Johnson et al. (2006) in that I test whether information risk as measured by accruals quality is priced or affects expected returns. This information risk factor based on accruals quality captures more than industry membership. For example, accrual quality can be affected by management quality, information system quality, as well as firm’s business features (industry effects).

¹⁵ I provide detailed discussion of Ferreira and Laux (2006) in section IIIA.4.

shareholder rights.

This study is motivated partly by recent finance and accounting research that shows that information risk is a non-diversifiable risk factor (e.g. Easley and O'Hara, (EO, 2004); O'Hara, (2003); Easley et al. (2002)); Lambert, Leuz, and Verrecchia, (2006); Francis, LaFond, Olsson, and Schipper, (FLOS, 2004, 2005); Chen, Shevlin, and Tong, (2007)). Specifically, Easley and O'Hara develop a multi-asset rational expectations model and predict that firms with more information risk will have higher cost of capital, where information risk concerns the uncertainty or (perceived) imprecision of information used or desired by investors to price securities. FLOS investigate the relation between information risk and cost of equity and find empirical evidence that information risk is a priced risk factor. Assuming that investors value securities based on their assessments of future cash flows, they develop an accounting-based information risk measure (accrual quality metric-AQ) that captures the information uncertainty in future cash flows. They find that firms with the worst AQ have a 210 basis points (bp) higher cost of equity than firms with the best AQ. In addition, they find that $AQfactor^{16}$ adds significantly to size and book to market (as well as the market risk premium) in explaining variation in expected returns for the three-factor asset pricing regression. They conclude that accruals quality contributes significant incremental explanatory power over and above the three Fama-French factors.

¹⁶ See section II for detailed explanation for the construction of the AQfactor.

Following FLOS, I construct an *AQfactor* as the proxy for information risk premium (factor returns). I first replicate GIM and BCF studies and estimate the abnormal returns to the shareholder rights indices based hedging strategies through time series excess return regressions. To investigate whether information risk can explain the abnormal returns, I then add the *AQfactor* returns to the traditional expected return models and re-estimate the abnormal returns to the hedging strategies. My results are as follows: (1) a trading strategy that buys firms with the lowest G-Index (high shareholder rights) and sell firms with the highest G-index (low shareholder rights) generates an annualized abnormal return of about 8.7% (significant at the 0.01 level) from September 1990 to December 1999, without the presence of the *AQfactor*, which is consistent with GIM; (2) a trading strategy that buys firm with the lowest E-Index (high shareholder rights) and sell firms with the highest E-index (low shareholder rights) generates an annualized abnormal return of about 14% (significant at the 0.01 level) during the 1990s and 10% (significant at the 0.01 level) from September 1990 to December 2003, without the presence of the *AQfactor*, which is consistent with BCF; (3) after I include the *AQfactor* in the abnormal return estimation regressions, both strategies earn non-significant abnormal returns (annualized abnormal return of about 1.8% for the G-Index hedging strategy during the 1990s; annualized abnormal return of about 1.3% for the E-Index hedging strategy for both the period of the 1990s and an extended period from September 1990 to December 2003). Thus, I conclude

that information risk in general, and accrual quality in particular, can explain the “governance anomaly” well. Put differently, one can say that at least a substantial portion of the abnormal returns to the governance indices based hedging strategies can be attributed to the differential exposure of the governance indices portfolios to the accrual quality factor.

Given the above findings, I next examine whether shareholder rights are associated with information risk. One should note that the correlation between shareholder rights and information risk is not a necessary condition for the success of information risk to explain the observed “governance anomaly”. It is possible that firms in the extreme shareholder rights portfolios have some characteristics (other than shareholder rights) that are associated with information risk. Specifically, I observe that the firms in the low shareholder rights portfolios (as defined in GIM and BCF) have significantly higher age, higher institutional ownership and higher level of S&P 500 presence than the firms in the high shareholder rights portfolios. Prior research suggests that these firm specific features are associated with information risk (e.g. Ecker, Francis, Kim, Olsson, and Schipper, (2006) show that information risk is higher for younger firms).

I further investigate whether shareholder rights are associated with information risk after controlling for known firm characteristics that are correlated with information risk. I show that both G-Index and E-Index are negatively and significantly associated with information risk. The association is

robust to the inclusion of various control variables that are shown by prior research to be innate determinants of information risk. I posit one explanation for the observed relation between shareholder rights and information risk: managements in firms with high shareholder rights (low management rights) have less extent of protection from the governance provisions for their jobs in case of unsatisfactory operating performance, and they might frequently resort to “cooked reported earnings” to prevent losing their jobs. I argue that this is one possible “negative side effect” of enhancing shareholder rights.

This study makes several contributions. First, it provides an explanation for the intriguing findings of GIM and BCF that shareholder rights are associated with future abnormal stock returns. It shows that a substantial portion of these abnormal return differences between strong shareholder rights firms and weak shareholder rights firms can be explained by differentials in information risk (as proxied by accrual earnings quality). This study gives one of the first relatively successful explanations for the “governance anomaly”. Second, the paper provides empirical evidence that strong shareholder rights might lead to high information risk, possibly due to some substitute effects between earnings manipulation and management rights with respect to job protection. Third, this study has implications for recent empirical studies that attempt to link shareholder rights to the cost of capital or firm performance. For example, Klock, Mansi, and Maxwell (2005) document that firms with weak shareholder rights (high G-Index) have a lower cost of debt financing than firms with strong

shareholder rights (low G-Index). They argue that anti-takeover provisions, although not beneficial to stockholders, are viewed favorably in the bond market. However, according to the findings of this study, this relation between shareholder rights (G-Index) and cost of debt might be due to the association between firms' information risk and cost of debt (e.g. FLOS document a positive association between information risk and cost of debt). That is, weak shareholder rights firms have lower information risk level (as documented in this study), which lead to lower cost of debt. In addition, many studies investigate the association between shareholder rights and firm performance by employing accounting based measures of operating performance (e.g. GIM use ROE, Core et al. (2006) use ROA). However, these accounting measures might suffer from managers' discretionary reporting behaviors. Therefore, the documented positive association between shareholder rights and these performance measures (ROE, ROA) might disappear after excluding the "discretionary portion of earnings" from the "R"s (operating earnings). Thus, this study provides important implications for this stream of empirical research that intends to relate G-Index (or E-Index) to firm performance and cost of capital. Fourth, this paper provides corroborating evidence on the pricing of information risk. It shows that while the governance anomaly is robust to the Fama-French factors and other recently proposed "risk" or "style" factors (e.g. momentum factor and liquidity risk factor), it cannot survive the presence of information risk factor in the expected return model. The alphas for the

governance indices hedging portfolios become insignificant after the inclusion of information risk factor in the abnormal return estimation process, and the overall goodness-of-fit of the time series regressions also increases substantially. Finally, although not central to this study, I find that institutional ownership is negatively and significantly associated with information risk (this is possibly the first study that documents this association empirically), and there is no consistent evidence to show that analysts' coverage is also negatively associated with information risk¹⁷.

The remainder of the paper is structured as follows. Section I develops the hypotheses of this study. Section II describes the data and the construction of G-Index, E-Index, and the information risk proxy (*AQfactor*). Section III discusses the research design and displays the empirical results with respect to the hypotheses. Section IV provides concluding remarks and discussions for future research opportunities.

I. Hypotheses Development

A. *Shareholder Rights and Stock Returns*

GIM argue that if shareholder rights matter for firm performance and this relationship is not immediately incorporated by the stock market then realized returns on the stock would differ systematically from equivalent securities.

Using G-Index as the proxy for shareholder rights, they find that an investment

¹⁷ Actually, I find some evidence that analysts' following is positively associated with information risk, which might indicate that high information risk firms demand more analysts' information production services.

strategy that purchases shares of Democracy firms ($G\text{-Index} \leq 5$, represents strong shareholder rights), and sells shares of Dictatorship firms ($G\text{-Index} \geq 14$), earns abnormal stock returns of 8.5% per year during the 1990s. The G-Index of GIM includes all the 24 governance provisions followed by IRRC. The provisions cover tactics for delaying hostile takeovers, protection for officers or directors, voting rights and state laws limiting takeover bids. See appendix I for a detailed discussion on these provisions. Although GIM name these as corporate governance provisions, they are basically external anti-takeover governance provisions, which restrict shareholder rights and enhance management rights. BCF argue that there is no a priori reason to expect that all the 24 IRRC provisions contribute to the documented correlation between G-Index and stock returns. Bearing this notion, BCF identify six “key” provisions that are likely to play the most substantial roles. Based on these six provisions, they construct an E-Index, and document significant associations between E-Index and abnormal stock returns. Specifically, BCF show that a strategy of buying firms with low E-index ($E\text{-index} = 0$) and selling firms with high E-index ($E\text{-index} = 5, 6$) earns average annual abnormal return of approximately 13.9% during the 1990-1999 period and 10.1% during the extended period from 1990 to 2003. They also show that their results concerning the correlation between E-index and abnormal returns are not driven by a limited sub-period within 1990-2003.

Gompers et al. (2003) is a seminal study that relates a comprehensive

shareholder rights measure to abnormal stock returns. Earlier finance studies normally study the association between individual corporate governance mechanisms and firm's performance (or firm value). For example, Yermack (1996) shows an inverse relation between board size and profitability, asset utilization, and Tobin's Q. Brown and Caylor (2004) show that firms with board sizes of between six and fifteen have higher returns on equity and higher net profit margins than do firms with other board sizes. Richardson (2004) finds that firms with positive free cash flow exhibit less evidence of over-investment when their boards are made up of a higher percentage of independent directors. There are also some studies that utilize some sort of governance indices. For example, Durnev and Kim (2005) find that higher scores on both the CLSA corporate governance index and the S&P disclosure index predict higher Tobin's q for a sample of 859 large firms in 27 countries.

Recently, several studies try to explain the results of Gompers et al. Core et al. (2006) find that investors and analysts are not surprised by the different operating performance between high G-index and low G-index firms, and they conclude that the abnormal returns documented by Gompers et al. are not likely due to investors' mispricing. Masulis et al. (2007) show that acquirers with more anti-takeover provisions (high G-index or E-index) experience lower announcement period abnormal returns. However, the estimated magnitude of the return differential is "too small to explain a substantial part of Gompers et al.'s findings" (about 0.2% per year). Gompers et al. also posit that shareholder

rights might be associated with some unknown risk factors and the omission of these factors from the expected returns models could have led to the observed abnormal returns. Drawing on recent theoretical and empirical literature that finds that information risk is a priced factor¹⁸, I posit that the information risk factor might be one of the omitted factors that are correlated with shareholder rights. I investigate this possibility by testing the following hypotheses:

H1a: An investment strategy that buys shares in the lowest G-Index firms and sells shares in the highest G-index firms earns significant abnormal return with the presence of information risk factor in the expected return model;

H1b: An investment strategy that buys shares in the lowest E-Index firms and sells shares in the highest E-index firms earns significant abnormal return with the presence of information risk factor in the expected return model.

¹⁸ The main task of this study is to examine whether information risk can explain the abnormal returns documented by Gompers et al and whether information risk is related to shareholder rights (first link). I rely on prior research that information risk is priced (e.g. Easley and O'Hara, 2004; Francis et al, 2004,2005) (second link).

However, I did test the second link in my study to some extent. My results show that information risk factor can explain an important portion of the variations of returns to the testing assets in my study (shareholder rights sorted portfolios). This can be taken as addition empirical evidence for the pricing of information risk. The effectiveness of a risk factor in explaining stock market anomalies can be deemed as corroborating evidence for the pricing of the factor. For the pricing of information risk, it seems that most theoretical studies (e.g. Easley and O'Hara. 2004) support the link between information risk and equity expected returns. For the empirical tests for the pricing of information risk, there are generally two approaches.

The first approach uses realized returns as a proxy for expected returns. In realized return tests, there are time-series tests and cross-sectional tests. Francis et al. (2004, JAE 2005) employ time-series tests and find evidence that information risk (accrual quality factor) should be priced by the stock market. However, Core et al. (2007) argue that evidence from the time-series test is not sufficient to support the pricing of information risk. They conduct cross-sectional tests and find no evidence that information risk affects stock returns according to their cross-sectional results. And they conclude that the pricing of information risk is not supported by traditional finance asset pricing tests that employ realized returns. However, the cross-sectional tests also suffer from the serious problems in that they fail to take into account changes in beta over time (cross-sectional tests assume that beta is constant for each asset). The second approach for asset pricing tests employs implied cost of capital (ICC) as a proxy for expected returns. The ICC method infers cost of capital from some valuation models using analysts' earnings forecasts and current market price. Francis et al. (2004, JAE2005) also employ the ICC method and find that information risk (accruals quality) is a determinant of expected returns. Pastor et al. (2007, JF) argue that ICC measure is useful in capturing time-variation in stock returns. They show in simulations as well as empirically that the ICC outperforms realized returns in detecting a risk-return tradeoff. Thus, evidence from ICC method might be more reliable than from the methods using realized returns. In summary, prior literature provides relatively convincing evidence that information risk (accrual quality) should affect expected returns.

B. Shareholder Rights and Information Risk

If information risk can explain the return differences between weak shareholder rights firms and strong shareholder rights firms, it is possible that shareholder rights are (positively) correlated with information risk (or accrual earnings quality). However, a clear-cut theoretical prediction for this relation might not be easily established. On the one hand, reduced capital market scrutiny for weak shareholder rights firms might induce management to engage in opportunistic behavior to maximize their personal wealth by expropriating investors' benefits. This might lead to earnings manipulation and thus reduce accrual earnings quality and increase information risk. On the other hand, strong shareholder rights might encourage management to engage in earnings management activities, in case of unsatisfactory operating outcome to prevent losing their jobs. This is because strong shareholder rights firms (weak management rights) do not shield managers from the consequences of lower-tail outcomes of good projects (Core et al, (2006)), and the managers might seek other resorts (which might be to cook financial reports) to protect themselves from being removed by the investors. Fudenberg and Tirole (1995) provide similar arguments that managers in high shareholder rights (low level of management protection) firms tend to manipulate earnings because of their concern about keeping their position or avoiding interference. Thus, strong shareholder rights might also lead to earnings manipulation and increased

information risk. Given the above arguments, I examine the relation between shareholder rights and information risk empirically by the following null hypotheses:

H2a: Shareholder rights as proxied by G-Index have no relation to information risk as proxied by accrual earnings quality.

H2b: Shareholder rights as proxied by E-Index have no relation to information risk as proxied by accrual earnings quality.

I rephrase that the correlation between shareholder rights and information risk is not a necessary condition for the success of information risk to explain the governance anomaly.

II. Data, Shareholder Rights Indices, Information Risk Factor

Construction

A. G-Index and E-Index

The sample of this study for calculating G-index and E-index¹⁹ includes all the firms for which there is governance provision information from IRRC, excluding firms with dual class common stocks²⁰. The IRRC has published seven listings of corporate governance provisions for individual firms until now: September, 1990; July, 1993; July, 1995; February, 1998, November, 1999;

¹⁹ I thank Andrew Metrick and his co-authors for sharing the G-Index data. I thank Lucian Bebchuk and his co-authors for sharing the E-Index data.

²⁰ GIM argue that firms with dual class common stock have a wide variety of voting and ownership differences, which makes it difficult to compare their governance structures with those of single class firms. The dual class stock firms account for less than 10% of total firms in the IRRC publications.

February 2002; and December 2003.

The number of firms covered by IRRC range from 1400 to 1800 each year. The IRRC's universe includes all S&P 500 firms and a number of other firms considered important by the IRRC. The firms in IRRC listings each year account for more than 90% of the total U.S. stock market capitalization.

Following GIM, I construct the G-index by adding one point for every provision that restricts shareholder rights for every firm (24 provisions totally followed by IRRC). A firm's E-index is equal to the number of entrenchment provisions (6 entrenchment provisions totally identified by BCF) that the firm has. Since IRRC does not publish the governance surveys every year, I assume that firms' governance provisions reported in IRRC survey each year are in place during the period immediately following the publication date until the publication of the subsequent surveys. This procedure allows us to enlarge the sample considerably, which enable us to investigate a long period from September 1990 to December 2005²¹.

Panel A of table I reports the summary statistics for the G-index. The G-index ranges from 2 to 19 and the distribution is stable across years from 1990 to 2004. The mean and median G-index is around 9 across years. The sample increases substantially in 1998 because the IRRC expanded their coverage in 1998 to include some smaller firms and firms with high levels of

²¹ GIM, BCF, Core et al. (2006) and most other studies employ the same filling method. For most of the analysis I only report the results for the time periods that are consistent with GIM and BCF to ease comparisons.

institutional ownership. Within each year, the sample is fairly equally distributed over the G-index portfolios. At the firm-level, the index does not change much from period to period. Following GIM, I define the portfolio with the strongest shareholder rights ($G \leq 5$) as the Democracy portfolio, and define the portfolio with the weakest shareholder rights ($G \geq 14$) as the Dictatorship portfolio.

Panel B of table I reports the summary statistics for the E-index. The firms are concentrated in the portfolios with E-index of 1, 2, 3, and 4. The mean (median) E-index increases slightly from 2.3 (2) in the 1990s to 2.5 (3) in the years after 2000. Following BCF, I define the portfolio with E-index of 0 as the low entrenchment portfolio (Non-Entrenched portfolio), and I group firms with E-index of 5 and 6 as one portfolio and define it as the high entrenchment portfolio (Entrenched portfolio).

[Table I about here]

B. Sample Firm Characteristics

Table II reports the descriptive statistics for the full sample of firms as well as the sub-sample firms used in forming the hedge portfolios. The financial statements data are from Compustat, price and return data are from Center for Research in Securities Prices (CRSP), analyst data are from I/B/E/S, institutional ownership data are from CDA/Spectrum Institutional (13f)

Holdings database. The descriptive statistics are calculated based on firm-year observations for firms identified in Section A. Panel A of table II shows that the firms in my sample are generally large firms, with relatively high analysts following (mean analysts' coverage of about 13) and high institutional ownership (average number of institutional investors of 175 and average percentage of shares held by institutional investors of 55%). About 25% of the sample firms are drawn from S&P 500 index firms. Panel B of table II compares the firm characteristics for the sub-samples. I can see that firms in the Dictatorship portfolio have more analysts' coverage, higher institutional ownership, higher ages²², and higher S&P500 presence than firms in the Democracy portfolio. In addition, the Dictatorship firms tend to have lower occurrence of losses than Democracy firms. Ecker et al. (2006) show that younger firms have higher information risk than older firms²³. They also argue that firms with higher level of analyst following, higher level of institutional ownership, are associated with lower information risk. With respect to the two E-index portfolios, table II shows that firms with high entrenchment index have relatively higher institutional ownership, higher ages, and lower occurrence of losses than firms with low entrenchment index. The differences in analysts following and S&P 500 are not significant. Overall, I observe from table II that strong shareholder rights firms (as defined by GIM and BCF extreme portfolios)

²² Firm's age is calculated as the number of years since listing, where listing year is the first year for which stock returns are available on CRSP. This calculation method is same as Fama and French (2004) and Ecker et al. (2006). Refer to table II for the description of calculation methods of other variables.

²³ Ecker et al. (2006) argue that relatively sparse firm-specific information that is available for younger firms induces greater uncertainty about that firm's business, including uncertainty about its financial reporting quality.

are generally younger and have less institutional ownership than weak shareholder rights firms. The table also suggests that strong shareholder rights firms incur more losses on average during the sample period (from 1990 to 2005). Based on these observations and arguments of prior research, it is very possible that the strong shareholder rights firms in the sample have higher level of information risk than weak shareholder rights firms.

[Table II about here]

C. Construction of the Information Risk Factor

I construct the information risk factor following FLOS, Ecker (2006), and Ecker et al. (2006)²⁴. First, I identify all firms with necessary data to estimate the accrual quality metric (AQ). Specifically, I estimate the following model²⁵ in annual industry cross-sections for each of the 48 Fama-French industries with at least 20 firms in that industry-year:

$$TCA_{j,t} = \phi_{0,j} + \phi_{1,j}CFO_{j,t-1} + \phi_{2,j}CFO_{j,t} + \phi_{3,j}CFO_{j,t+1} + \phi_{4,j}\Delta Rev_{j,t} + \phi_{5,j}PPE_{j,t} + v_{j,t}. \quad (1)$$

where:

$$TCA_{j,t} = \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t};$$

²⁴ Several studies have confirmed the validity of this measure of information risk (eg. Chen et al., 2007; Ecker, 2006; Ecker et al. 2006). In addition, Ecker et al. find that accruals quality empirically dominates proxies for the quantitative notion of information risk, such as bid-ask-spreads and PIN scores. This measure also avoids the potential critique of Miller and Scholes (1982) and Berk (1995) in that the estimation of AQ does involve security price (in contrast to size or book-to-market).

²⁵ See Dechow and Dichev (2002), McNichols (2002), Francis et al. (2005) for detailed development of this abnormal accrual estimation model.

$$CFO_{j,t} = NIBE_{j,t} - TA_{j,t};$$

$$TA_{j,t} = \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t} - DEPN_{j,t};$$

TCA is total current accruals; CA is current assets (CS#4)²⁶; CL is current liabilities (CS#5); Cash is cash (CS#1); STDEBT is short-term debt (CS#34); CFO is cash flow from operations; NIBE is net income before extraordinary items (CS#18); TA is total accruals; Rev is revenues (CS#12); PPE is gross value of property, plant and equipment (CS#7); Δ is a first order difference operator indicating that the value is current year's number minus last year's number; All variables are scaled by average assets (CS#6).

For each firm-year the accrual quality metric $AQ_{j,t} = \sigma(\hat{v}_{j,T})$, $T=t-5, \dots, t-1$ ²⁷. For each month, I assign firms to AQ deciles based on the firm's most recent value of AQ known prior to the month²⁸. I then calculate the monthly AQ factor returns (MAQ: monthly AQ factor returns²⁹) using the equal-weighted return of the four deciles of firms with the highest AQ less the equal-weighted return of the four deciles of firms with the lowest AQ³⁰.

[Table III about here]

²⁶ I use CS#X to indicate Compustat Data Item No. X (DATA).

²⁷ The AQ metric is calculated using residuals from T-5 to T-1 is to account for the fact that the industry regressions contain the leading cash flow from operations.

²⁸ I lag the AQ metric by three months after fiscal year end for each firm-year to ensure that accounting data are publicly available for each month.

²⁹ I use "MAQ" to denote monthly AQ factor returns, and use "DAQ" to denote daily AQ factor returns in this paper.

³⁰ I follow Ecker et al. (2006) that use equally-weighted return and do not orthogonalize with respect to firm size. This procedure is similar to Carhart (1997). Ecker et al. show that their results based on value-weighted, size-orthogonalized AQ factor are similar in all respects to the results based on equally-weighted, non-orthogonalization method.

Table III presents the summary statistics and correlation matrix for the monthly AQfactor returns (MAQ) along with other factors returns. The monthly factor returns for other factors (RMRF, SMB, HML, UMD, and LIQ³¹) are downloaded from the WRDS database. Panel A shows that the mean and t-statistics for the MAQ factor return is larger than those of any other factor returns (3%-4% average monthly return during the period 1990 to 2003, with t-statistics ranging from 5 to 6)³². Panel B reports the correlations between different factor returns. MAQ is significantly correlated with the three Fama-French factors, which reveals that this factor is not fully independent from the Fama-French factors, partly due to the construction methodology. The MAQ factor returns is positively correlated with the market risk premium and the SMB factor returns, and is negatively correlated with the HML factor returns. There seems to be no correlation between MAQ factor returns and the momentum factor (UMD), and between MAQ factor and the Pastor and Stambaugh (2003) liquidity factor (LIQ). The table also suggests a significant positive correlation between UMD and LIQ, which is consistent to the findings of Pastor and Stambaugh.

III. Empirical Findings

³¹ See K. French website for detailed explanations for the construction the Fama-French three factors as well as the UMD factor. See Pastor and Stambaugh (2003) for details on the construction of liquidity factor (LIQ).

³² Note that the MAQ factor returns comprise effects from other factors such as size and book-to-market.

A. Shareholder Rights, Information Risk and Stock Returns (Tests of H1a and H1b)

Following GIM and BCF, I employ the “performance attribution” methodology³³ to examine if the abnormal stock returns to the G-Index hedge portfolio and E-Index hedge portfolio remain after I include an information risk factor (MAQ) in the expected return models. Specifically, I estimate the following time series regression models³⁴:

$$\text{Model 1: } R_t = \alpha_1 + \beta_{11} \times RMRF_t + \beta_{12} \times SMB_t + \beta_{13} HML_t + \varepsilon_{1t};$$

(2)

$$\text{Model 2: } R_t = \alpha_2 + \beta_{21} \times RMRF_t + \beta_{22} \times SMB_t + \beta_{23} HML_t + \beta_{24} UMD_t + \varepsilon_{2t};$$

(3)

$$\text{Model 3: } R_t = \alpha_3 + \beta_{31} \times RMRF_t + \beta_{32} \times SMB_t + \beta_{33} HML_t + \beta_{35} LIQ_t + \varepsilon_{3t};$$

(4)

$$\text{Model 4: } R_t = \alpha_4 + \beta_{41} \times RMRF_t + \beta_{42} \times SMB_t + \beta_{43} HML_t + \beta_{46} MAQ_t + \varepsilon_{4t};$$

(5)

Model 5:

$$R_t = \alpha_5 + \beta_{51} \times RMRF_t + \beta_{52} \times SMB_t + \beta_{53} HML_t + \beta_{54} UMD_t + \beta_{55} LIQ_t + \beta_{56} MAQ_t + \varepsilon_{5t};$$

³³ The hedge portfolio methodology is designed to eliminate possible economy wide contemporary shocks.

³⁴ The performance attribution equations in this section are standard asset pricing factor models in the finance literature. These models are stand-alone regression equations and are not a system of equations. The selection of the right-hand side risk factors are based on prior research (e.g. Fama & French, 1993). To some extent, this paper tests which of the risk factors can explain the return variation of my testing assets (shareholder rights sorted portfolios). The left hand-side variable is testing assets' returns of my sample and right-hand side variables are risk factors' returns. The risk factors' returns are calculated using all the stocks in the stock market (downloaded from Professor Ken French's homepage), whereas the left-hand side variable comprises a much smaller set of stocks that is my sample firms. As such, endogeneity is not a problem in these equations. All of studies in the finance and economics literature that employ this methodology and risk factors do not test for endogeneity (e.g. Fama-French 1997, Gompers et al 2003). Specifically, the left hand Multicollinearity is not a problem here either, since I am looking at the alphas. However, I try to calculate the variance inflation factors for the independent variables and the results suggest no multicollinearity problem.

(

6

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where R_t is the excess return over the risk-free rate to the G-index (or E-index) based hedge portfolio in month t ; $RMRF_t$ is value-weighted market return minus the risk-free rate in month t ; SMB_t , HML_t , UMD_t , and LIQ_t are the month t returns on zero-investment benchmark factor mimicking portfolios designed to capture size, book-to-market, momentum and liquidity effect, respectively³⁵; MAQ_t is the month t return on zero-investment factor mimicking portfolio designed to capture information risk effect. The estimated intercept term, α , is the estimated abnormal return earned by the hedging portfolio.

A.1 G-Index Hedge Returns (H1a)

Table IV reports the results of estimating model 1 to model 5 for the period from September 1990 to December 1999, which is the original sample period in GIM's paper. To ease comparison, I also reproduce the GIM results in Table IV. The dependent variable in table IV is the monthly return differential between

³⁵ I downloaded the monthly SMB, HML, UMD, and LIQ factor returns from the WRDS online database (which are collected from Professor K. French's website by WRDS). GIM/BCF calculate the UMD factor returns following Carhart (1997). Their results show that the factor-loading on momentum is insignificant, and their alpha estimation and the coefficient estimates for RMRF, SMB, and HML are similar to my results from Fama-French three-factor model estimation. Therefore, I use the Fama-French three-factor model as my baseline model to compare with GIM/BCF results. The differences between the UMD factor returns calculated by GIM/BCF and Fama-French are due to different calculation methodology. Refer to K. French website for the details of factors construction. I use UMD factor returns from WRDS throughout the paper.

the Democracy portfolio ($G \leq 5$) and Dictatorship portfolio ($G \geq 14$). The results from estimating model 1 show that the hedge portfolio earns a significant 73 bp per month, which is similar to the result of GIM (71 bp). The difference here is caused by the momentum factor in GIM estimation³⁶. The results from estimating model 2 show that the estimated abnormal return earned by GIM hedge portfolio is 54 bp, significant at the 0.01 level. The difference between the alpha estimation in model 2 and that of GIM indicates that the UMD factor from WRDS (which is provided by Ken French, constructed following Jegadeesh and Titman, (1993)) might be more effective in capturing the return variations than that used in GIM and BCF (which are calculated by the authors themselves following Carhart (1997)). In model 4, I add the liquidity factor (LIQ) to the Fama-French three-factor model, and obtain an estimation of alpha of 0.70, which is also significant and similar to the results of GIM. Therefore, I conclude that both the UMD and LIQ factor cannot explain the return difference between the Dictatorship portfolio and Democracy portfolio documented by GIM. In model 4, I add the information risk factor (MAQ) to the Fama-French three-factor model, and the estimated abnormal return reduced dramatically from 73 bp per month to 39 bp per month. The 39 bps monthly return is not significant at the 0.1 level. In addition, the abnormal return estimated from model 5, which adds UMD, LIQ and MAQ factors to the

³⁶ GIM's momentum factor loadings are not significantly different from zero; therefore, throughout the paper I assume that they use the Fama-French three-factor model. Since my loadings for the momentum factor returns from WRDS are statistically significant for most of the regressions, I assume my UMD factor as an additional factor to the original GIM study

Fama-French three-factor model, decreases to 15 bp. Untabulated results indicate that the reduction of hedge returns comes from both portfolios. Specifically, after controlling for information risk, the abnormal returns for both Dictatorship portfolio and Democracy portfolio are not different from zero at the conventional significance level. In summary, the results in this section provide evidence that the documented abnormal return to the shareholder rights (G-Index) hedge portfolios are possibly due to the omission of information risk factor. Moreover, the R^2 increases from 24.68% in model 1 to 29.30% (26.18%) in model 5 (model 4), which suggests that the information risk factor increases the explanatory power of the expected return model significantly.

[Table IV about here]

A.2 E-Index Hedge Returns (H1b)

In this section, I examine whether the presence of an information risk factor in the expected return model also impacts estimated abnormal returns from the E-index hedging portfolio. As in section A.1, I employ the Fama-French three-factor expected return model to estimate the abnormal return for the strategy of buying firms with the lowest entrenchment index ($E = 0$) and selling firms with the highest entrenchment index ($E = 5, 6$). The first row of table V displays the abnormal returns results from September 1990 to December 1999 estimated from the three-factor model (I reproduce the estimated alpha of BCF for the same period in table V under the heading of “BCF Alpha”). The E-index

based strategy earns a striking 120 bp abnormal return during the 1990s (This is similar to BCF's results of 116 bps), which is much higher than that of the G-index hedging strategy documented by GIM. When I add the momentum factor 'UMD' to the three-factor model, the estimated abnormal return declines to 87 bp, which is still significant at the 0.01 level. The inclusion of liquidity factor (LIQ) into the Fama-French factor model results in an abnormal return estimation of 113 bp, which is also significant at the 0.01 level. However, when I add the information risk factor "MAQ" to the three-factor expected return model, the estimated return drops dramatically to 52 bp, which is not statistically significant at the 0.1 level. Finally, when I include UMD, LIQ and MAQ in the expected returns model, the estimated abnormal return earned by the E-index hedging strategy reduced to 11 bp, which is not significantly different from zero. The above results again confirm the importance of controlling for information risk in estimating the association between shareholding rights and stock returns.

[Table V about here]

Table VI reports further evidence for the extended period from September 1990 to December 2003 (the abnormal return estimated by BCF for the same period is reproduced in the table under the title of "BCF Alpha"). It shows that the abnormal return of the E-index hedging strategy estimated by Fama-French

three-factor model is 84 bp (significant at the 0.01 level, which is same as BCF result). After I add the momentum factor to the three-factor model, the estimated abnormal return reduces to 81 bp (which is still significant at the 0.01 level). The estimated abnormal return reduces to 82 bp in model 3, when I add the LIQ factor to the FF model. Finally, when I add the information risk factor to the three-factor model, the estimated abnormal return drops to 26 bp (which is insignificantly different from zero); and the abnormal return drops to 11 bp, when UMD, LIQ and MAQ factors are added to the FF expected return model. The adjusted R^2 increases from 49.14% in model 1 to 54.71% in model 5. This again confirms that the abnormal return earned by the E-index hedge strategy documented by BCF is largely due to the non-presence of information risk factor in the expected return models (or performance attribution regressions).

[Table VI about here]

A.3 Summary

To summarize, when I use the expected returns models without information risk factor, the abnormal returns earned by the G-index and E-index strategy are both significant at the 0.01 level. The E-index strategy can earn much higher abnormal return than the G-index strategy, which might confirm BCF claim that the E-Index involves much less “noise” than the G-Index. However, when I employ an expected return model that includes information risk factor to

conduct the “performance attribution” procedure, both hedging strategies earn non-significant abnormal returns. Figure 1 shows the summarized results for the abnormal return estimation for both strategies, using different estimation methods. It shows that after controlling for information risk (along with the other two factors), both strategies earn about the same level of abnormal returns (G-index: 15 bp; E-index: 11 bp), which are not significantly different from zero.

[Figure 1 about here]

A.4 Shareholder Rights and Private Information Flow

In this study, I use an accounting based factor to proxy for information risk. This factor is theoretically motivated by the work of Easley and O’Hara (2004)³⁷. According to the EO model, a firm’s expected return can be affected by the composition and quality of information. Specifically, they argue that investors demand higher return to hold stocks with greater private information (correspondingly less public information). They also show that the higher the quality of information, the lower the expected return for a firm. EO then suggest that firms can influence their cost of capital by choosing features like accounting treatments, analyst coverage, and market microstructure. Therefore, the AQ factor can be seen as an empirical factor that is constructed to capture the information risk component that reflects the accuracy of public information.

³⁷ In contrast, the Fama-French factors can be deemed to be empirically motivated factors. The “size” and “value” factors are constructed to proxy for some unknown risk to explain the size and value anomaly, which have been documented in the earlier finance literature.

In a related work by Easley et al. (2002), they construct a measure of the probability of information-based trading (PIN), using a market microstructure model. They show that this measure can capture the information risk that is resulted from private information flow, and it is related to expected returns empirically. In a recent study by Ferreira and Laux (FL, 2006), they argue that openness to the market for corporate control leads to more informative stock prices by encouraging collection of and trading on private information³⁸. In the language of the EO model, their study indicates that stronger shareholder rights (more openness to the market) lead to more private information and promote more trading on private information, which leads to higher information risk. In their empirical analysis, FL do find a positive relation between shareholder rights and private information flow (proxied by PIN)³⁹. However, they do not further investigate whether this private information flow differential can explain the governance anomaly observed in GIM. In this section, I investigate whether adding a PIN⁴⁰ factor (PINF) to the asset pricing regressions can drive the alpha of the hedging portfolios to zero.

Table VII displays the results. The table shows that the abnormal returns to both the G-index and E-index hedging strategies are still significantly different

³⁸ They also show that shareholder rights are related to idiosyncratic risk. And in the note 2 of study, they argue that “several papers consider a relation between idiosyncratic volatility and expected returns (e.g. Goyal and Santa-Clara (2003))”. They further write “added to our findings, these suggest the possibility of a governance to volatility to expected returns link.” However, in a recent study by Bali et al. (2005), they show that the findings of Goyal and Santa-Clara are mainly due to improper research design and the small firms listed on NASDAQ. These findings by Bali et al. and the fact that the sample firms in GIM are mainly large firms listed on NYSE/AMEX, I believe the governance anomaly cannot be the result of differential idiosyncratic risk. In addition, the empirical results from TABLE VII further confirm my conclusions.

³⁹ Table V of Ferreira and Laux (2006).

⁴⁰ I thank Soeren Hvidkjaer and his co-authors for making the PIN data available. For detailed explanation of the construction of PIN and FPIN, please refer to Easley et al. (1996, 2002, 2005).

from zero, with the presence of PINF in the return attribution models. Therefore, I conclude that the private information risk factor⁴¹ cannot explain a significant portion of the abnormal returns to the G-index or E-index hedging strategy (the “governance anomaly”).

[TABLE VII about here]

Observing the success of the (public) information risk factor in explaining the governance anomaly in Section A, I further investigate in the next section whether there is a relationship between information risk and shareholder rights, after controlling for known determinants of the (public) information risk.

B. Shareholder Rights and Information Risk (Tests of H2a and H2b)

To examine the relationship between shareholder rights and information risk, I regress an information risk metric on G-Index (E-Index) and a set of control variables. Following prior research, I measure the level of information risk by “e-loadings” (Ecker et al. (2006), Chen et al. (2007)). To calculate e-loadings, I first construct daily AQfactor returns (DAQ) for the sample period following the methodology discussed in Section II.C.⁴² To obtain the e-loading for a firm-year observation, I regress the firm’s daily excess returns during the year⁴³

⁴¹ I call the PIN as a proxy for private information risk, because it intends to capture the effect from private information trading. The proxy of this study can then be named as “public information risk”, which intends to capture the firms’ exposure to the quality of accounting information.

⁴² I thank Frank Ecker and his co-authors for sharing the daily AQfactor returns.

⁴³ I require at least 50 trading days returns available for each year.

on the Carhart (1997) four factors' returns⁴⁴ and the DAQ. The e-loading (our measure for information risk) is the yearly regression coefficient on DAQ.

Specifically, I run the following firm- and year-specific regressions:

$$R_{j,t} - R_{F,t} = \alpha_{j,T} + \beta_{j,T} RMRF_t + s_{j,T} SMB_t + h_{j,t} HML_t + u_{j,t} UMD_t + e_{j,T} DAQ_t + \varepsilon_{jt}. \quad (7)$$

where t is the index for the number of trading days in year T ; $R_{j,t}$ is firm j 's raw return on day t , $R_{F,t}$ is the risk free rate on day t , $RMRF_t$ is the daily market risk premium on day t , SMB_t is the daily SMB factor return on day t , HML_t is the daily HML factor return on day t , and UMD_t is the daily momentum factor return on day t . Firms' daily returns are from CRSP, and the $RMRF$, SMB , HML and UMD factor returns are downloaded from WRDS online database (all the factors' returns are collected from Kenneth R. French's website by WRDS). The estimated coefficient $e_{j,T}$ is the measure of information risk for firm j in year T .

I use the following models to estimate the effect of shareholder rights on information risk:

$$e_{j,T} = \beta_0 + \beta_1 G_{j,T} + \sum_{i=2}^n \beta_i X_{i,j,T} + \varepsilon. \quad (8)$$

where $e_{j,T}$ is firm j 's information risk in year T , (I use deciles rankings of raw e-loadings in the regression analysis); $G_{j,T}$ is the shareholder rights variable, which denotes G-Index, E-Index, Dict (an indicator variable that equals one if the firm is in the Dictatorship portfolio, zero if the firm is in the Democracy

⁴⁴ The empirical results are the similar when I employ the CAPM as the base model or a five-factor model with an additional liquidity factor as the base model.

portfolio), and Entrench (an indicator variable that equals one if the firm is in the Entrenched portfolio and zero if the firm is in the Non-entrenched portfolio), respectively, in separate regression models; $X_{i,j,T}$ is a set of control variables for firm j in year T .

I consider the following control variables that have been suggested by prior research to be correlated with information risk:

1. Institutional ownership (IO-Percent) and analysts following (Analyst): although there is no prior research that explicitly investigates the relation between information risk and institutional ownership (analysts following), prior research does suggest that high institutional ownership/high analysts coverage indicates good information environment for a firm and thus might lead to low information risk (Ecker et al., (2006)). Therefore, I predict that higher level of institutional ownership and analysts following are associated with lower level of information risk. IO-percent is the average percentage of institutional ownership during a year for a firm. Analyst is the number of analysts that report an EPS forecast for a firm during a year.
2. Firm age (age): Ecker et al. (2006) posit and find empirical evidence that information risk (e-loading) is negatively associated with firm age. They view firm age as an inverse measure of investor perceptions of the amount and stability of firm-specific information. They suggest that the relatively sparse firm-specific information that is available for younger firms induces greater uncertainty about that firm's business, which lead to higher information risk.

Following Ecker et al., I measure firm age as the number of years since listing, where listing year is the first year for which stock returns are available on CRSP. I use the logarithm of age in the regression analysis (log (age)).

3. The “innate determinants” of information risk: FLOS suggest that the following firm characteristics are innate determinants of information risk: standard deviation of operating cash flows (SDCFO), standard deviation of sales revenues (SDSALES), the length of operating cycle (LgOpCycle), the incidence of negative earnings realizations (Loss), and firm size. FLOS and Ecker et al. show that all these measures are positively correlated with information risk.

4. Finally, I include ROA, leverage, and size⁴⁵ as additional control variables. ROA is measured as operating income divided by year end total assets, leverage is measured as total debts divided by total assets; and size is measured as the logarithm of firm’s market value.

[Table VIII about here]

The descriptive statistics for the regression variables are presented in table III. Table VIII reports the correlation matrix. The table shows that e-loading is negatively and significantly correlated with both G-Index (-0.038) and E-index (-0.046), which provides preliminary evidence that strong shareholder rights are

⁴⁵ Size is also an “innate factor” that affects information risk; I present it separately in the notion that it may also capture other effects.

associated with high information risk. The e-loadings are negatively and significantly correlated with institutional ownership (-0.045), which suggests that high institutional ownership might reduce information risk⁴⁶. Table VIII does not show that e-loadings are also negatively correlated with analysts following. I posit that this finding might be due to the complicated association between information risk and analysts' coverage. On the one hand, higher analysts' coverage might lead to low information risk, due to the information production effect; on the other hand, it is also possible that firms with high information risk demands more analysts' services. The e-loading is negatively and significantly correlated with firm age, which is expected. The e-loadings are positively and significantly correlated with standard deviation of cash flows (0.033), the standard deviation of sales (0.019), the length of operating cycle (0.093), and the incidence of loss (0.140), which is consistent with my predictions and prior research. Table VIII also shows that e-loadings are negatively related to ROA (-0.133) and firm's size (-0.020).

Table VIII also suggests a positive correlation between G-Index (E-Index) and institutional ownership. Table VIII does not reveal any negative correlation between G-Index (E-Index) and ROA, which is inconsistent with the claim that strong shareholder rights lead to better operating performance⁴⁷. Institutional ownership and analysts following are positively correlated (0.289), which is

⁴⁶ However, it is also possible that institutional investors are attracted to firms with lower information risk. Thus, I do not claim any causal relation here.

⁴⁷ Core et al. (2006) show a negative relation between G-Index and industry-adjusted ROA (which is not significant, see Core et al.-table III). There are at least two possible reasons for the different findings: first, the ROA in my study is not industry-adjusted number; second, the sample period is different: my sample period is from 1990 to 2003, while Core et al.'s sample period is from 1990 to 1999).

consistent with prior research. ROA and loss are highly and negatively correlated (-0.507), which is not unexpected due to the calculation method of ROA.

Table IX and table X display the results from multivariate analysis based on the panel data set. Table IX shows the regression results from fixed effect models and table X shows the results from random effect models. The models' coefficients are estimated by weighted least squares, and the standard errors are calculated by panel corrected standard error (PCSE, Beck and Katz, (1995)) method⁴⁸. Since the results are similar to fixed effect regressions and random effect regressions, I base my discussion on the fixed effect regression results (Table IX).

[Table IX and Table X about here]

Table IX presents the regression coefficients and t-statistics for various models. The results from the full sample indicate that both the G-Index (model 1-3) and E-Index (model 7-9) are negatively and significantly associated with e-loadings and the results are robust to the inclusion of various control variables. This finding is consistent with the argument that management in the firms with high shareholder rights might resort to earnings management to conceal unsatisfactory operating outcomes. In contrast, weak shareholder rights firms

⁴⁸ Due to the possible high autocorrelation of the dependent variables and some of the independent variables, I use PCSE to deal with it. The method is also robust to heteroscedasticity. I thank Beck and Katz for making the computer programs for calculating the PCSE available.

might give managers enough job security so that they do not need to rely on cooked financial reports to protect themselves from removal. I posit that this is only one possible explanation for my findings. I also find significant negative association between e-loadings and institutional ownership, which suggests that either institutional investor's monitoring role mitigates earnings management activities or institutional investors act as suppliers of additional information, and thus leads to lower information risk, or the institutional investors tend to invest in firms with lower information risk. This is probably the first study that explicitly investigates the relation between information risk and institutional ownership empirically. However, it is difficult to establish a causal relationship here⁴⁹. Consistent with the univariate analysis in table VIII, I do not find significant correlation between information risk and analysts' coverage.⁵⁰ Results for other control variables are generally as expected.

I next turn my focus to the reduced sample of firms that are used to form the hedging portfolios. Models 4-6 of table IX (and table X) report the results for the regressions of e-loadings on Dict and control variables. The results show that the information risk of the Dictatorship portfolio is significantly lower than that of the democracy portfolio. However, this association becomes insignificant after I control for other variables that affect information risk. Therefore, the result indicate that the return difference between the two

⁴⁹ I do try the Granger causality test, and I find some evidence supporting the hypothesis that E-index Granger causes E-loadings. However, the Granger test's result on G-Index is inconclusive.

⁵⁰ Since institutional ownership and analysts' following are highly correlated, I also run the regressions with one of these two variables. However, the results are similar to the reported results.

portfolios is probably due to difference in information risk, however, this difference of information risk is probably not caused solely by different level of shareholder rights (instead, it is mainly caused by other firm characteristics, such as institutional ownership). The results for the Entrench and Non-entrench portfolios' regressions tell the same story (models 10-12). However, the insignificant result for the Dict and Entrench dummies in the full models might be due to the high correlation between Dict (Entrench) and IO-percent, and the low power of the tests (the sample size is relatively small for the reduced sample).

Table XI reports the robust regression results for the full model and full sample. The coefficients are estimated using OLS (except for the Fama-MacBeth annual regressions and the bootstrapping estimation). Following Petersen's (2006) recommendations, I calculate the standard errors using most of the preferred methodologies in the current finance literature and report the t-statistics based on these standard errors. Specifically, I estimate the standard errors by the following procedures: Fama-Macbeth (1973) annual regression weighted average standard errors, standard errors clustered by firm (Liang and Zeger, (1986); Roger (1993)), standard errors based on bootstrapping techniques, Newey-West (1987) time series adjusted standard errors with lag length of 13 years (because I only have 14 time periods), and standard errors clustered by firms with year dummy variables (Petersen, (2006)). The results indicate that the findings from table IX and table X are generally

robust to all the standard error calculation methods discussed in Petersen (2006).

One point deserved to be mentioned here is that the association between e-loadings and G-Index is only marginally significant under some standard error calculation methods (the t-statistics range from 1.88 to 2.03 based on the various robust standard error calculations), which indicates that the correlation between G-Index and information risk is not as robust (strong) as the correlation between E-Index and information risk. The results of table XI also reveal a rather consistent positive (although only marginally significant) correlation between information risk and analysts' coverage, which indicates that firms with higher information risk might demand more analysts' service.

[Table XI about here]

In summary, I provide convincing evidence in this section that (public) information risk is positively and significantly correlated with shareholder rights (especially when I use E-Index as the inverse measure for shareholder rights). In addition, I show that institutional ownership is negatively associated with information risk, and there is no evidence that analysts' coverage help reduce information risk⁵¹.

⁵¹ The result of my paper is a bit counterintuitive. However, my study is somewhat consistent with U.S. studies that study shareholder rights mechanisms and earnings management. For example, Jiraporn (2005) study the association between some anti-takeover provisions and earnings management. He find that poison pills and staggered boards are related to less earnings management (translated into "higher shareholder rights" leads to more earnings management, which might leads to higher information risk). The study shows no relation between Blank Check Preferred Stock and the extent of earnings management. Most importantly, my findings are consistent with the theoretical predictions of Fudenberg and Tirole (1995). They argue that managers in high shareholder rights (low level of management protection) firms tend to manipulate earnings because of their concern about keeping their position or avoiding interference. Thus, strong shareholder rights might also lead to earnings manipulation and increased information risk.

C. Controlling for Internal Governance Variables

Prior accounting literature has documented some evidence that strong internal governance might mitigate earnings management. It is possible that firms with weak shareholder rights (weak external governance in the sense of corporate market control) employ strong internal governance as substitute provisions. Therefore, the results in my study suffer from the alternative explanation that lower information risk is due to stronger internal governance mechanism. To rule out this possibility, I collect additional internal governance data as controls. Specifically, the additional control variables include board size, percentage of external directors on the board, CEO duality, percentage of shares held by top management, and percentage of directors who serve more than 4 boards (busy directors). In addition, I include an auditor dummy to control the effect of audit quality. The results are reported in Appendix II. The results reveal that the shareholder rights variables continue to be very significant even after the controlling of the above internal governance mechanism. Therefore, I conclude that the association between shareholder rights and information risk is not due to the omission of internal governance provisions in the regression analysis.

IV. Conclusions and Future Research

This study reexamines the intriguing findings of prior research that shareholder rights are related to abnormal stock returns. Benefiting from the

recent theoretical and empirical finance and accounting literature on the relation between information risk and expected returns, I posit that the “abnormal” returns to the shareholder rights based hedging strategies documented by prior studies are partly due to the omission of information risk factor in their abnormal return estimations. Employing the same procedure of abnormal return estimation as prior research and adding an additional information risk factor to the traditional factor-based asset pricing models, I find that the shareholder rights based hedging portfolios (G-index by GIM, and E-index by BCF) earn insignificant abnormal returns. Therefore, I provide a relatively satisfactory explanation for the puzzling findings that strong shareholder right firms earn higher abnormal returns than weak shareholder rights firm. In addition, I find that the differences of information risk between strong shareholder rights firms and weak shareholder rights firms are caused by differences in the firms’ characteristics such as: firm’s age, percentage of institutional ownership, and shareholder rights. Finally, I provide evidence that the level of information risk is *positively* and significantly associated with shareholder rights (negative relation between e-loadings and G-Index (E-Index)). I show that this association is robust to various important control variables and different robust standard error computation methodologies.

This research has implications for the asset-pricing literature. I provide further evidence for the important role of information risk as a factor in determining expected stock returns. This paper highlights the importance of

controlling for information risk in studies that try to get implications from stocks' long-term abnormal returns. Moreover, this study documents a "dark side" of strong shareholder rights. I show that strong shareholder rights might lead to management's earnings manipulation activities and thus higher information risk. However, I view my findings as preliminary and recommend more future research on the possible (good or bad) consequences of enhancing shareholder rights. Future research that reexamines the association between shareholder rights and firm performance with a proper control for earnings quality is warranted (since most of prior studies uses accounting based performance measures, which include earnings as an element). Finally, future studies that investigate the factors that affect information risk will also be fruitful.

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Appendix I. List of Provisions in the G-index (Reproduced from Gompers et al. (QJE, 2003) and Investors Responsibility Research Center's Corporate Governance Data Manual)

GIM's G-index is constructed using 24 anti-takeover provisions. They divide them into five groups: tactics for delaying hostile bidders; voting rights; director/officer protection; other takeover defenses; and state laws.

Antigreenmail. Greenmail refers to a transaction between a large shareholder and a company in which the shareholder agrees to sell his stock back to the company, usually at a premium, in exchange for the promise not to seek control of the company for a specified period of time. Antigreenmail provisions prevent such arrangements unless the same repurchase offer is made to all shareholders or approved by a shareholder vote. Such provisions are thought to discourage accumulation of large blocks of stock because one source of exit for the stake is closed, but the net effect on shareholder wealth is unclear.

Blank Check Preferred Stock is stock over which the board of directors has broad authority to determine voting, dividend, conversion, and other rights. While it can be used to enable a company to meet changing financial needs, its most important use is to implement poison pills or to prevent takeover by placing this stock with friendly investors. Because of this role, blank check preferred stock is a crucial part of a "delay" strategy. Companies that have this type of preferred stock but require shareholder approval before it can be used as a takeover defense are not coded as having this provision in our data.

Business Combination Laws impose a moratorium on certain kinds of transactions (e.g., asset sales, mergers) between a large shareholder and the firm, unless the transaction is approved by the Board of Directors. Depending on the State, this moratorium ranges between two and five years after the shareholder's stake passes a prespecified (minority) threshold. (These laws were in place in 25 states in 1990 and two more by 1998. It is the only state takeover law in Delaware, the state of incorporation for about half of our sample.)

Bylaw and Charter amendment limitations limit shareholders' ability to amend the governing documents of the corporation. This might take the form of a **supermajority vote** requirement for **charter or bylaw amendments**, total elimination of the ability of shareholders to amend the bylaws, or the ability of directors (beyond the provisions of state law) to amend the bylaws without shareholder approval.

Control-share Cash-out laws enable shareholders to sell their stakes to a "controlling" shareholder at a price based on the highest price of recently acquired shares. This works something like fair-price provisions (see below) extended to non-takeover situations. (These laws were in place in three states by 1990 with no additions during the decade).

Classified board or Staggered board: A board of directors, divided, for the purpose of election, into separate classes. In most instances there are three classes, with the directors in each class serving overlapping three-year terms. Staggering directors' terms makes it more difficult for dissidents to seize

control of a target company immediately, even if they control a majority of the company's stock, since only one-third of the directors stand for election in any one year. With a classified board, also known as a staggered board, the shareholders' ability to affect the makeup of the board is limited because it would take at least two elections to replace a majority of the board.

Compensation Plans with changes-in-control provisions allow participants in incentive bonus plans to cash out options or accelerate the payout of bonuses if there should be a change in control. The details may be a written part of the compensation agreement, or discretion may be given to the compensation committee. **Director indemnification Contracts** are contracts between the company and particular officers and directors indemnifying them from certain legal expenses and judgments resulting from lawsuits pertaining to their conduct. Some firms have both "Indemnification" in their bylaws or charter and these additional indemnification "Contracts."

Cumulative Voting allows a shareholder to allocate his total votes in any manner desired, where the total number of votes is the product of the number of shares owned and the number of directors to be elected. By allowing them to concentrate their votes, this practice helps minority shareholders to elect directors. Cumulative Voting and Secret Ballot (see below) are the only two provisions whose presence is coded as an increase in shareholder rights, with an additional point to the Governance Index if the provision is absent.

Directors' Duties provisions allow directors to consider constituencies other

than shareholders when considering a merger. These constituencies may include, for example, employees, host communities, or suppliers. This provision provides boards of directors with a legal basis for rejecting a takeover that would have been beneficial to shareholders. (Thirty-one states have Directors' Duties laws allowing similar expansions of constituencies, but in only two of these states (Indiana and Pennsylvania) are the laws explicit that the claims of shareholders should not be held above those of other stakeholders. We treat firms in these two states as though they had an expanded directors' duty provision unless the firm has explicitly opted out of coverage under the law.)

Fair-Price provisions limit the range of prices a bidder can pay in two-tier offers. They typically require a bidder to pay to all shareholders the highest price paid to any during a specified period of time before the commencement of a tender offer, and do not apply if the deal is approved by the board of directors or a supermajority of the target's shareholders. The goal of this provision is to prevent pressure on the target's shareholders to tender their shares in the front end of a two-tiered tender offer, and they have the result of making such an acquisition more expensive. (Also, 25 states had Fair-Price laws in place in 1990, and two more states passed such laws in 1991. The laws work similarly to the firm-level provisions.)

Golden Parachutes are severance agreements that provide cash and noncash compensation to senior executives upon an event such as termination, demotion, or resignation following a change in control. They do not require shareholder

approval. While such payments would appear to deter takeovers by increasing their costs, one could argue that these parachutes also ease the passage of mergers through contractual compensation to the managers of the target company. While the net impact on managerial entrenchment and shareholder wealth is ambiguous, the more important effect is the clear decrease in shareholder rights. In this case, the “right” is the ability of a controlling shareholder to fire management without incurring an additional cost. Golden Parachutes are highly correlated with all the other takeover defenses. Out of 21 pair-wise correlations with the other firm-level provisions, 15 are positive, 10 of these positive correlations are significant, and only one of the negative correlations is significant. Thus, we treat Golden Parachutes as a restriction of shareholder rights.

Director Indemnification uses the bylaws, charter, or both to indemnify officers and directors from certain legal expenses and judgments resulting from lawsuits pertaining to their conduct. Some firms have both this “Indemnification” in their bylaws or charter and additional indemnification “Contracts.” The cost of such protection can be used as a market measure of the quality of corporate governance.

Limitations on director Liability are charter amendments that limit directors’ personal liability to the extent allowed by state law. They often eliminate personal liability for breaches of the duty of care, but not for breaches of the duty of loyalty or for acts of intentional misconduct or knowing violation of the

law.

Pension Parachutes prevent an acquirer from using surplus cash in the pension fund of the target to finance an acquisition. Surplus funds are required to remain the property of the pension fund and to be used for plan participants' benefits.

Poison Pills provide their holders with special rights in the case of a triggering event such as a hostile takeover bid. If a deal is approved by the board of directors, the poison pill can be revoked, but if the deal is not approved and the bidder proceeds, the pill is triggered. Typical poison pills give the holders of the target's stock other than the bidder the right to purchase stock in the target or the bidder's company at a steep discount, making the target unattractive or diluting the acquirer's voting power. Poison pills are a crucial component of the "delay" strategy at the core of modern defensive tactics. Nevertheless, we do not include poison pills in the Delay group of provisions, but include it in the Other group because the pill itself can be passed on less than one-day's notice, so it need not be in place for the other Delay provisions to be effective. The other provisions in this group require a shareholder vote, so they cannot be passed on short notice.

Confidential voting: Under a confidential voting policy, management does not know how shareholders vote on their proxy cards, or view ballots or voting tabulations that identify shareholders' votes. Independent tabulators and inspectors of elections are responsible for examining individual ballots, while management and shareholders are simply given vote totals. Confidential voting

policies often include exceptions for certain types of contested elections.

Executive Severance agreements assure high-level executives of their positions or some compensation and are not contingent upon a change in control (unlike Golden or Silver Parachutes).

Silver Parachutes are similar to Golden Parachutes in that they provide severance payments upon a change in corporate control, but differ in that a large number of a firm's employees are eligible for these benefits.

Special Meeting limitations either increase the level of shareholder support required to call a special meeting beyond that specified by state law or eliminate the ability to call one

entirely. Such provisions add extra time to proxy fights, since bidders must wait until the regularly scheduled annual meeting to replace board members or dismantle takeover defenses. This delay is especially potent when combined with limitations on actions by written consent (see below).

Supermajority requirements for approval of mergers are charter provisions that establish voting requirements for mergers or other business combinations that are higher than the threshold requirements of state law. They are typically 66.7, 75, or 85 percent, and often exceed attendance at the annual meeting. In practice, these provisions are similar to Control-Share Acquisition laws. These laws require a majority of disinterested shareholders to vote on whether a newly qualifying large shareholder has voting rights. (They were in place in 25 states

by September 1990 and one additional state in 1991.)

Unequal Voting rights limit the voting rights of some shareholders and expand those of others. Under time-phased voting, shareholders who have held the stock for a given period of time are given more votes per share than recent purchasers. Another variety is the substantial-shareholder provision, which limits the voting power of shareholders who have exceeded a certain threshold of ownership.

Written consent: A company or another party asking shareholders to take action without a meeting.

Appendix II. Regressions with Additional Corporate Governance Mechanisms

Variable	coef.	t-stat	VIF	coef.	t-stat	VIF
G-Index	-0.012***	-3.63	1.27			
E-index				-0.026***	-3.80	1.21
IO-percent	-0.050	-0.90	1.26	-0.037	-0.70	1.27
analysts	0.082***	5.59	2.55	0.082***	5.58	2.55
auditor	-0.057	-1.06	1.03	-0.056	-1.06	1.03
duality	0.012	0.70	1.09	0.011	0.62	1.08
insider	-0.171	-3.58***	1.19	-0.175***	-3.65	1.19
boardsize	-0.006	-1.50	1.76	-0.006	-1.44	1.76
poutboard	-0.011	-0.20	1.20	-0.009	-0.18	1.20
pbusyboard	0.074	0.86	1.16	0.072	0.83	1.16
log(age)	-0.040	-3.60	1.41	-0.045	-4.19	1.36
sdcfo	0.387	1.40	1.15	0.363	1.31	1.16
sdsale	0.299	1.05	1.17	0.368	1.29	1.17
lgopcycle	0.030	2.52	1.10	0.029	2.42	1.10
loss	0.078	3.27	1.60	0.077	3.23	1.60
ROA	-0.219	-2.42	1.71	-0.219	-2.41	1.71
leverage	-0.053	-1.14	1.19	-0.056	-1.22	1.18
log(mv)	-0.009	-0.99	3.50	-0.012	-1.30	3.59
N	1438			1438		
Adj R ²	12.02%			12.10%		

Variable definitions:

The internal governance data are collected from board analyst.

Auditor: an indicator variable that takes the value of 1 if the firm's auditor is BIG5.

Duality: an indicator variable that takes the value of 1 if the CEO is the board chair.

Insider: percentage of shares held by top management.

Boardsize: number of directors on the firm's board.

Poutboard: percentage of outside directors on the firm's board.

Pbusyboard: percentage of directors who sit on more than 4 boards.

Other variables are same to those in table 8,9,10.

VIF is the variance inflation factor.

The observations are from 2002 and 2003, where I can have all the above internal governance

Data available. Board analyst provides data from 2001 onward. However, the 2001 dataset

missed significant data fields.

TABLE I

Panel A. Summary Statistics for the G-index

G-index	1990	1993	1995	1998	2000	2002	2004
Mean	9.0	9.3	9.4	8.9	9.2	9.2	9.2
Std	2.9	2.8	2.8	2.8	2.7	2.6	2.5
Min	2	2	2	2	2	2	2
Median	9	9	9	9	9	9	9
Max	17	17	17	18	19	18	18
# of firms							
G<=5	156	139	120	216	145	119	124
G=6	119	88	108	169	149	128	129
G=7	157	140	127	181	187	185	182
G=8	163	139	152	203	198	242	281
G=9	160	183	183	195	239	236	255
G=10	176	170	178	220	229	244	256
G=11	150	168	166	193	190	204	211
G=12	105	123	142	135	144	121	145
G=13	85	100	110	110	102	95	91
G>=14	85	93	87	85	87	94	85
Sum	1356	1343	1373	1707	1670	1668	1759

This table reproduces and extends GIM table II to provide summary statistics on the distribution of G-index from 1990 to 2004. Refer Gompers et al (2003) for the definition of the G-index and detailed information on each governance provision. Following GIM, we divide the sample into ten portfolios based on G-index and define the Democracy portfolio as all firms where $G \leq 5$, and the Dictatorship portfolio as all firms where $G \geq 14$.

TABLE I

Panel B. Summary Statistics for the E-index

E-index	1990	1993	1995	1998	2000	2002	2004
Mean	2.2	2.3	2.3	2.3	2.5	2.5	2.5
Std	1.4	1.4	1.3	1.3	1.3	1.3	1.3
Min	0	0	0	0	0	0	0
Median	2	2	2	2	3	3	3
Max	6	6	6	6	6	6	6
# of firms							
E=0	181	149	151	181	126	121	107
E=1	249	236	243	328	297	255	262
E=2	328	336	350	439	408	447	476
E=3	342	341	346	430	460	455	503
E=4	197	220	228	271	305	308	335
E=5	50	56	52	48	64	75	70
E=6	9	5	3	10	10	7	6
Sum	1356	1343	1373	1707	1670	1668	1759

This table reports the summary statistics for the E-index. Refer to Bebhuk et al. (2006) for detailed description for the E-Index.

TABLE II
Descriptive Statistics

Panel A							
Variable	Mean	Std	Min	Q1	Median	Q3	Max
G-index	9.43	2.78	2	7	10	11	18
E-index	2.40	1.33	0	1	2	3	6
ASSETS (millions)	11586	54839	6	590	1829	6525	1264032
Sales (millions)	4480	10234	0	539	1352	4015	257157
MV (millions)	6036	20164	0	450	1308	4027	596475
LEV	0.26	0.19	0.00	0.12	0.25	0.37	2.45
ROA	0.08	0.10	-1.58	0.04	0.08	0.12	0.93
Age	29.03	19.30	0.00	14.00	25.00	37.00	78.00
Analyst	12.97	8.94	1.00	6.00	11.00	18.00	51.00
IO-number	174.64	164.00	3.75	71.00	124.50	220.50	1307.75
IO-percent	0.55	0.19	0.00	0.42	0.56	0.69	1.00
SDCFO	0.05	0.03	0.00	0.03	0.04	0.06	1.04
SDSALES	0.03	0.05	0.00	0.01	0.02	0.04	2.03
LgOpCycle	5.00	1.10	1.27	4.42	4.81	5.26	11.10
Loss	0.21	0.41	0.00	0.00	0.00	0.00	1.00
SP500	0.25	0.43	0.00	0.00	0.00	0.00	1.00

Panel B												
Variable	Democracy Firms		Dictatorship Firms		Wilcoxon Test		Low Entrenchment		High Entrenchment		Wilcoxon Test	
	Mean	Std	Mean	Std	Difference		Mean	Std	Mean	Std	Difference	
G-index	4.43	0.76	14.55	0.75	-10.12	**	5.65	1.77	13.05	1.80	-7.41	**
E-index	0.50	0.64	4.00	0.77	-3.50	**	0.00	0.00	5.08	0.27	-5.08	**
ASSETS	11387.85	56562.67	8559.51	21892.69	2828.34	**	31360.78	130802.37	5762.08	9718.22	25598.70	**
Sales	4090.20	13105.67	4112.83	5132.30	-22.63	**	7929.74	22113.87	2501.09	2999.68	5428.65	*
MV	6158.08	21571.35	4259.14	7866.79	1898.94	**	14565.61	48105.24	2458.19	3058.57	12107.42	**
LEV	0.25	0.22	0.28	0.18	-0.03	**	0.25	0.20	0.28	0.18	-0.03	**
ROA	0.08	0.12	0.08	0.06	0.00		0.08	0.13	0.08	0.06	0.00	
Age	21.98	17.60	35.22	18.28	-13.24	**	25.48	18.80	27.33	16.63	-1.85	**
Analyst	10.62	8.82	13.32	8.72	-2.70	**	13.09	9.93	11.90	7.16	1.20	
IO-number	142.47	172.43	178.63	130.45	-36.16	**	192.09	228.91	145.05	88.55	47.04	*
IO-percent	0.49	0.22	0.57	0.18	-0.08	**	0.50	0.21	0.55	0.21	-0.04	**
SDCFO	0.05	0.04	0.04	0.02	0.01	**	0.05	0.03	0.04	0.03	0.01	
SDSALES	0.04	0.05	0.03	0.03	0.01	**	0.03	0.05	0.03	0.03	0.00	**
LgOpCycle	4.91	0.96	5.10	1.12	-0.19	**	5.04	1.06	5.13	1.46	-0.09	
Loss	0.24	0.43	0.16	0.36	0.08	**	0.20	0.40	0.16	0.36	0.04	**
SP500	0.17	0.38	0.29	0.46	-0.12	**	0.28	0.45	0.26	0.44	0.02	

*Significant at the 0.05 level; **significant at the 0.01 level or better.

Variable definitions:

G-index: The governance index as defined in Gompers et al. (2003);

E-index: The entrenchment index as defined in Bebchuk et al. (2006);

Assets: Total assets, Compustat Data6 (Millions);

Sales: Net sales, Data12 (Millions);

MV: Market value, Data24 x Data25 (Millions);

LEV: Leverage, (Data34 + Data9) / Data6;

ROA: Return on total assets, Data178 / Data6;

Age: Firm's age, the number of years since listing, where listing year is the first year for which stock returns are available on CRSP;

Analyst: Analysts following, number of analysts having a forecast of EPS (the maximum numbers during the I/B/E/S statistical year;

IO-number: Number of institutional investors holding the firm's shares during the year, average of quarter numbers extracted from CDA/Spectrum Institutional (13f) Holdings;

IO-percent: Average percentage of outstanding shares held by institutional investors extracted from CDA/Spectrum Institutional (13f) Holdings;

SDCFO: Standard deviation of operating cash flows deflated by total assets (this data item is calculated using eight quarters data of the last two years, Compustat Quarterly Data108 / Data44);

SDSALES: Standard deviation of net sales deflated by total assets (this data item is calculated using eight quarters data of the last two years, Compustat Quarterly Data2 / Data44);

LgOpCycle: Log of firms' operating cycles, log {Sum [365 / (Data12/Average Data2), 365 / (Data41/Average Data3)]};

Loss: an indicator variable if the firm's net income is negative (data172);

SP500: an indicator variable if the firm is an S&P 500 firm (Compustat: ZLIST = 01).

TABLE III

Summary Statistics for Monthly Factor Returns

Panel A Descriptive Statistics

	Sept 1990-Dec 2003			Sept 1990-Dec1999		
	Mean	Std	<i>t</i>	Mean	Std	<i>t</i>
RMRF	0.0070	0.04	2.02	0.0121	0.04	3.41
SMB	0.0026	0.04	0.83	-0.0003	0.03	-0.10
HML	0.0038	0.04	1.32	-0.0004	0.03	-0.16
UMD	0.0092	0.05	2.24	0.0109	0.03	3.52
LIQ	0.0010	0.06	0.21	0.0007	0.05	0.16
MAQ	0.0353	0.08	5.29	0.0402	0.06	6.57

Panel B Correlation Matrix (*Pearson: above diagonal / Spearman: below diagonal*)

	RMRF	SMB	HML	UMD	LIQ	MAQ
RMRF		0.20	-0.52	-0.19	0.04	0.44
SMB	0.23		-0.46	0.13	0.32	0.68
HML	-0.50	-0.30		-0.05	-0.31	-0.62
UMD	-0.12	0.12	0.01		0.52	-0.13
LIQ	-0.03	0.03	-0.04	0.46		0.19
MAQ	0.42	0.65	-0.50	-0.16	-0.06	

This table reports the summary statistics for the risk factor premium based on 160 monthly observations from September 1990 to December 2003. Boldface indicates two tailed significant level of 0.01.

RMRF is the return on the value-weighted NYSE/AMEX/NASDAQ portfolio minus the one-month Treasury bill rate. SMB and HML are the monthly returns on two factor mimicking portfolios associated with the size effect and book-to-market effect, respectively. UMD is the momentum factor. SMB, HML, UMD and LIQ factor returns are all downloaded from WRDS Database. See Fama and French (1993), the K. French website and Pastor and Stambaugh (2003) for details on the factors' construction. MAQ is the monthly AQfactor returns defined as the equal-weighted monthly return of the four deciles of firms with the highest AQ less the equal-weighted monthly return of the four deciles of firms with the lowest AQ. See Ecker et al. (2006) for a detailed explanation for the construction of AQfactor.

TABLE IV
Monthly Abnormal Hedge Returns From September 1990 to December 1999 (GIM: G-index)

This table presents the abnormal returns earned by a G-index based trading strategy under different expected return models. Following Gompers et al. (2003), we estimate risk-factor regressions using monthly hedge portfolio returns. The hedge portfolio is constructed by taking a long position in a value-weighted portfolio of Democracy firms ($G < -5$) and taking a short position in a value-weighted portfolio of Dictatorship firms ($G \geq 14$). The portfolios are reset in September 1990, July 1993, July 1995 and February 1998, which are the months after new data on G-index becomes available. The regression alpha measures the abnormal returns to such a strategy after controlling for various risk factors. In model 1, the benchmark expected return model is the Fama-French three-factor model, which includes RMRF, SMB and HML. Model 2 adds a momentum factor (UMD) to the traditional three-factor model; model 3 adds a P-S liquidity risk factor to the traditional three-factor model; model 4 adds an information risk factor (MAQ) to the traditional three-factor model; model 5 adds all the three additional risk factors to the three-factor model. The Fama-French factors, the momentum factor and the P-S liquidity risk factor are taken from WRDS database. (See Kenneth R. website for detailed explanations on the construction of these factors). We construct the monthly information risk factor (AQfactor) following Francis et al. (2005) and Ecker et al. (2006).

	Alpha	RMRF	SMB	HML	UMD	LIQ	MAQ	Adj. R ²
GIM Table VI	0.71*** (2.73)	-0.04 (-0.57)	-0.22** (-2.44)	-0.55*** (-5.50)	-0.01 ^a (-0.14)			
Model 1	0.73*** (3.13)	-0.04 (-0.53)	-0.19** (-2.40)	-0.54*** (-5.71)				24.68%
Model 2	0.54** (2.23)	-0.02 (-0.36)	-0.15* (-1.92)	-0.47*** (-4.83)	0.17** (2.38)			27.80%
Model 3	0.70*** (2.98)	-0.01 (-0.14)	-0.14* (-1.66)	-0.50*** (-5.02)		0.07 (1.28)		25.12%
Model 4	0.39 (1.32)	-0.06 (-0.93)	-0.32*** (-2.99)	-0.52*** (-5.56)			0.09* (1.79)	26.18%
Model 5	0.15 (0.50)	-0.05 (-0.67)	-0.28*** (-2.57)	-0.44*** (-4.42)	0.17** (2.21)	0.02 (0.38)	0.10** (2.02)	29.30%

a. Notice that the momentum factor used in GIM is different from that used in this study. For ease of presentation, we use the Fama-Macbeth three factor model as the baseline model, since the estimated alpha and other coefficients by the Fama-French three-factor model is almost same as those estimated by GIM's "four-factor model".

*Significant at the 0.1 level or better; **significant at the 0.05 level or better; ***significant at the 0.01 level or better.

TABLE V
Monthly Abnormal Hedge Returns From September 1990 to December 1999 (BCF: E-Index)

This table presents the abnormal returns earned by an E-index based trading strategy under different expected return models. Following Bebhuk et al. (2006), we estimate risk-factor regressions using monthly hedge portfolio returns. The hedge portfolio is constructed by taking a long position in a value-weighted portfolio of low entrenchment firms ($E\text{-index}=0$) and taking a short position in a value-weighted portfolio of high entrenchment firms ($E\text{-index}=5, 6$). The portfolios are reset in September 1990, July 1993, July 1995 and February 1998, which are the months after new data on E-index becomes available. The regression alpha measures the abnormal returns to such a strategy after controlling for various risk factors. In model 1, the benchmark expected return model is the Fama-French three-factor model, which includes RMRF, SMB and HML. Model 2 adds a momentum factor (UMD) to the traditional three-factor model; model 3 adds a P-S liquidity risk factor to the traditional three-factor model; model 4 adds an information risk factor (MAQ) to the traditional three-factor model; model 5 adds all the three additional risk factors to the three-factor model. The Fama-French factors, the momentum factor and the P-S liquidity risk factor are taken from WRDS database. (See Kenneth R. website for detailed explanations on the construction of these factors). We construct the monthly information risk factor (AQfactor) following Francis et al. (2005) and Ecker et al. (2006).

	BCF Alpha	Alpha	RMRF	SMB	HML	UMD	LIQ	MAQ	Adj. R ²
Model 1	1.16*** (4.08)	1.20*** (4.16)	-0.16* (-1.86)	-0.25*** (-2.56)	-0.67*** (-5.70)				22.09%
Model 2		0.87*** (2.98)	-0.14* (-1.68)	-0.18** (-1.94)	-0.55*** (-4.65)	0.29*** (3.40)			29.04%
Model 3		1.13***	-0.10	-0.15	-0.59***		0.14**		24.63%
		(3.96)	(-1.19)	(-1.47)	(-4.81)		(2.15)		
Model 4		0.52 (1.45)	-0.21*** (-2.55)	-0.52*** (-3.98)	-0.64*** (-5.58)			0.18*** (2.98)	27.39%
Model 5		0.11 (0.31)	-0.17** (-2.12)	-0.44*** (-3.41)	-0.48*** (-4.13)	0.28*** (3.16)	0.06 (0.96)	0.20*** (3.46)	35.64%

*Significant at the 0.1 level or better; **significant at the 0.05 level or better; ***significant at the 0.01 level or better.

TABLE VI
Monthly Abnormal Hedge Returns From September 1990 to December 2003 (BCF: E-Index)

This table presents the abnormal returns earned by an E-index based trading strategy under different expected return models. Following Bebhuk et al. (2006), we estimate risk-factor regressions using monthly hedge portfolio returns. The hedge portfolio is constructed by taking a long position in a value-weighted portfolio of low entrenchment firms ($E\text{-index}=0$) and taking a short position in a value-weighted portfolio of high entrenchment firms ($E\text{-index}=5, 6$). The portfolios are reset in September 1990, July 1993, July 1995 and February 1998, November 1999, and February 2002, which are the months after new data on E-index becomes available. The regression alpha measures the abnormal returns to such a strategy after controlling for various risk factors. In model 1, the benchmark expected return model is the Fama-French three-factor model, which includes RMRF, SMB and HML. Model 2 adds a momentum factor (UMD) to the traditional three-factor model; model 3 adds a P-S liquidity risk factor to the traditional three-factor model; model 4 adds an information risk factor (MAQ) to the traditional three-factor model; model 5 adds all the three additional risk factors to the three-factor model. The Fama-French factors, the momentum factor and the P-S liquidity risk factor are taken from WRDS database. (See Kenneth R. website for detailed explanations on the construction of these factors). We construct the monthly information risk factor (AQfactor) following Francis et al. (2005) and Ecker et al. (2006).

	BCF alpha	Alpha	RMRF	SMB	HML	UMD	LIQ	MAQ	Adj. R ²
Model 1	0.84*** (3.75)	0.84*** (3.37)	-0.12* (-1.80)	-0.30*** (-4.34)	-0.99*** (-11.46)				49.14%
Model 2		0.81*** (3.15)	-0.11 (-1.59)	-0.30*** (-4.35)	-0.98*** (-11.22)	0.02 (0.46)			48.89%
Model 3		0.82*** (3.28)	-0.10 (-1.59)	-0.31*** (-4.47)	-0.96*** (-10.77)		0.05 (1.12)		49.22%
Model 4		0.26 (0.94)	-0.20*** (-3.07)	-0.51*** (-6.22)	-0.88*** (-10.29)			0.19*** (4.27)	54.21%
Model 5		0.11 (0.37)	-0.17*** (-2.63)	-0.55*** (-6.53)	-0.83*** (-9.33)	0.06 (1.06)	0.04 (0.89)	0.20*** (4.55)	54.71%

TABLE VII
Monthly Abnormal Hedge Returns-Controlling for Private Information Risk (PINF)

This table presents the abnormal returns earned by the previously defined G-index and the E-index based trading strategy, after controlling for an additional factor (FPIN) to capture the private information trading risk (PIN). The RMRF, SMB, HML, UMD and LIQ factors returns are defined in the same way as in table IV, V, VI. The PIN is the proxy for probability of informed trading (see Easley et al. 1996). PINF is constructed following Easley et al. (2005). G and E denote G-index and E-index hedging strategy respectively. T-statistics are reported in the parentheses.

	Alpha	RMRF	SMB	HML	UMD	LIQ	PINF
G:90-99	0.54** (2.24)	-0.03 (-0.43)	-0.17** (-1.95)	-0.47*** (-4.72)	0.18** (2.36)	0.02 (0.34)	-0.31 (-1.59)
E:90-99	0.88*** (3.00)	-0.12 (-1.40)	-0.16 (-1.53)	-0.53*** (-4.35)	0.27*** (2.80)	0.07 (0.94)	-0.14 (-0.58)
E:90-02	0.93*** (3.40)	-0.10 (-1.34)	-0.29*** (-3.93)	-0.95*** (-9.70)	-0.01 (-0.21)	0.06 (1.22)	-0.06 (-0.31)

*Significant at the 0.1 level or better; **significant at the 0.05 level or better; ***significant at the 0.01 level or better.

TABLE VIII
Correlation Matrix for Variables in the Information Risk Regressions*

	<i>E_Loading</i>	G-Index	E-Index	IO-percent	Analysts	Log(Age)	SDCFO	SDSALES	LgOpCycle	Loss	ROA	LEV	Log(MV)
<i>E_Loading</i>													
G-Index	-.038		-.046	-.045	0.005	-.088	.033	.019	.093	.140	-.133	-0.002	-.020
E-Index	.744			.099	.114	.294	-.052	-.046	.054	-.076	.033	.066	.103
IO-percent				.082	0.014	.129	-.042	-.040	.040	-.034	-0.001	.074	-.036
Analysts					.289	-.017	-.052	-0.010	-.109	-.126	.195	-.044	.292
Log(Age)						.101	-.069	-.104	.048	-.149	.162	-.017	.702
SDCFO							-.094	-.062	-.026	-.143	.079	.074	.249
SDSALES								.244	-.046	-0.006	.054	-.094	-.073
LgOpCycle									-.263	.040	.040	0.012	-.131
Loss										-.033	-.180	-.109	.076
ROA											-.507	.117	-.308
LEV												-.117	.292
Log(MV)													-.034

* Boldface indicates that the correlation is significant at the 0.05 level or better; Following Ecker et al. (2006), we estimate a firm's e-loadings by regressing the firm's daily excess returns (raw return minus risk-free rate) on daily risk factors: RMRF, SMB, HML, and the DAQ, an the e-loading is the firm's coefficient loading on DAQ in each year. Others variables are defined in table II.

TABLE IX
Regression Results of Information Risk on Corporate Governance – Fixed Effect Models

In this table, we report the regression results of e-loadings on G-index (E-index) with and without control variables. Following Ecker et al. (2006), we estimate a firm's e-loadings by regressing the firm's daily excess returns (raw return minus risk-free rate) on daily risk factors: RMRF, SMB, HML, UMD, and DAQ and the e-loading is the estimated coefficient of DAQ. The table also reports the regression results for the reduced sample with only firm-year observations in the extreme G-Index (E-index) portfolios, which are used to form the hedge portfolios in previous sections. Dict (Entrench) is an indicator variable that takes the value of 1 if the firm is in the dictatorship portfolio (entrenched portfolio) and zero otherwise. The equations are estimated by GLS procedures assuming firm fixed effects and the coefficient standard errors are calculated by Panel Corrected Standard Error (PCSE) methodology (Beck and Katz, 1995) to account for serial correlations and heteroskedasticity. All independent variables are defined previously.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
G-index	-0.047*** (-4.81)	-0.040*** (-3.17)	-0.031*** (-2.47)									
E-index							-0.065*** (-5.74)	-0.056*** (-3.93)	-0.043*** (-3.01)			
Dict				-0.032** (-2.39)	-0.038** (-2.07)	-0.016 (-0.86)						
Entrench										-0.040*** (-2.76)	-0.035* (-1.79)	-0.023 (-1.13)
IO-percent			-0.114*** (-5.99)			-0.127*** (-2.70)			-0.112*** (-5.88)			-0.149*** (-3.05)
Analyst			0.007 (1.16)			-0.031** (-2.36)			0.007 (1.19)			0.010 (0.67)
Log(AGE)		-0.018*** (-4.48)	-0.020*** (-4.90)		-0.010 (-0.94)	-0.024** (-2.10)		-0.019*** (-4.96)	-0.021*** (-5.33)		-0.017 (-1.61)	-0.024** (-2.17)
SDCFO		0.296*** (2.65)	0.366*** (3.28)		0.432* (1.61)	0.257 (0.94)		0.291*** (2.61)	0.362*** (3.25)		0.398 (1.32)	0.330 (1.10)
SDSALE		0.386*** (4.93)	0.376*** (4.82)		0.105 (0.53)	0.098 (0.49)		0.383*** (4.89)	0.374*** (4.80)		0.278 (1.14)	0.295 (1.21)
LgOpCycle		0.035*** (8.39)	0.033*** (7.89)		0.017* (1.60)	0.011 (1.06)		0.035*** (8.26)	0.033*** (7.79)		0.025*** (2.57)	0.020** (2.05)

Loss	0.124*** (14.13)	0.084*** (8.43)	0.098*** (4.26)	0.067*** (2.62)	0.123*** (14.03)	0.083*** (8.40)	0.076*** (2.95)	0.032 (1.12)
ROA		-0.258*** (-7.28)		-0.237*** (-2.98)		-0.256*** (-7.23)		-0.239*** (-2.89)
LEV	0.036** (2.14)	0.023 (1.37)	0.108*** (2.69)	0.065 (1.59)	0.037** (2.19)	0.024 (1.41)	0.060* (1.45)	0.024 (0.57)
Log(MV)	0.005** (2.33)	0.008*** (2.67)	-0.002 (-0.48)	0.016** (2.26)	0.004 (1.89)	0.007** (2.39)	0.005 (0.93)	0.007 (0.87)
Firms	2488	1641	535	374	2488	1641	309	309
N	15546	10438	2419	1678	15546	10437	1472	1472
Adj. R ²	0.1%	3.9%	0.8%	4.6%	0.2%	4.9%	4.2%	5.6%

*Significant at the 0.1 level or better; **significant at the 0.05 level or better; ***significant at the 0.01 level or better.

TABLE X (Appendix Table)
Regression Results of Information Risk on Corporate Governance – Random Effect Models

In this table, we report the regression results of e-loadings on G-index (E-index) with and without control variables. The table also reports the regression results for the reduced sample with only firm-year observations in the extreme G-Index (E-index) portfolios, which are used to form the hedge portfolios in previous sections. The equations are estimated by GLS procedures assuming firm random effects and the coefficient standard errors are calculated by Panel Corrected Standard Error (PCSE) methodology (Beck and Katz, 1995) to account for serial correlations and heteroskedasticity. All variables are defined previously.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
G-index	-0.047*** (-4.77)	-0.038*** (-3.05)	-0.029** (-2.29)									
E-index							-0.065*** (-5.69)	-0.058*** (-4.10)	-0.043*** (-3.02)			
Dict				-0.028** (-2.06)	-0.030* (-1.64)	-0.008 (-0.42)						
Entrench										-0.039*** (-2.67)	-0.034* (-1.73)	-0.020 (-1.02)
IO-percent			-0.127*** (-7.21)			-0.157*** (-3.58)		-0.124*** (-6.98)				-0.143*** (-3.16)
Analyst			0.009* (1.84)			-0.026** (-2.09)		0.009* (1.83)				0.005 (0.39)
Log(AGE)		-0.015*** (-3.71)	-0.018*** (-4.34)		-0.009 (-0.77)	-0.021* (-1.86)		-0.016*** (-4.14)	-0.018*** (-4.72)	-0.013 (-1.20)	-0.020* (-1.81)	

SDCFO	0.259** (2.33)	0.337*** (3.02)	0.396 (1.48)	0.253 (0.93)	0.255** (2.29)	0.334*** (3.00)	0.350 (1.16)	0.315 (1.05)
SDSALE	0.395*** (5.06)	0.380*** (4.89)	0.104 (0.52)	0.081 (0.41)	0.390*** (4.99)	0.377*** (4.84)	0.289 (1.18)	0.305 (1.26)
LgOpCycle	0.035*** (8.40)	0.033*** (7.93)	0.017* (1.62)	0.013 (1.24)	0.035*** (8.24)	0.033*** (7.81)	0.026*** (2.58)	0.021** (2.05)
Loss	0.117*** (13.58)	0.080*** (8.17)	0.090*** (3.96)	0.063*** (2.50)	0.117*** (13.52)	0.080*** (8.15)	0.069*** (2.70)	0.030 (1.07)
ROA		-0.241*** (-6.93)		-0.213*** (-2.70)		-0.241*** (-6.92)		-0.230*** (-2.81)
LEV	0.031* (1.84)	0.018 (1.08)	0.103*** (2.57)	0.063 (1.54)	0.032** (1.93)	0.019 (1.15)	0.061 (1.48)	0.027 (0.64)
Log(MV)	0.003 (1.70)	0.007** (2.33)	-0.004 (-0.80)	0.014** (2.03)	0.003 (1.28)	0.006** (2.07)	0.004 (0.74)	0.008 (1.13)
Firms	2488	1641	535	374	2488	1641	479	309
N	15546	10438	2419	1678	15546	10438	2285	1472
R ²	0.1%	3.4%	0.1%	5.1%	0.2%	4.4%	0.3%	3.3%

*Significant at the 0.1 level; **significant at the 0.05 level; ***significant at the 0.01 level or better.

TABLE XI
Regression Results of Information Risk on Corporate Governance – Robust Regressions

In this table, we report the regressions results of e-loadings on G-index (E-index) and all the control variables. The coefficients are estimated by OLS methods (except for columns-‘FM’, which are estimated by Fama-MacBeth (1973) methodology). The t-values are presented in parentheses and are calculated using standard errors estimated by various methodologies. OLS indicates White (1984) standard errors; FM indicates weighted average Fama-MacBeth (1973) standard errors; Rogers indicates Rogers (1993) standard errors clustered by firms; Bootstrap indicates bootstrapped standard errors clustered by firms, with the number of repetitions of 1000; NW (13) indicates Newey-West (1987) standard errors with lag length of 13 years; Roger (FY) indicates standard errors clustered by firms and with yearly fixed effects. All the variables are defined previously.

Variables	G-Index Regressions						E-Index Regressions					
	OLS	FM	Rogers	Bootstrap	NW(13)	Roger(FY)	OLS	FM	Rogers	Bootstrap	NW(13)	Roger(FY)
G-index	-0.029** (-2.30)	-0.029* (-1.88)	-0.029* (-1.89)	-0.029* (-1.89)	-0.029** (-1.95)	-0.031** (-2.03)	-0.043*** (-3.02)	-0.041** (-2.08)	-0.043*** (-2.47)	-0.043*** (-2.47)	-0.043*** (-2.54)	-0.043*** (-2.44)
E-index							-0.043*** (-3.02)	-0.041** (-2.08)	-0.043*** (-2.47)	-0.043*** (-2.47)	-0.043*** (-2.54)	-0.043*** (-2.44)
IO-percent	-0.127*** (-7.20)	-0.104*** (-4.07)	-0.127*** (-6.05)	-0.127*** (-5.82)	-0.127*** (-6.18)	-0.112*** (-4.91)	-0.124*** (-6.96)	-0.100*** (-3.86)	-0.124*** (-5.86)	-0.124*** (-5.80)	-0.124*** (-5.98)	-0.110*** (-4.81)
Analyst	0.009* (1.84)	-0.002 (-0.16)	0.009* (1.63)	0.009* (1.68)	0.009* (1.63)	0.005 (0.80)	0.009* (1.83)	-0.002 (-0.16)	0.009* (1.62)	0.009* (1.67)	0.009* (1.62)	0.005 (0.83)
Log(AGE)	-0.018*** (-4.33)	-0.018*** (-2.51)	-0.018*** (-3.61)	-0.018*** (-3.67)	-0.018*** (-3.68)	-0.020*** (-3.97)	-0.018*** (-4.71)	-0.019*** (-2.60)	-0.018*** (-3.89)	-0.018*** (-4.01)	-0.018*** (-3.99)	0.021*** (-4.27)

SDCFO	0.337*** (3.01)	0.510*** (3.25)	0.337*** (2.74)	0.337*** (2.72)	0.337*** (2.78)	0.369*** (2.98)	0.334*** (2.98)	0.498*** (3.17)	0.334*** (2.72)	0.334*** (2.66)	0.334*** (2.75)	0.365*** (2.95)
SDSALE	0.380*** (4.89)	0.352*** (3.55)	0.380*** (4.03)	0.380*** (4.00)	0.380*** (4.16)	0.375*** (3.98)	0.377*** (4.85)	0.355*** (3.54)	0.377*** (4.02)	0.377*** (3.90)	0.377*** (4.14)	0.373*** (3.97)
LgOpCycle	0.033*** (7.91)	0.030*** (4.22)	0.033*** (6.30)	0.033*** (6.23)	0.033*** (6.58)	0.033*** (6.22)	0.033*** (7.80)	0.029*** (4.13)	0.033*** (6.19)	0.033*** (6.16)	0.033*** (6.46)	0.032*** (6.12)
Loss	0.080*** (8.15)	0.091*** (7.46)	0.080*** (7.06)	0.080*** (7.11)	0.080*** (7.17)	0.084*** (7.37)	0.080*** (8.13)	0.090*** (7.40)	0.080*** (7.05)	0.080*** (7.25)	0.080*** (7.16)	0.083*** (7.34)
ROA	-0.241*** (-6.90)	-0.270*** (-5.36)	-0.241*** (-5.97)	-0.241*** (-5.95)	-0.241*** (-6.08)	-0.256*** (-6.17)	-0.241*** (-6.89)	-0.269*** (-5.41)	-0.241*** (-5.98)	-0.241*** (-5.89)	-0.241*** (-6.09)	-0.254*** (-6.15)
LEV	0.018 (1.08)	0.028 (1.07)	0.018 (0.89)	0.018 (0.87)	0.018 (0.91)	0.023 (1.11)	0.019 (1.15)	0.029 (1.12)	0.019 (0.95)	0.019 (0.96)	0.019 (0.97)	0.024 (1.15)
Log(MV)	0.007** (2.32)	0.013* (2.08)	0.007* (2.05)	0.007** (2.09)	0.007** (2.06)	0.009*** (2.45)	0.006** (2.07)	0.012* (1.98)	0.006* (1.83)	0.006* (1.79)	0.006* (1.84)	0.009*** (2.22)
N	10437	10437	10437	10437	10437	10437	10437	10437	10437	10437	10437	10437

*Significant at the 0.1 level or better; **significant at the 0.05 level or better; ***significant at the 0.01 level or better.

Figure 1. Average Monthly Abnormal Returns

Figure 1 shows the average abnormal returns earned by the G-index strategy (1990s) and E-index strategy (1990s and 1990-2003) estimated by different benchmark return models. Model 1 is Fama-French three-factor expected return model; Model 2 adds momentum factor (UMD) to the FF 3-factor model; Model 3 adds P-S liquidity factor (LIQ) to the FF 3-factor model; Model 4 adds information risk factor (MAQ) to the FF 3-factor model; Model 5 adds all three additional factors to the FF 3-factor model.