The Home Stigma: Adverse Selection in ADRs and the Home Capital Market Environment

Abstract

We investigate whether characteristics of the home country capital market environment, such as information disclosure and investor rights protection, continue to affect ADRs cross-listed in the U.S. Using microstructure measures as proxies for adverse selection, we find that characteristics of the home markets continue to be relevant, especially for emerging market firms. Less transparent disclosure, poorer protection of investor rights, and weaker legal institutions are associated with higher levels of information asymmetry. Developed market firms appear to be affected by whether or not home business laws are of common law or civil law legal origin. To further understand the persistence of the home capital market effect, we find that regulatory effectiveness is an important determinant. The home capital market environment effect becomes weaker for emerging market firms after the enactment of the Sarbanes-Oxley Act. The bid-ask spread, as a measure of adverse-selection cost, increases two years into a cross-listing, and stays high for emerging market ADRs. Our finding contributes to the bonding literature. It suggests that cross-listing in the U.S. should not be viewed as a complete substitute for improvement in the quality of local institutions, and attention must be paid to improve investor protection in order to achieve the full benefit of improved disclosure. Improvement in the domestic capital market environment can attract more investors even for U.S. cross-listed firms. It also suggests that regulatory tightening in the U.S. has a bigger effect on emerging market ADRs than developed market ADRs.

Journal of Economic Literature Classification Codes: F21, F36, F55, G14, G15, G32.
Keywords: Information Asymmetry, Disclosure, Governance, Cross-Listing.

1 Introduction

Year 2011 has seen multiple alleged accounting scandals of Chinese ADRs stemming from questions surrounding a couple "reversed mergers" by Chinese firms. Wall Street has dubbed the difficulty in precisely decipher information about Chinese ADRs as "the great transparency wall of China". ADRs cross-listed in the U.S. are subject to U.S. disclosure regulations. The bigger question arise therefore is whether the lack of transparency post-listing is isolated to a couple of firms or a more general characterization of ADRs.

This article examines whether characteristics of the home-country capital market environment, such as information disclosure and investor rights protection, continue to be relevant for foreign firms cross-listed on U.S. exchanges. It is well documented that foreign firms improve their information disclosure and corporate governance after cross-listed in the U.S. The effectiveness of the improvement over the long run, however, is less well-understood. We find that less transparent disclosure, poorer protection of investor rights, and weaker legal institutions in the countries of origin are associated with higher level of adverse selection in ADRs, especially for firms from emerging markets. Poor home capital market environment increases the average bid-ask spread by 10% with one standard deviation in disclosure quality, and the effect is economically significant. In our further analysis, we find that information quality of emerging market ADRs deteriorate years after they are first cross-listed, and that the regulatory stingingness has a big impact on these firms. Our finding illustrates that cross-listing in the United States is not a substitute for improvement of local information transparency and protection of minority shareholders.

Foreign issuers are subject to U.S. securities laws concerning disclosures and procedures for equity issuances and are required to reconcile their accounting statements with U.S. GAAP (using form 20-F). Some studies (e.g., Coffee Jr (1999), Stulz (1999), Reese and Weisbach (2002)) argue that cross-listing in the U.S. serves as a substitute for weak investor protection laws in the home country. Extending that logic, foreign firms can also bond themselves to stricter disclosure requirements and stricter enforcement in the U.S. in order to achieve a better information environment and attract investors who would otherwise be reluctant to invest.

A growing body of empirical research have tested the bonding hypothesis. Doidge (2004), for example, finds that the premium between voting and non-voting shares declines following cross-listing, an indication that minority investors become better protected. Reese and Weisbach (2002) interpret the frequency and location of equity offerings that follow cross-listing as evidence of firms from weak investor protection countries seeking to bond with the U.S. security regime. Lang, Lins, and Miller (2003) find that cross-listed firms achieve greater analyst coverage with improved forecast accuracy, and Bailey, Karolyi, and

Salva (2006) find evidence of higher liquidity. Other studies find that an enhancement in the shareholder protection and information environment, in turn, is associated with higher valuation of the cross-listed firm (Foerster and Karolyi (1999), Doidge, Karolyi, and Stulz (2004), and Bailey, Karolyi, and Salva (2006)).

The bonding hypothesis largely deals with the *motivation* and *immediate* consequence of ADR cross-listing. The question however remains whether bonding is sufficient enough to transform U.S. listed foreign firms to be equally transparent regardless of the differences in the home capital market environment. There is also the question of how effective firms can transcend their home capital market environment *after* they are cross-listed in the *long run*, especially given the evidence that long-run return performances of ADR offerings are less than stellar (Foerster and Karolyi (2000), Bancela, Kalimipallib, and Mittooc (2009)). This paper seeks to shed some light on this question.

There are several possible reasons why bonding might not be totally effective. First, regulation and enforcement of U.S. corporate laws might not be as stringent for foreign firms. Foreign issuers can obtain exemptions from various disclosure requirements of exchanges and regulators. Anecdotal evidence suggests that the U.S. stock exchanges and the SEC are not as stringent with foreign firms in enforcing listing standards. Siegel (2005) argues that the lack of effective law enforcement by the SEC and minority shareholders against cross-listed foreign firms adds to the ineffectiveness of regulatory bonding. Further, rules governing corporate bankruptcy and derivative actions against foreign insiders are based on the laws in the companies' home country. Second, mechanisms to credibly commit a firm to higher-quality information disclosure and governance may be unavailable or prohibitively expensive in countries with poor investor protection and insufficient economic development (Doidge, Karolyi, and Stulz (2006), Ball (2001)). Ball (2001) argues that changing accounting standards alone is not enough to improve actual financial reporting and disclosure. Third, if firms want to misrepresent their information within the U.S. regulation, they have varieties of means to do so. They can for example, engage in earnings smoothing, aggressive accounting, or loss avoidance (Lang, Raedy, and Wilson (2006)).

Even when bonding is effective, it is conceivable that the home capital market environment still plays an important role in cross-sectional differences in information asymmetry of cross-listed foreign firms. First, many disclosure practices are voluntary. SEC and other regulatory rules mean to serve as a floor for necessary reporting. In practice, companies can, and may in fact desire to, disclose more than what SEC regulation requires. Therefore, actual levels of voluntary disclosure may differ for firms from different markets.[1] Second, firms from different countries may have different costs and benefits in implementing measures to

[1]Voluntary disclosures can also be a source of information manipulation. See, for example, Brockman, Khurana, and Martin (2008).

improve governance and transparency. Hence, their incentives to increase the level of voluntary disclosure and to bond through reputation mechanism may differ. The incentive to improve is low if, for example, there are large controlling blocks of shares and minority investors are not well protected, or when a firm is difficult to effectively differentiate itself because the home market information environment is poor. Third, even when all necessary information is disclosed, it takes effort to decipher and disseminate useful information. This is more challenging for firms from less transparent home markets. Lang, Lins, and Miller (2004) argue that U.S.-based analysts are less likely to follow non-U.S. firms with large family or management-owned controlling blocks of shares, especially for companies with weak legal protections in the home market. It is also possible that the added reporting and disclosure required by regulators for cross-listing could crowd out or substitute for the collection of private information (Kim and Verrecchia (2001)).

There is evidence that institutional features of the local environment find their way into U.S. cross-listed firms. Lang, Raedy, and Wilson (2006) show that U.S. cross-listed firms report financial information systematically differently than equivalent U.S. firms despite the fact that all firms use the same accounting standards. Foreign firms recognize losses in a less timely manner and generally report more smoothed earnings. Therefore, a cross-listed firm's home environment continues to be relevant in explaining the quality of its U.S. GAAP reported earnings. Doidge et al. (2006) find country characteristics are significant for ADR firms, especially for those from emerging markets. Bailey et al. (2006) report cross-sectional evidence in volume and volatility that suggests cross-listed firms from emerging markets have lower information quality. Ferreira and Fernandes (2008) show the improvement in price informativeness after cross-listing is concentrated in developed market firms; cross-listing is negatively associated with price informativeness in emerging market firms.

In this paper, we examine the cross-section of the information asymmetry surrounding ADR firms, and relate it to information disclosure quality, governance, and rule of law measures of the countries in which those firms are domiciled. We utilize market microstructure proxies to measure information asymmetry. Market microstructure measures of information asymmetry are designed to capture adverse selection between informed traders and uninformed traders. Since the firm managers and those close to them constitute an important subset of informed traders in the market, market microstructure measures should capture adverse selection faced by ADR firms, albeit imperfectly. More importantly, those proxies capture the financial market's perception of information advantage held by firm insiders and the resulting adverse selection cost. Bharath, Pasquariello, and Wu (2009) use microstructure proxies to establish the relationship between information asymmetry and capital structure decisions. Heflin, Shaw, and Wild (2005) find that there is a negative association between disclosure quality and bid-ask-spread-based measures of information asymmetry in the

U.S. stock market. Eleswarapu and Venkataraman (2006) examines after-listing trading cost, namely the bid-ask spreads of ADRs, and find that improvement in legal and political institutions can lower the cost of liquidity for ADRs. Our study is different from their's in several important ways. We focus primarily on the effect of information environment on adverse selection cost. To that end, we decompose bid-ask spread into an adverse-selection component and non-information component, and we use non-spread-based measure of information asymmetry to confirm out findings. Our tests are more restrictive in a sense that we control for the firm-specific characteristics related to information asymmetry, which would bias against finding home capital market environment effect. While we confirm their finding of the impact legal institutions, we also find that the direct impact of information disclosure exists even after controlling for legal institution and corporate governance. Second, in stead of focusing on high-frequency spread measures in a short period of time, we study annual average of (daily) adverse-selection measures over a long period of time.[2] The longer horizon confirms that the home capital market environment effect is not a short term fab. It also gives us opportunity to study the time dynamics of information quality and gain some insight into why the home capital market environment would still matter for ADR firms.

We start with investigating the effect of home country financial information opaqueness, since it is a direct concern as a source of adverse selection. A less transparent information environment can not only lead to a firm's poor disclosure practice, but also downgrade the market's perception about the quality of its disclosure. We also include legal and governance measures in our investigation of adverse selection. Although there are distinctions between financial opaqueness and poor protection of investors, a country's financial opaqueness is often coupled, and mutually reinforced, with imperfect protection of shareholder rights and poor corporate governance. Moreover, as discussed above, investor protection and corporate governance can influence a firm's incentive to adhere to a high level of information disclosure, and ultimately affect adverse selection costs.[3] Thus, we include legal institution and corporate governance variables not only as control variables to investigate whether home country financial transparency remains as a significant factor of adverse selection for ADR firms, but also to examine their direct impact on information asymmetry.

Our primary empirical results indicate that the home market environment still matters for adverse selection of non-U.S. firms cross-listed on U.S. exchanges. ADRs of firms from countries with greater financial opaqueness, poorer investor protection and weaker corporate governance experience a higher degree of adverse selection, especially when issued by firms from emerging markets. Among those emerging

[2]Eleswarapu and Venkataraman (2006) use intraday data covering three months from January to March 2002. As described later, our primary sample covers from year 1995 to 2006.

[3]Miller and Reisel (2009) find that countries legal investor protections impact the design of public securities issued aboard. Restrictive covenants are more prevalent in bonds issued by firms located in countries with weak creditor rights, less disclosure and poor shareholder rights.

market firms, both quoted bid-ask spreads and effective spreads are negatively correlated with the quality-of-disclosure and governance proxies. Among firms from developed markets, there is weaker evidence that poorer home country information transparency and firm governance lead to bigger quoted spreads. Instead, legal origin of business laws (La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998)) appears to be a consistent and significant factor in their level of adverse selection. To extract the adverse selection in our spread proxy, we also decompose quoted spreads into an asymmetric-information component and a non-information component. We find that the asymmetric-information component of spreads exhibits a negative relation with domicile market transparency and governance, especially for emerging market firms. It reinforces the idea that our microstructure measure does indeed capture the information quality of ADR firms. Our results complement Ferreira and Fernandes' (2008) event study finding that cross-listing does not improve price informativeness for emerging market firms. We also provide some evidence that the "home country risk" is priced by the market. Abnormal return is larger for firms from countries of less information transparency and weaker institution quality.

Our inferences appear to be quite robust. We control our empirical regressions of the market condition and individual firm characteristics. Given that many firm-level controls such as size, leverage, and the book-to-market ratio are possibly correlated with level of information asymmetry, and might be correlated with country-level information environment, our tests are actually biased against finding an additional adverse selection component. We also augment our tests with analyst coverage and forecast dispersion, which prior research indicates are associated with a firm's disclosure and information environment (e.g., Lang and Lundholm (1996)). Our results withstand those controls. To alleviate concern about home market information transparency measure, we confirm our primary findings with several other proxies of disclosure environment including a time-varying measure of information environment advocated by Morck, Yeung, and Yu (2000), and Jin and Myers (2006).[4] We also confirm our empirical tests with several statistical methods. Finally, to further substantiate our interpretation of spread-based proxies as a measurement of adverse selection, we conduct our tests utilizing an alternative proxy derived by Llorente, Michaely, Saar, and Wang (2002) that is not spread-based. The results of the alternative dependent variable show that the proxy of adverse selection is negatively correlated with home market transparency and better governance for emerging market sub-sample, but not for developed market firms. There are several possible explanations for the finding that developed market firms show less evidence of a relation between the home market environment and the adverse selection in ADRs than emerging market firms. Disclosure measures may not capture capital

[4]We also check our results with disclosure index used by La Porta, Lopez-de-Silanes, and Shleifer (2006) and "business extent of information disclosure" in 2006 published by world bank. Our results remain robust to these alternative disclosure measures.

market characteristics among developed market firms; the cost of adopting better disclosure and governance practice may be small enough for developed market firms to bond themselves more effectively.

To understand the home capital market environment effect better, we then investigate how the tightening of regulatory rules affects the significance of the home capital market environment effect. When regulatory floor is raised, we should see a lower level of adverse selection, and further, the impact should be bigger for firms whose disclosure and governance practices are closer to the regulatory floor. Indeed, the passage of Sarbanes-Oxley Act in July 30, 2002 reduces the home capital market effect and has the biggest impact on emerging market firms. We also look into the dynamics of the bid-ask spreads over time of listing. We examine how the vintages of listing affect the spread, after controlling for yearly averages. On average, the bid-ask spread goes up significantly in the second and third year after it was first listed, and it remains at a higher level for emerging market firms.

Our finding that the home capital market environment continues to act as a crucial factor in the adverse selection of ADR firms, especially for those from emerging markets, has important policy implications. It illustrates that cross-listing in the United States is not a substitute for the improvement of local information transparency and the protection of minority shareholders. In a recent study, Ammer, Holland, Smith, and Warnock (2008) document that if everything else is equal, cross-listing has a smaller impact on U.S. investors' holdings for firms from countries with weaker shareholder protection. Our findings help explain such a home bias in ADR holdings. Therefore, governments and policymakers should still focus on promoting information disclosure and improving corporate governance in order to attract capital flows to their countries.

The rest of the paper proceeds as follows. Section 2 describes the data and provides discussion on some institutional backgrounds. Section 3 empirically investigates the relation between ADR information asymmetry and home market environments. Section 4 provides evidences to the understand why home capital market environment still influences ADR firms. Section 5 concludes.

2 Data

In this section, we describe sample selection and the institutional background, the measurement of firm-specific adverse selection and the home country capital market environment, and the control variables used in this study.

2.1 Sample Selection

To construct a uniform testing sample, we need to restrict our firms to similar institutional requirements. Different choices of listing type have different institutional requirements. Non-U.S. companies to be listed in the U.S. are required to file a registration statement with the SEC and furnish an annual report on a Form 20-F with reconciliation with U.S. GAAP. Level I ADRs trade over-the-counter and require only minimal SEC disclosure and no GAAP reconciliation (exempt from Form 20-F by Rule 12g3-2(b)). Level II and III ADRs are exchange-listed securities and they require full SEC disclosure and compliance with the exchange's own listing rules. Level III programs raise capital and must file Form F-2 and F-3 for offerings. Finally, SEC Rule 144a issues raise capital as private placements to qualified institutional buyers and do not require compliance with GAAP.[5] Ordinary listings require an exact replication of settlement facilities as for U.S. securities and go beyond Level II and Level III ADRs in requiring full annual and quarterly reports prepared in accordance with U.S. GAAP. We focus on level II and III ADRs to ensure uniform regulatory disclosure requirements. We identify our sample of exchange-listed ADR firms on NYSE, AMEX or Nasdaq from Bank of New York and other sources. To the extent that level II and III ADRs are subject to stricter disclosure requirements than level I and Rule 144a issuances, our sample is biased against finding a home market effect.

We restrict our sample of ADRs to issues that occurred no earlier than 1990, and collect their price and volume information between 1994 and the end of 2006. The purpose of our restriction on issuance and price data is two-fold. First, foreign issuances become more active in the 1990s due to conscious effort by the U.S. to attract foreign issues and financial liberalization in other parts of the world; further, most emerging market ADRs are issued after 1990, and most emerging markets do not have local stock market indices until after 1994. An ADR issued earlier is more likely to be localized by the U.S. market. More important, most of our disclosure measures are time-invariant, and are constructed with data from late 1990s and early 2000s. Our restriction is to keep the data relevant to the question we study. Instead of focusing on a limited period of time (e.g., Lang et al. (2003)), we examine the whole period of time when most price information is available. We also drop ADRs for which institutional data is not available.[6] We end up with 355 firms from 36 countries over 13 years.

[5] It may be that a firm that accesses the U.S. markets by way of a Rule 144a private placement or OTC listing, which require little or no conformity with U.S. GAAP, actually chooses to disclose more because it anticipates a subsequent upgrade to an exchange listing at some later point. Similarly, a firm that chose to list its shares for trading on the NYSE or Nasdaq may have anticipated doing so for some time before and thus had chosen to present its financial statements voluntarily in accordance with IAS or U.S. GAAP in the years before the U.S. listing.

[6] We do not include cross-listings from Canada, which are unique in their regulatory requirements. See Jordan (2006) for details.

To avoid drawing spurious inferences from extreme values and to filter out errors in the data, we winsorize observations in the top and bottom 5% of the asymmetric information measure and firm size over the whole sample period. Also the availability of the specific control variables such as the number of analyst coverage might differ, so the number of observations for each individual regression may vary.

Stock price and return data is from CRSP and Datastream. Non-U.S. Market returns and volatility are calculated based on Datastream total market indices. Firm accounting data is from Compustat. Analyst forecast data is from IBES.

2.2 Home Capital Market Environment

We use several measures to characterize the information environment of the capital market of a country. Financial transparency measures capture the intensity and the timeliness of financial disclosures, and their interpretation and dissemination by analysts. We draw our main proxy of disclosure, $GCRSCORE$, from The Global Competitiveness Reports, which includes results from surveys about the level and effectiveness of financial disclosure in different countries. The respondents were asked to assess the statement "The level of financial disclosure required is extensive and detailed" on a scale from 1 (strongly disagree) to 7 (strongly agree), as well as to assess "availability of information" on the same scale. For each country, we take the average over responses to the two questions in the 2000 survey and form a disclosure score $GCRSCORE$. Higher values of $GCRSCORE$ indicate higher degree of information transparency of home markets of ADR issuing firms. The advantage of this survey-based proxy is that it is possible to reflect variations in information disclosure beyond those stipulated in the accounting rules. This is most relevant for emerging markets where existing regulations on the book are not always properly enforced. Jin and Myers (2006) show that this survey-based measure works quite well as a proxy for financial transparency of the markets.

We also use an accounting-based index to augment $GCRSCORE$ disclosure measure, and to ensure the robustness of our results. The Center for International Financial Analysis and Research (CIFAR (1995)) reports for each country a disclosure index that represents a score based on the inclusion or omission of 90 items as required disclosures in the annual reports, with low scores indicating poor accounting standards. These items fall into seven categories: general information, income statements, balance sheets, funds flow statement, accounting standards, stock data, and special items. We denote this index as $CIFAR$.[7]

[7] In our unreported robustness check, we also use disclosure scores reported by La Porta, Lopez-de-Silanes, and Shleifer (2006) and the World Bank, respectively.

Figure 1 charts the values of $CIFAR$ and $GCRSCORE$ (scaled by 10 times) for countries in our sample. $GCRSCORE$ ranges from 3.8, of China, to 6.4, of Finland, with a median of 5.65, about the level of disclosure for Ireland. $CIFAR$ ranges from the lowest score of 56 for Brazil, to the highest score of 85 for the U.K., with a median of 73, the score for Hong Kong. $CIFAR$ covers slightly fewer countries (31) than $GCRSCORE$ (34), and covers fewer emerging markets. Numbers of ADRs from each country covered in our sample are also reported in Figure 1.

A country's financial opaqueness is often coupled with imperfect protection of shareholder rights and poor corporate governance. Nevertheless, there is a distinction between opaqueness and poor protection of investors, which can affect firms' incentive to voluntary disclose. We thus include legal institution and corporate governance variables, not only to investigate whether those remain as important factors in determining degree of information asymmetry in ADRs, but also to check whether our disclosure variables remain significant after controlling for the shareholder protection.

We use an index of anti-director rights compiled by La Porta, Lopez-De-Silanes, Shleifer, and Vishny (henceforth, LLSV)(1998), denoted $ANTIDIR$, to proxy for strength of corporate governance. It measures the ability of shareholders in a country to challenge managers or dominant shareholders in the corporate decision-making process. It ranges from zero to six, with higher score representing better investor protection. LLSV (1998) show that $ANTIDIR$ is a reasonable proxy for investor rights protection. When applicable, we employ a dummy variable $CIVIL$, which equals one if the home market legal rules are of *Civil Law* origin, and zero if legal rules regarding investor rights are of *Common Law* origin. LLSV (1998) show that, broadly speaking, common law countries afford the best legal protections to shareholders.

Table 1 reports the Spearman rank correlations among the disclosure and governance measures, as well as the summary statistics of each measure. It shows that the disclosure measures and the governance proxy are positively correlated with each other and negatively correlated with the civil law dummy. The survey-based disclosure measure $GCRSCORE$ and accounting-based disclosure measure $CIFAR$ have a high correlation of 0.69. The governance measure $ANTIDIR$ and legal origin are more correlated with each other than with disclosure measures in terms of magnitude. Correlation coefficient between $ANTIDIR$ and $CIVIL$ is -0.64, it is 0.13 between $ANTIDIR$ and $GCRSCORE$, and 0.36 between $ANTIDIR$ and $CIFAR$.

Notice that our home environment measures are time-invariant, but our sample spans over several years. Fortunately, institutional quality variables are relatively stable, and are very slow to change. Nevertheless, to check the robustness of our results, we also use a time-varying measure of home country information

environment following Jin and Myers (2006). The details of that alternative measure will be explained in the next section.

2.3 Asymmetric Information

Information asymmetry measures at the firm level are notoriously hard to estimate and lack accuracy. Researchers have used IBES analyst dispersion of estimates, earning surprises, or firm's accounting discrepancies to proxy for it, with varying degrees of success. We use market microstructure measures to proxy for the degree of adverse selection. Specifically, we first examine bid-ask spreads of ADRs. The presence of traders who possess superior knowledge of the value of a stock can impose adverse selection costs on liquidity traders and market makers. Bid-ask spread compensates liquidity providers for bearing this cost and increases with degree of information asymmetry. Previous research finds the bid-ask spread to be a reasonable proxy for information asymmetry. Lee, Mucklow, and Ready (1993), for example show firms with lower spreads have a lower degree of information asymmetry or adverse selection costs.

We calculate the quoted spread in percentage terms with daily data as

$$S = 100 * (askprice - bidprice)/\frac{1}{2}(askprice + bidprice), \tag{1}$$

We then take the yearly average to obtain an average quoted spread, QS, for each stock every year.

The first column of Table 2 reports the summary statistics of the average quoted spread across all sample firms as well as across groups that are formed by the measures of disclosure and institutional quality. Quoted spread has a mean of 1.71 (percent), and a wide variation across firms and years with a standard deviation of 1.47. Firms from markets of lower $GCRSCORE$, lower $CIFAR$, lower $ANTIDIR$, and firms from countries of civil law origin and emerging markets all have relatively higher QS. We note that the finding that firms from civil law countries have higher QS is consistent with the findings in LLSV (1998) that civil law origin countries offer weaker legal protection of investor rights. The differences in the means of sub-samples are all significant except that of different $GCRSCORE$s. This gives us a first indication that QS of ADRs, and hence the degree of information asymmetry, is dependent on the information and legal environment of the home countries.

Quoted spread has components other than asymmetric-information reasons such as inventory, transaction, and order-processing costs. George, Kaul, and Nimalendran (1991) show a method of unbiasedly estimating the adverse selection component of a stock's spread by exploiting different stock return auto-

correlations of uninformed trading and informational speculation. In light of this consideration, we also estimate the adverse selection component of the quoted spread and substitute that as the dependent variable, following George et al. (1991) and Bharath et al. (2009).

To substantiate our interpretation that quoted spread differences reflect the degree of information asymmetry of ADRs, we also test for the presence of a home environment effect using an alternative non-spread-based dependent variable that measures the relative importance of information-driven trading in stocks' price fluctuations. Llorente et al. (2002) show theoretically and empirically that accounting for the intensity of trading volume accompanying stock return autocorrelation can help identify the extent of informed trading. We develop our alternative proxy following their methodology. Specifically, we estimate

$$r_{it}(\tau) = c_{0it} + c_{1it} r_{it}(\tau - 1) + c_{2it} T_{it}(\tau - 1) r_{it}(\tau - 1) + \varepsilon_{it}(\tau), \tag{2}$$

for each firm i in year t, where r_{it} is the stock return of ADR i in year t, τ is an indicator for days in year t, $T_{it}(\tau)$ is the natural logarithm of the daily turnover detrended by its mean over the past 200 observations. The measure of informed trading is given by the coefficients c_{2it}, yielding one observation for each firm-year. For firms with considerable information asymmetry, c_{2it} tends to be positive, as more volume indicates more speculative trading and the stock exhibits positive return autocorrelation. For firms with low information asymmetry, c_{2it} tends to be negative, as more volume indicates liquidity-based (or noise) trading and the return exhibits negative autocorrelation. The lower (higher) is the estimated c_{2it}, the lower (higher) is firm i's degree of adverse selection.

2.4 Control Variables

We include a variety of firm characteristics variables to control for the cross-section of individual firm idiosyncrasy, including firm size, asset tangibility, leverage, and the book-to-market ratio.

$SIZE_{it}$ is defined as the logarithmic of firm i's total asset in year t, DTA_{it} is the debt-to-asset ratio, MTB_{it} is the market-to-book ratio, $TANG_{it}$ is the tangibility of firm assets, defined as the ratio of firm's tangible assets (Property, Plant and Equipment Total, Compustat fundamental data item PPENT) to total assets.

Our firm characteristics variables are all possibly related to the degree of information asymmetry of firms. Smaller firms are likely to have more severe information asymmetry problems. A firm with relatively less tangible assets, *ceteris paribus*, is expected to have a higher degree of information asymmetry. Low

MTB also may reflect more severe information problems between managers and investors. LLSV (2002) show that firms with better investor protection have higher valuation relative to their assets, i.e., higher MTB. If information asymmetry is an important determinant of a firm's debt issuance decisions, then its cumulative effect, leverage, is likely to be higher for firms facing more severe information problems. Since our main interest is to test whether the home country information disclosure and governance environment have an effect on the information asymmetry of ADRs, controlling for the firm characteristics helps control for the firm level idiosyncrasy. Since firm characteristics are possibly endogenous to country-level characteristics, adding those controls will bias against finding a home market effect.

Table 2 reports the summary statistics of the firm-level control variables, along with the means of the firm-level control variables for sub-samples of firms according to whether home market disclosure and governance measures are above or below the medians, or whether firms are from emerging or developed markets. It reports the p-value of T-test of difference in means in parentheses. On average, ADRs from emerging markets, compared with those from developed markets, are slightly smaller (but the difference is not significant), have significantly higher proportion of tangible assets, and have significantly higher leverage ratio and lower MTB. ADRs from more transparent markets and markets of better investor rights protection, as well as ADRs from countries of common law origin, are noticeably smaller in size, have significantly less tangibility, and have comparatively higher MTB ratio. Except for comparison across ANTIDIR subgroups, they also appear to have comparatively lower level of leverages, although the differences are not significant. These features in the data are consistent with the hypothesis that higher disclosure level and better corporate governance of home markets allow ADR issuers to keep a lower level of tangible assets. Relatively lower level of leverage and higher market-to-book ratio of those firms indicate comparatively smaller degree of information asymmetry.

Many authors have used analyst-following data to proxy for the firm-level information environment (e.g., Lang et al. (2003)). We include two variables calculated from IBES data to make for additional firm-level controls. $NUMANALYS$ is measured as the number of analysts following in the annual consensus IBES forecast. $DISPERSION$ is the dispersion of analyst EPS forecasts measured as standard deviation of analysts forecasts in months of calendar year prior to the end of fiscal year, and normalized by absolute value of realized EPS and square root of the number of analysts.[8] While higher forecast dispersion is generally believed to be associated with higher degree of information asymmetry,[9] the relation between

[8] We follow Jin and Myers (2006)) in constructing analyst forecast dispersion.

[9] When information production is possible, more potential private information can be discovered and traded upon when there is greater uncertainty regarding future earnings. However, Jiang, Lee, and Zhang (2005) show that the increased uncertainty makes it more costly to discover and profit from private information.

analyst following and information asymmetry is less conclusive in the literature. A priori, we do not have expectations of how $NUMANALYS$ or $DISPERSION$ is related to adverse selection, and control for it only to the extent that it may affect an ADR firm's information environment.

We include year dummies to control for time-specific variations. We also include U.S. and local market volatility, measured as standard deviation of daily returns calculated from market indices (in percentages), to control for possible correlation between market volatility and ADR liquidity.

3 Empirical Analysis

We are interested in whether the home market information and governance environment continue to be relevant factors in asymmetric information of ADR firms that are subject to SEC regulation and U.S. GAAP reporting. We estimate the following regression model:

$$AS_{ijt} = \gamma_0 + \gamma_1 HCME_j + \gamma_2 X_{jt} + \gamma_3 X_{ijt} + \mu_t + \upsilon_{ijt}, \tag{3}$$

where AS_{ijt} is the adverse selection measure of firm i from country j in year t, $HCME_j$ is the institutional variables of market j where firm i is domiciled, X_{jt} is a set of market-level control variables that include volatility of U.S. and home markets, X_{ijt} is a set of firm-level control variables, and μ_t is a set of year dummy variable to control for the decrease of adverse section measures over time.[10] All panel test statistics are adjusted for heteroskedasticity and autocorrelation with robust errors. We also check our estimation with cluster regression errors, which yield very similar results.[11]

We pay special attention to the information disclosure environment, since intense and timely financial disclosures, including interpretation and coverage by analysts and the media, are crucial for inside managers to have credible ways of conveying hidden firm-specific information to outside investors.

[10] Bid-ask spreads are in general decreasing over time. One well-documented reason for reduction of spreads over time is the reduction of minimum tick size. NYSE, for example, adjusted the minimum tick size from one eighth to one sixteenth in June 1997, and further convert to a decimal system beginning in August 2000. NASDAQ and AMEX followed with a similar process.

[11] Cluster regression does not change coefficient estimates.

3.1 Average Quoted Spreads

This section discusses the results of regression equation 3 with the average quoted spread, QS, as the dependent variable. It provides us with the first evidence in our investigation.

Table 3 reports the estimation results of our baseline regressions. Examining Table 3, we find that both $GCRSCORE$ and $CIFAR$ are negatively correlated with the quoted spread, with similar magnitudes (the mean of $GCRSCORE$ is 5.4 and the mean of $CIFAR$ is 71), indicating a higher spread for ADRs from less transparent markets. The coefficient estimate of $GCRSCORE$ is -0.06 with a *p*-value of 0.11. The coefficient estimate of $CIFAR$ is -0.01 with a *p*-value of 0.02. The significance level of $GCRSCORE$ is relatively weak. This is partly due to the fact that variations of $GCRSCORE$ are smaller relative to variations in spreads throughout the years. It is also explained by the possibility that survey measures do not characterize developed markets as well as emerging markets. In our later sub-sample and two-stage analysis this will transpire more clearly. The coefficient estimate of $ANTIDIR$ is -0.12. The $CIVIL$ dummy shows a coefficient of 0.42. Both are highly significant. These estimates suggest that firms with better protection of investor rights, measured either by the anti-director rights or by common-law legal origin versus civil-law, on average have lower spreads. The result that the legal and governance environment can affect an ADR firm's information asymmetry is somewhat counterintuitive at the first blush. But in light of our discussion that weak investor protection can: (i) reduce a firm's incentive to voluntarily disclose, (ii) negatively affect analyst coverage of the firm, and (iii) decrease investors' desire to be informed about the firm, then the result isn't all that surprising.

As expected, the control variables SIZE and MTB, which are often used as proxies of information asymmetry, are negatively correlated with spreads. Estimates on the U.S. market volatility are insignificant, which is understandable since we already controlled for yearly average of the spread. More volatile local markets lead to higher spreads, but the estimates are not significant. Leverage is positively correlated with spread, consistent with the suggestion that higher degree of information asymmetry leads to higher leverage. One surprise is that tangibility is positively correlated with the quoted spreads, since higher tangibility often suggests a lower information asymmetry.

Table 4 focuses on the disclosure variable $GCRSCORE$, and further examines the robustness of our baseline results of the quoted-spread regression with various combinations of controls based on our regression in Table 3. Columns (1) estimates regression with only the firm size, leverage and market-to-book as controls. Column (2) estimates regression by including market volatilities as additional controls. They show that the exclusion of TANG or market volatility does not affect the significance of our results. Column (3)

includes an emerging market dummy variable, EM, to the regression. It shows that $GCRSCORE$ absorbs most of the emerging market factor, but the significance level decreases. Column (4) includes industry fixed effects; it shows that the industry fixed effect reduces home country disclosure factor but the estimate on $GCRSCORE$ is still negative and significant at the 10 % level.[12] Columns (5), (6), and (7) add $CIVIL$, $ANTIDIR$, and then both to the list of regressors. The coefficient estimates of $GCRSCORE$ remain negative and significant and their magnitude actually increases, indicating that disclosure, although positively correlated with the governance and the civil-law dummy, is a distinctive factor that affects spreads. The estimates on $CIVIL$ and $ANTIDIR$ remain consistent with those of Table 3 and are significant. Column (8) and (9) show that home country disclosure effect is robust to controlling of the analyst opinion dispersion and the analysts coverage. The coefficient estimate on $DISPERSION$ is negative and on $NUMANALYS$ is positive, consistent with the argument that analysts dispersion of opinion is an indicator of information asymmetry and that more analyst coverage reduces information asymmetry.

Several authors have argued that ADR firms from markets of different maturity behave differently when being integrated into the new information environment. Ferreira and Fernandes (2008) find that cross-listing has an asymmetric impact on stock price informativeness for emerging-market and developed-market firms. It is therefore of interest to estimate our baseline regressions separately for the EM (Emerging Market) and the DEV (Developed Market) firms. Table 5 presents the results. For the EM sub-sample, the coefficient estimate on disclosure and governance variables are slightly higher in magnitudes than the whole sample (estimate on $GCRSCORE$, for example, increases from -0.09 for the whole sample to -0.14 for EM sub-sample), and are highly significant. While for the DEV sub-sample, $GCRSCORE$ estimate is positive and insignificant, but the coefficient estimate on $CIFAR$ remains negative and significant. It suggests that survey-based disclosure measure is not as informative an indicator of market transparency for the DEV markets as it is for the EM markets. Conceptually, it is harder to distinguish matured markets by survey respondents. Accounting-based "hard" measures are more appropriate for those markets. While for the EM markets, the accounting-based "hard" measure is not enough to explain the level of market transparency, probably due to the lack of enforcement of the existing rules. Therefore, for EM firms, the survey-based measure does a better job. Note also that for our data, $GCRSCORE$ covers more EM countries than $CIFAR$. After examining estimates on $ANTIDIR$ and $CIVIL$, we find that the governance and the legal origin effects are much larger for the EM firms than for the DEV firms. $ANTIDIR$ and $CIVIL$ coefficients are -0.17 and 0.45, respectively, for the EM sub-sample, comparing to -0.002 and 0.18 respectively for the DEV sub-sample. $CIVIL$ estimate is significant, but $ANTIDIR$ is not significant for

[12] Industry classification is defined according to 2-digit SIC. Our Fama-Macbeth estimates show that significance of $GCRSCORE$ is robust to industry fixed effect

the DEV firms, suggesting that corporate governance is less of a concern for the DEV firms than the EM firms. Taken as a whole, results in our sub-sample tests are consistent with the hypothesis that EM ADRs are subject to the characteristics of the home capital market environment more so than DEV ADRs.

3.2 Fama-Macbeth Statistical Method

In the above regression method, we utilize a panel approach by correcting for robust regression error, or adjusting for year and country fixed effects (cluster regression, not reported). If serial correlation in the error or heteroskedasticity is quite large, however, the above statistical methods might produce false significance. An alternative solution is to use a Fama and MacBeth (1973) two-stage procedure, which estimates a separate regression cross-sectionally in each year and then takes the time series mean of the coefficients. The relative advantage of the Fama-MacBeth procedure is to minimize the serial correlated error and to maximize the cross-sectional variation in the home country information and institution qualities.

We find that the resulting estimates from the two-stage method largely confirm our earlier results. Table 6 reports an example as we reproduce the estimation of Table 3 and 4 using the two-stage regressing approach. Notice that the U.S. market volatility drops out of the cross sectional regressions. The resulting $GCRSCORE$ coefficient in Table 6 is -0.12 with a *p*-value of 0.08 when no additional controls are added. Its magnitudes increase to around -0.20 and significance increases to levels within 5% when $ANTIDIR$ or $CIVIL$ or both are added, as well as when analyst dispersion and coverage are controlled. Consistent with our results in Table 4, magnitude and significance decrease when the industry fixed effects are added. Coefficient estimate on $ANTIDIR$ is negative, and on $CIVIL$ is positive. They are significant when entering regressions separately. Of the control variables, $SIZE$, DTA, and MTB have signs as we expected. One notable difference is that $TANG$ is no longer significant, indicating the existence of autocorrelation in the panel data. Overall, the Fama-MacBeth method confirms our earlier regression results.[13]

The Fama-MacBeth method provides with us an opportunity to examine economic significance of home market effect since it presents direct cross-section comparisons. For a coefficient estimate of -0.20 on $GCRSCORE$, average quoted spread decreases by 0.15 $(0.73 * (-0.2))$ if a firm improves its disclosure score by one standard deviation (0.73).[14] This is economically significant, given that the average quoted spreads is at 1.71. The hypothetical move reduces the average spread by nearly 10%, all else equal. Similarly, the difference in spreads between a firm from common-law country and civil-law country is 0.2.

[13] Sub-sample analysis of the Fama-MacBeth approach also confirms our earlier findings. These results are not reported and are available upon request.

[14] Bid-ask spreads are in percentages.

Dividing the sample according to emerging and developed markets offers some contrast between the two (not reported here). The resulting estimates for EM firms are consistent with the estimates of the full sample, but $GCRSCORE$ coefficient is estimated positive for DEV firms (CIFAR remains negative but insignificant). $CIVIL$ estimate again remains positive. The effect of the home market information opaqueness is mostly driven by the EM firms; the DEV firms are more affected by their legal institutional differences.

3.3 Robustness: Measure of Information Environment

One drawback of our disclosure proxies is that they are time invariant. While evidence suggests a country's information disclosure environment and underlying institutional structure are quite stable, we nevertheless try to check the robustness of our results with other disclosure proxies. One alternative proxy is the disclosure index reported by La Porta, Lopez-de-Silanes, and Shleifer (2006). Their disclosure index is design to capture the strength of disclosure requirements in security laws.[15] Another proxy we use is the *business extent of disclosure index* that is reported by the World Bank.[16] We use year 2006 value of that index to check if our result is robust to the recent measure of home capital market disclosure environment. Our finding of home capital market environment effect is robust to these alternative measures. We do not report results of these estimates there due to space limitations.

A third measure of the degree of the home market information opaqueness is the R^2 measure advocated by Morck et al. (2000) and Jin and Myers (2006). R_i^2 in a market factor regression can be used as a measure of the extent to which firm-specific information determines stock price movements, because R_i^2 measures precisely the percentage of firm-specific idiosyncratic volatility to total volatility. A high R_i^2 thus indicates a high degree of stock price co-movement and a low observable idiosyncratic risk. Morck et al. (2000) find that stocks have higher R^2s in countries with less-developed financial markets. Jin and Myers (2006) confirm that R^2 is correlated with a country's financial opaqueness. Ferreira and Fernandes (2008) use R^2-based measure to show that emerging-market firms that cross-list in the U.S. achieved less improvement in information environment than their developed-market counterparts.

[15] Specifically, their disclosure index is the arithmetic mean of the following requirements: (1) Prospectus; (2) insiders' compensation; (3) ownership by large shareholders; (4) inside ownership; (5) contracts outside the normal course of business; and (6) transactions with related parties. See La Porta, Lopez-de-Silanes, and Shleifer (2006) for more details.

[16] Detailed description of the index is available at http://www.doingbusiness.org/methodologysurveys/ProtectingInvestors.aspx

We follow Jin and Myers (2006) to calculate R^2_{it} from the following regression:

$$\begin{aligned} r_{i\tau} &= \alpha_i + \beta_{1i} r_{m,j\tau} + \beta_{2i} r_{exus,j\tau} + \beta_{3i} r_{m,j\tau-1} + \beta_{4i} r_{exus,j\tau-1} + \beta_{5i} r_{m,j\tau-2} \\ &\quad + \beta_{6i} r_{exus,j\tau-2} + \beta_{7i} r_{m,j\tau+1} + \beta_{8i} r_{exus,j\tau+1} + \beta_{9i} r_{m,j\tau+2} + \beta_{10i} r_{exus,j\tau+2} + \epsilon_{i\tau}, \end{aligned} \tag{4}$$

for each firm i included in the DATASTREAM stock database of country j in year t, where $r_{i\tau}$ is the firm return, $r_{m,j\tau}$ is the local market return from DATASTREAM total return index of the country, $r_{exus,j\tau}$ is the U.S. market index return adjusted by exchange rate. The leads and lags in the regression are to correct for possible non-synchronous trading. We then average across firms in country j in year t to get our information measure R^2_{jt}, denoted RS, to substitute for disclosure measures in equation 3.[17] If quoted spread captures the degree of adverse selection, we expect RS to be positively correlated with QS.

Table 7 reports the results of the RS regressions. Through inspection of panel A, we find that the RS measure confirms our finding in Table 3. The RS coefficient estimate is 1.2 when no additional controls are added, and it is significant at the 5% level. After industry, governance, and legal origin are controlled for, respectively, estimates of the RS coefficient remain positive. They are significant except when $CIVIL$ is added. Panel B and Panel C compare estimation results for the emerging and the developed market sub-samples. The coefficient estimates of RS for the EM firms are all positive, and are in general much more pronounced than those of the whole sample. The coefficient of RS in the regression without additional controls, for example, goes up to 2.18 and is highly significant. In contrast, three of four RS estimates for the DEV firms are negative. We do not find significantly positive correlation between the spreads and RS for the DEV sub-sample. This result is consistent with Ferreira and Fernandes' (2008) finding that DEV firms have improved their information environment after cross-listing but EM firms do not. Therefore the EM firms continue to have their degree of adverse selection affected by the home market information environment while the DEV firms do not. We observe in Panel C, however, that the coefficient estimates of $CIVIL$ and $ANTIDIR$ for the DEV firms have the expected signs. That is, consistent with Table 5, the coefficient estimate of $CIVIL$ is positive and the coefficient estimate of $ANTIDIR$ is negative. $CIVIL$ stays significant for the DEV firms. Overall, our tests with RS as the home market information opaqueness measure provide evidence that suports a positive relation between the adverse selection in ADR trading and home market information opaqueness for the emerging market firms. For the developed market firms, the effects of legal institution on adverse selection withstand, but we do not find a significant effect of the home market information environment as measured by idiosyncratic informativeness in stock prices.

[17] Jin and Myers (2006) show that equally weighted averages perform as well as value-weighted averages.

3.4 Effective Spreads and Adverse Selection Component of Spreads

The quoted bid-ask spread is a raw measurement of trading cost and has its own concerns. The quoted bid-ask spread may contain measurement problems, or actual trading may take place mostly within the quotes. Roll (1984) derives a measure of *effective spread* based on negative autocovariance of security returns, under the assumption that market makers face only order processing costs. Moreover, Stoll (1989) and others show that spreads could be decomposed of a non-information component, such as order processing and inventory holding cost, and an asymmetric information component of adverse selection cost. In our context, weak home market institution and information opaqueness can potentially lead to an increase of both components of bid-ask spreads. Higher (unit) processing cost can be a result of less frequent trading, partly due to less transparent information; higher inventory holding cost also can result from weak institutional protection; higher trading costs of ADRs from certain countries can be a result of the lack of competition among exchanges, which in turn reflects higher local trading costs due to institutional and informational problems. At the same time, home market information opaqueness and corporate governance, through effect on incentives to disclose, can lead to higher information component of spreads. Therefore, we are interested in the effect of the home market environment on both ADRs' effective spreads and the adverse-selection component of these spreads.[18]

We estimate Roll (1984)'s effective spreads and information component of spreads with methods proposed by George et al. (1991). We estimate the former utilizing the difference between returns based on transaction prices and returns calculated using bid-to-bid prices. In the latter case, the adverse selection component of spread is extracted by subtracting the non-information component calculated with auto-covariance of expected return filtered return series from the yearly average quoted spread. Specifically, we calculate the non-information component by estimating $\hat{S}_i = 200\sqrt{-cov(\eta_\tau, \eta_{\tau-1})}$, over a 60-day rolling sample in year t, where η_τ is expectation-filtered transaction return (see George et al. (1991) and Bharath et al. (2009) for details); we then take the average $\hat{S}_i$ to get the yearly estimates. We are interested in seeing whether effective spreads and/or the information component of spreads are correlated with our disclosure and institutional quality measures.

Table 8 and Table 9 report the regression results in which effective spread and adverse selection component of the spread are used as dependent variables, respectively. Upon examining the tables, we find a consistent pattern of difference between the EM and the DEV firms. The emerging market firms are sensitive to disclosure, measured either by $GCRSCORE$ or $CIFAR$, and to governance proxies; while the

[18] We estimate information component of spreads, not proportional information component, because with a big enough spread, the information component of a stock can still be relatively high even with a low proportional measure.

developed market firms are only sensitive to legal origins. In fact, the coefficient of $GCRSCORE$ for the developed market firms in the effective spread regression appears to be positive.

In the effective spread regressions, emerging market ADRs' effective spreads are negatively correlated with disclosure, measured either by $GCRSCORE$ or $CIFAR$, and protection of shareholder rights, measured by $ANTIDIR$. Slope estimates on $GCRSCORE$ ranges from -0.15 without additional control to -0.26 when legal origin and investor protection are controlled. $GCRSCORE$ remains a significant factor after controlling for both $CIVIL$ and $ANTIDIR$. Slope estimate of $ANTIDIR$ is -0.18 and is highly significant. $CIVIL$, the legal origin variable, however, is not significant, and appears to have negative signs when augmented as a control variable. For the DEV firms, on the other hand, local market opaqueness does not appear to be a significant factor that increases effective spreads, nor does shareholder protection.[19] However, $CIVIL$ is positively and significantly correlated with the effective spread, as expected, indicating that rule of law based on different legal origins is an important home market factor for firms from developed markets. These results are consistent with the hypothesis that emerging market ADRs have higher effective trading cost due to local market conditions.

In the adverse-selection component regression results, reported in Table 9, the EM firms with better local market financial disclosure have lower spreads attributed to information asymmetry. Slope estimates on $GCRSCORE$ ranges from -0.16 to -0.22. $GCRSCORE$ is highly significant without controlling for investor protection and legal origin, and is significant at 10% level when these are added as controls. $CIFAR$ has a slope estimate of -0.02 and highly significant. $CIVIL$ and $ANTIDIR$, in regressions where they are used separately as the main institutional regressors respectively, are significant and have signs as expected, but lose significance when used as control variables to $GCRSCORE$. For the DEV firms, $CIFAR$ is negatively and significantly correlated with adverse selection component of spreads. $GCRSCORE$ estimates are positive and not significant. Therefore, unlike results in the effective spread regressions, we find limited evidence that adverse-selection component of spreads of the DEV firms widens with more opaque home disclosure proxied by accounting standards, albeit less significantly comparing to that of the EM firms. Coefficient estimates of $CIVIL$ are consistently positive and significant across specifications, again indicating legal origin is an important factor in determining information cost for DEV firms. $ANTIDIR$ is not significant in the regression without other controls, and is otherwise positive. In contrast to results in the effective spread regression, estimates of institutional quality variables for the whole sample all have the

[19] $GCRSCORE$, in fact, appears to be positively correlated with effective spreads, although not significant. The reason behind a positive relation between effective spreads and $GCRSCORE$ among DEV firms may be due to ADRs from more transparent markets being more actively traded and thus have higher order processing cost and more volatile returns, which both contribute to higher effective spread. When the information asymmetry component of spread is less affected by home market information environment for DEV ADR firms, effects of other components of the bid-ask spread are likely to dominate.

expected signs and are significant. This is understandable, because there are more variations across countries of emerging and developed markets in the whole sample, thus the power of the tests are higher. It can also partly due to that DEV firms' responses of adverse selection component of spreads to disclosure and governance variables are more "well behaved" than that of effective spreads.

Overall, we conclude that better local legal institution qualities and more transparent information environment reduce the adverse selection component of trading costs. This effect is more pronounced for emerging market firms, which display significant effects in both effective trading cost and adverse selection component of spreads than for developed market firms. For firms from developed markets, local information disclosure and corporate governance measured by anti-director rights do not appear to adversely affect effective spreads, instead the rule of law based on different legal origins appears to be the dominant institutional factor in affecting trading costs. The adverse selection component of spreads of developed market firms are weakly correlated with domestic institution qualities, but the non-information component is not. Both information and non-information component of spreads of emerging market firms are correlated with domestic institution quality. As a result, the overall sample exhibits correlation between information component of spreads and home quality of institutions.

3.5 Alternative Information Measure

So far, we have presented empirical evidence that information-based trading is positively correlated with a more opaque domestic information environment and a poorer institutional quality. More specifically, bid-ask spreads, and their information component, appear to be higher for ADRs from markets of lower disclosure, poorer investor protection, and of civil law legal origin, especially for emerging market firms. To substantiate our interpretation of the relation between information asymmetry of ADR firms and the home country information and institutional quality, we test for the relation with an alternative adverse selection measure that is not spread-based as the dependent variable.

Llorente at al. (2002) develop an intensity-of-informed-trading measure that accounts for the trading volume accompanying stock return autocorrelations. We follow their method and construct our alternative proxy for each firm-year with resulting coefficient estimates of C_{2it}, denoted C2, from equation 2 for all NYSE and AMEX listed firms in our sample.[20] Within each year, higher values of C2 tend to indicate more information-based trading and a higher degree of adverse selection.

[20] Volume data for NASDAQ firms contains information from after-hour trading and therefore is not as reliable. We also eliminate firms that have fewer than 60 available observations in a year.

Results of regressions using C2 (scaled by 100) as the dependent variable are reported in Table 10. To minimize the error driven by market factor and the complication of between-year comparisons of C2, we estimate with the two-stage regression approach and report the means of the estimates and *p*-values of the related T-tests. The results for this alternative measure of stock price informativeness support the findings that domestic information environment and institutional qualities matter primarily for emerging market ADRs. The coefficient estimates of $GCRSCORE$ and $ANTIDIR$ for EM firms are negative and significant, while for DEV firms they are positive. We do not find support that information asymmetry is related to legal origin with the C2 measure. However, caution should be taken against over-interpreting the C2 measure results, since the goodness-of-fit is relatively poor. R^2 of cross section regressions are at about 5% (consistent with Llorente at al. (2002)).

3.6 Is the Home Country Institution Risk Priced?

With the evidence presented above, that domestic information environment and institutional qualities continue to affect adverse selection costs of ADRs, especially for emerging market firms, it is natural to ask the question: Is the risk posed by home country information opaqueness and inadequate institutional quality priced? Previous research finds evidence that poor shareholder protection (LLSV (2002)) and weak legal institutions (Lombardo and Pagano (1999)) are penalized with lower valuations. We've already seen that poorer home country institutions are associated with higher capital costs in terms of higher bid-ask spreads of ADRs. This section presents some preliminary evidence on the valuation effect of the home country institution risk.

In our context, the task of answering that question is a lot more difficult, because ADR returns also reflect country factors other than the home country capital market environment. It is difficult to differentiate the information factor from other country risk factors in our context. Further, occasional bursts of international financial crisis in emerging markets will likely distort our analysis. Nevertheless, we attempt to provide some clue to that question by analyzing monthly excess ADR returns. We use returns after 2002 to avoid complication by international financial crises. We first consider a hedge portfolio similar to Aboody, Hughes, and Liu (2004). More specifically, we extend the Fama-French three-factor model by using a hedge portfolio based on home capital market environment factor and substituting a world market return for market return. We estimate for each firm-year:

$$r_{p\tau} - r_{f\tau} = \alpha + \beta_1(r_{wd\tau} - r_{f\tau}) + +\beta_2 SMB_\tau + \beta_3 HML_\tau + \zeta_\tau, \tag{5}$$

where $r_{p\tau}$ is the (equally weighted) monthly hedge portfolio return of going long in ADRs from markets where $GCRSCORE$ are below the sample median and going short in ADRs from markets where $GCRSCORE$ are above the sample median. $r_{f\tau}$ is the risk free rate, $r_{wd\tau}$ is the U.S. dollar return of world market index; SMB_τ and HML_τ are, respectively, the Fama and French (1992) size and market-to-book factor returns. We are interested in the estimate of α. A positive estimation of α suggests that lower information quality requires compensation via higher expected returns. Regression with monthly returns from 2002 to 2006 gives us an estimation of α of 0.67 with a T-stat of 1.5.

To investigate the question in more depth, we next adopt an approach similar to Easley, Hvidkjaer, and O'Hara (2002). We first estimate factor loadings with returns of 36 months prior to the month. For each firm i at month t we estimate:

$$r_\tau - r_{f\tau} = \alpha + \omega_{wd}(r_{wd\tau} - r_{f\tau}) + \omega_{smb}SMB_\tau + \omega_{hml}HML_\tau + \zeta_\tau. \tag{6}$$

We then estimate cross-sectionally (firm subscript is omitted):

$$r_t - r_{ft} = \lambda_{0,t} + \lambda_{1,t}\hat{\omega}_{wd,t} + \lambda_{2,t}\hat{\omega}_{smb,t} + \lambda_{3,t}\hat{\omega}_{hml,t} + \lambda_{4,t}HCME + \varrho_t, \tag{7}$$

where $HCME$ are our proxies for home capital market environment. We expect negative estimate of λ_4 on $GCRSCORE$, $CIFAR$, and $ANTIDIR$ if lower information quality requires higher cost of capital. Table 11 reports the mean and P-value of T-test of average λ_4 loading from 2002 to 2006.

The resulting estimates show $GCRSCORE$, $CIFAR$, and $ANTIDIR$ are negatively correlated with the risk-adjusted excess return, and $CIVIL$ is positively correlated with the risk-adjusted abnormal return. Lower information transparency, poorer protection of investor rights, and civil law of origin are associated with a higher cost of capital. Therefore, it suggests that risks due to home market information opaqueness and lack of investor protection are taken into account by the market. The significance of coefficient estimates in Table 11, however, is relatively weak, with only $GCRSCORE$ being significant at the 10% level. Nevertheless, it provides us with some idea of the answer to the question. As we cautioned above, these excess return analysis should be viewed with extra caution, since factors independent of the home capital market environment effect are difficult to extract. Further research is warranted to draw a more conclusive answer to the question.

4 Why does the Home Market Effect Persist?

So far, we have established the evidence that home capital market effect persists after firms listed in the U.S. One might however wonder why this home capital market effect persists given the evidence in the literature that firms do improve their information environment and investor protection when they cross-list in the U.S., and that that bonding to the U.S. security regime is often cited as one of the reasons that firms cross-list in the U.S. One possible channel, as discussed above, is the variation in effectiveness of bonding given that regulatory rules serve only as a floor of reporting practice and different firms have different costs and benefits of implementation. Another possibility is that firms might revert back to their old practices over time after they cross-list. In a recent study of deregister decision by cross-listed foreign firms, Doidge, Karolyi, and Stulz (2008) find evidence that suggest foreign firms are more likely to deregister once the benefit of raising low-cost capital disappears. A similar channel might contribute to the persistence of home capital market effect: once foreign firms are listed in the U.S. and the prospect of requiring new capital diminishes, home capital market characteristics may creep back into ADR firms.

We analyze two pieces of evidence to try to provide some insights. If differences in voluntary disclosure above regulatory floor is one of the reason that the home capital market effect persists, one would expect that raising the regulatory floor would attenuate the home capital market effect. We study the effect of one such tightening in regulatory rules, namely, the enactment of Sarbanes-Oxley Act.[21] Sarbanes-Oxley, or SOX, sets new or enhanced disclosure and corporate governance standards for all U.S. publicly traded firms, including U.S. listed foreign firms. To examine how sox affect the influence of the home capital market environment on ADRs' adverse selection, we augment our early regression 3 with a interaction term. Specifically, we estimate:

$$AS_{ijt} = \gamma_0 + \gamma_1 HCME_j + \gamma_2 X_{jt} + \gamma_3 X_{ijt} + \gamma_4 HCME_j * SOX + \mu_t + \upsilon_{ijt}, \tag{8}$$

where SOX is a dummy variable that equals one if the year is on or after 2002, and zero otherwise. If the raising of regulatory floor does reduce the effect of the home capital market environment on ADR adverse selection, we should expect to see a smaller home capital market effect after 2002, especially for emerging market firms. In other words, $\gamma 4$ is expected to be positive for $GCRSCORE$, $CIFAR$, and $ANTIDIR$; and positive for $CIVIL$. The regression results are reported in Table 12. Panel A reports the regression estimates for the whole sample. The interaction term, $\gamma 4$, is positive and significant for $GCRSCORE$ and $CIFAR$, indicating that SOX mitigates the difference between home disclosure environment of ADR firms

[21] It is also known as the 'Public Company Accounting Reform and Investor Protection Act'.

with enhanced financial disclosure requirement. The coefficient estimate on $ANTIDIR$ interaction term is also positive but not significant, and the coefficient estimate on $CIVIL$ interaction term is negative and significant. Panel B and Panel C reports regression estimates for sub-sample of emerging market firms and developed market firms respectively. Overall, results in Table 12 are consistent with the notion that higher regulatory requirements can help reduce the influence of home capital market environment for cross-listed firms, especially for emerging market firms where domestic transparency and corporate governance is not adequate.[22]

We next analyze the dynamics of adverse selection cost over years after firms are listed in the U.S. Specifically, we estimate the coefficient of bid-ask spread on years a firm has been listed in the U.S. after controlling for annual average of the spreads and other firm-specific characteristics. That is, we augment our regression equation 3 with dummy variables according to the vintage of the listing. In other words, we analyze the fluctuations of the spreads according to the vintages of cross-listing. Figure 2 shows the plot of estimates over the listing years. It shows that bid-ask spread spikes up in the second and third year following the U.S. listing, and it remains higher for emerging market firms while decreases over time for developed market firms. Figure 2 suggests that a similar channel as Doidge, Karolyi, and Stulz (2008) suggests could be at work for the home capital market environment effect. Disclosure and governance qualities deteriorate and thus adverse-selection costs increase after firms have raised capital in the U.S. market. Our finding that adverse-selection costs for emerging market ADRs, in contrast to their developed counterpart, remain high after years of listing is consistent with our earlier finding that EM firms are in general more likely to subject to their home capital market environment.

In summary, our analysis in this section suggests that (i) regulatory rules serving only as a floor is part of the reason why home capital market environment effect exists; (ii) raising the regulatory floor has a bigger impact on emerging market firms than developed market firms; and that (iii) emerging market ADRs are more likely to suffer from a higher adverse selection cost as the years of listing increases.

5 Conclusion

Cross-listing has increasingly become an important form of raising capital abroad. U.S. investors hold ADRs as an alternative way to seek the benefit of international diversification (Ammer et al. (2008)). Previous research on cross-listing finds evidence in support of the bonding theory, which asserts that foreign firms can

[22] Another possible reason why adverse-selection cost has been reduced following the enaction of SOX is that new firms were to listed in the U.S. would now list in exchanges who regulate the financial sector with a lighter touch.

improve their disclosure and governance by cross-listing in the United States in order to bond themselves to the U.S. security regimes. The degree of effectiveness of such bonding, however, remains an open question. In this paper, we contribute to the bonding literature by investigating whether the home capital market environment such as information disclosure and the protection of investor rights remains to have effect on the degree of information asymmetry of ADRs cross-listed on the U.S. exchanges. Our evidence supports an affirmative answer to that question, especially for emerging market firms.

We show that both the average quoted bid-ask spread of ADRs and the informational component of the spread are positively correlated with information opaqueness and poor protection of investor rights in the capital market environment of the home countries, and this relation is more pronounced among emerging market ADRs. In other words, the home stigma exists among ADRs traded on the U.S. exchanges. This home stigma is robust to different measures of home market information environment and different statistical estimation methods. Our evidence with spread-based measure implies that adverse selection cost in ADRs is significantly higher for ADRs from less transparent and poorly governed capital markets, and our alternative non-spread-based measure confirms that the pattern reflects an information problem. In addition, we provide evidence that this "home stigma" risk appears to be priced by the market. Cross-sectionally, the difference is significant between firms from emerging markets and firms from more mature capital markets. Among emerging market ADRs, the connection between the home capital market environment and their adverse selection in the U.S. trading is much stronger than their developed market counterparts. Indeed, the "home stigma" problem of emerging market ADRs is so prominent that it also drives their effective spread and overall trading costs. Information opacity of emerging markets does not appear to be solely due to the lack of regulation stipulation itself. In fact, the survey-based transparency measure fits them better than the accounting-rule-based measure, suggesting lack of enforcement of the existing rules. Among developed market ADRs, the home stigma phenomenon is weaker, but there is evidence that home market accounting standards and the quality of legal institutions continue to affect their level of adverse section in the U.S. trading.

Timely and intense financial disclosures, including interpretation and coverage by analysts and the media, are crucial for inside managers to have credible ways of conveying hidden firm-specific information to outside investors. Although the regulatory requirements of U.S. listing provide cross-listed firms with an opportunity to bond with the U.S. market regime, much of the disclosure practice is voluntary and may be subject to an individual firm's costs and benefits. Home capital market environments can affect a firm's incentive of adhering to a higher disclosure standard, and therefore affect the level of adverse selection in their U.S.-listed securities. Our results suggest that this is especially a concern for emerging market firms. Given

the fact that bonding to the U.S. security regime is often cited as one of the reasons that firms cross-list in the U.S., our finding of home stigma appears a bit puzzling. Our further analysis shows that the influence of the home environment becomes weaker for emerging market firms after Sarbanes-Oxley is enacted. This piece of evidence is consistent with the theory that raising regulatory floor in the U.S. can help firms whose disclosure and governance practices are closer to the floor to be less influenced by bad practices at home. We also find evidence that adverse selection costs increase after an initial period of lower costs following cross-listing, which is more problematic for emerging market firms whose costs remain higher years after the listings. This finding is consistent with the notion that foreign firms are more likely to be affected by poor practices at home once the benefit of raising low-cost capital disappears, and it indicates one possible reason why home environment affects the adverse selection cost in ADR trading.

Our results have important policy implications. Our results illustrate that cross-listing in the United States is not a complete substitute for improvement of local information transparency and protection of minority shareholders. Governments and policymakers should still focus on promoting information disclosure and improving corporate governance in order to attract capital flows to their countries. Our finding that quality of governance matters for the information environment also suggests that policies aiming to improve domestic disclosure should be complemented with policies promoting better investor rights protection.

References

Aboody, Davis, John Hughes, and Jing Liu, 2004, Earnings quality, insider trading, and cost of capital, *Journal of Accounting Research* 43, 651–673.

Ammer, John, Sara B. Holland, David C. Smith, and Francis E. Warnock, 2008, Why do U.S. cross-listings matter?, International Finance Discussion Papers 930, Board of Governors of the Federal Reserve System.

Bailey, Warren, G. Andrew Karolyi, and Carolina Salva, 2006, The economic consequences of increased disclosure: Evidence from international cross-listings, *Journal of Financial Economics* 81, 1175–213.

Ball, 2001, Infrastructure requirements for an economically efficient system of public financial reporting and disclosure, *Brookings-Wharton Papers on Financial Services* pp. 589–623.

Bancela, Franck, Madhu Kalimipallib, and Usha R. Mittooc, 2009, Cross-listing and the long-term performance of ADRs: Revisiting european evidence, *Journal of International Financial Markets, Institutions and Money* Forthcoming.

Bharath, Sreedhar T., Paolo Pasquariello, and Guojun Wu, 2009, Does asymmetric information drive capital structure decisions?, *Review of Financial Studies* 22, 3211–3243.

Brockman, Paul, Inder K. Khurana, and Xiumin Martin, 2008, Voluntary disclosures around share repurchases, *Journal of Financial Economics* 89, 175 – 191.

CIFAR, 1995, *International accounting and auditing trends* (CIFAR Publications: Princeton, NJ) 4th edn.

Coffee Jr, John C., 1999, The future as history: The prospects for global convergence in corporate governance and its implications, *Northwestern University Law Review* 93, 641C708.

Doidge, Craig, 2004, U.S. cross-listings and the private benefits of control: Evidence from dual class firms, *Journal of Financial Economics* 72, 519–553.

——— , G. Andrew Karolyi, and René Stulz, 2004, Why are foreign firms that list in the U.S. worth more?, *Journal of Financial Economics* 71, 205C238.

——— , 2006, Why do countries matter so much for corporate governance?, *Journal of International Economics* 86, 1–39.

——— , 2008, Why do foreign firms leave U.S. equity markets?, NBER Working Paper No. 14245.

Easley, David, Soeren Hvidkjaer, and Maureen O'Hara, 2002, Is information risk a determinant of asset returns?, *Journal of Finance* 57, 2185–2221.

Eleswarapu, Venkat R., and Kumar Venkataraman, 2006, The impact of legal and political institutions on equity trading costs: A cross-country analysis, *The Review of Financial Studies* 19, 1082–1111.

Fama, Eugene F., and Kenneth R. French, 1992, The cross-section of expected stock returns, *Journal of Finance* 47, 427–465.

Fama, Eugene F., and James D. MacBeth, 1973, Risk, return, and equilibrium: Empirical tests, *Journal of Political Economy* 81, 607–636.

Ferreira, Miguel A., and Nuno Fernandes, 2008, Does international cross-listing improve the information environment?, *Journal of Financial Economics* 88, 216–244.

Foerster, Stephen, and Andrew G. Karolyi, 1999, The effect of market segmentation and investor recognition on asset prices: Evidence from foreign stocks listing in the United States, *Journal of Finance* LIV, 981–1013.

Foerster, Stephen R., and G. Andrew Karolyi, 2000, The long-run performance of global equity offerings, *The Journal of Financial and Quantitative Analysis* 35, 499–528.

George, Thomas J., Gautam Kaul, and M. Nimalendran, 1991, Estimation of the bid-ask spread and its components: A new approach, *The Review of Financial Studies* 4, 623–656.

Heflin, Frank L., Kenneth W. Shaw, and John J. Wild, 2005, Disclosure policy and market liquidity: Impact of depth quotes and order sizes, *Contemporary Accounting Research* 22, 829–866.

Jiang, Guohua, Charles M. C. Lee, and Yi Zhang, 2005, Information uncertainty and expected returns, *Review of Accounting Studies* 10, 185–221.

Jin, Li, and Stewart Myers, 2006, R-squared around the world: New theory and new tests, *Journal of Financial Economics* 79, 257–292.

Jordan, Cally, 2006, The chameleon effect: Beyond the bonding hypothesis for cross-listed securities, *NYU Journal of Law & Business* 37.

Kim, Oliver, and Robert E. Verrecchia, 2001, The relation among returns, disclosure and trading volume information, *The Accounting Review* 76, 633ł654.

La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer, 2006, What works in securities laws, *Journal of Finance* 61, 1–32.

——— , and Robert W. Vishny, 1998, Law and finance, *Journal of Political Economy* 106, 1113–1155.

——— , 2002, Investor protection and corporate valuation, *Journal of Finance* 57, 1147–1170.

Lang, Mark H., Karl V. Lins, and Darius P. Miller, 2003, ADRs, analysts, and accuracy: Does cross listing in the United States improve a firm's information environment and increase market value?, *Journal of Accounting Research* 41, 317–345.

——— , 2004, Do analysts matter most when investors are protected least?, *Journal of Accounting Research* 42, 589–623.

Lang, Mark H., and Russell J. Lundholm, 1996, Corporate disclosure policy and analyst behavior, *The Accounting Review* 71, 467–492.

Lang, Mark H., Jana Smith Raedy, and Wendy M. Wilson, 2006, Earnings management and cross listing: Are reconciled earnings comparable to U.S. earnings?, *Journal of Accounting and Economics* 42, 255–283.

Lee, Charles M C, Belinda Mucklow, and Mark J Ready, 1993, Spreads, depths and the impact of earnings information: An intraday analysis, *Review of Financial Studies* 6, 345–376.

Llorente, Guillermo, Roni Michaely, Gideon Saar, and Jiang Wang, 2002, Dynamic volume-return relation of individual stocks, *Review of Financial Studies* 15, 1005–1047.

Lombardo, Davide, and Marco Pagano, 1999, Legal determinants of the return on equit, CSEF Working Papers, No. 24.

Miller, Darius P., and Natalia Reisel, 2009, Do country-level investor protection impact security-level contract design? evidence from foreign bond covenants, Southern Methodist University Working Papers.

Morck, Randall, Bernard Yeung, and Wayne Yu, 2000, The information content of stock markets: Why do emerging markets have so little firm-specific risk?, *Journal of Financial Economics* 46, 215–260.

Reese, William Jr., and Michael S. Weisbach, 2002, Protection of minority shareholder interests, cross-listings in the United States, and subsequent equity offerings, *Journal of Financial Economics* 66, 65C104.

Roll, R., 1984, A simple implicit measure of the effective bid-ask spread in an efficient market, *Journal of Finance* 39, 1127–1139.

Siegel, Jordan, 2005, Can foreign firms bond themselves effectively by renting U.S. securities laws?, *Journal of Financial Economics* 75, 319–359.

Stoll, Hans R., 1989, Inferring the components of the bid-ask spread: Theory and empirical tests, *Journal of Finance* 44, 115–134.

Stulz, René, 1999, Globalization', corporate finance, and the cost of capital, *Journal of Applied Corporate Finance* 12, 8–25.

Table 0: Appendix: Measures of ADR Adverse Selection and Home Capital Market Environment

Variable	Description	Source
Adverse Selection in ADRs		
Average Quoted Spread (QS)	Proportional spread in percentage terms with daily data is calculated as: $S = 100 * (askprice - bidprice)/\frac{1}{2}(askprice + bidprice)$,we then take yearly average to get average quoted spread for each stock every year.	Author's calculation based on CRSP data
Effective Spread (ES)	Effective Spread is estimated with $\hat{ES}_i = 200\sqrt{-cov(RD_\tau, RD_{\tau-1})}$, where RD_τ is the difference between returns based on transaction prices and returns calculated using bid-to-bid prices.	Author's calculation based on CRSP data
Adverse-Selection Component of Spread (ADS)	ADS is calculated by subtracting the non-information component from QS. The non-information component is estimated by $\hat{S}_i = 200\sqrt{-cov(\eta_\tau, \eta_{\tau-1})}$, over a 60-day rolling sample in year t, where η_τ is expectation-filtered return.	Author's calculation based on CRSP data
C2	C2 is estimated from the coefficient estimate of c_{2it} in regression equation 2	Author's calculation based on CRSP data
Home Capital Market Environment		
GCRSCORES	Survey-based disclosure score about the level and effectiveness of financial disclosure in different countries.	The Global Competitiveness Reports (2000)
CIFAR	Accounting-standard-based disclosure index for each country published by CIFAR (1995) that represents a score based on the inclusion or omission of 90 items as required disclosures in the annual reports.	LLSV (1998)
Anti-Director Rights (ANTIDIR)	Formed by adding one when: (1) the country allows shareholders to mail their proxy vote; (2) shareholders are not required to deposit their shares prior to the General Shareholders meeting; (3) cumulative voting or proportional representation of minorities on the board of directors is allowed; (4) an oppressed minorities mechanism is in place; (5) the minimum percentage of share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting is less than 10 percent; or (6) shareholders have preemptive rights that can only be waived by a shareholders meeting. The range for the index is from zero to six.	LLSV (1998)
CIVIL	Equals one if the Company Law or Commercial Code of the country originates in Roman Law, and zero otherwise.	LLSV (1998)
R^2_{jt} (RS)	An information measure based on R^2s of ADRs' local market return in regression equation 4. R^2s are then averaged across firms in country j in year t to get R^2_{jt}.	Author's calculation based on DATASTREAM data

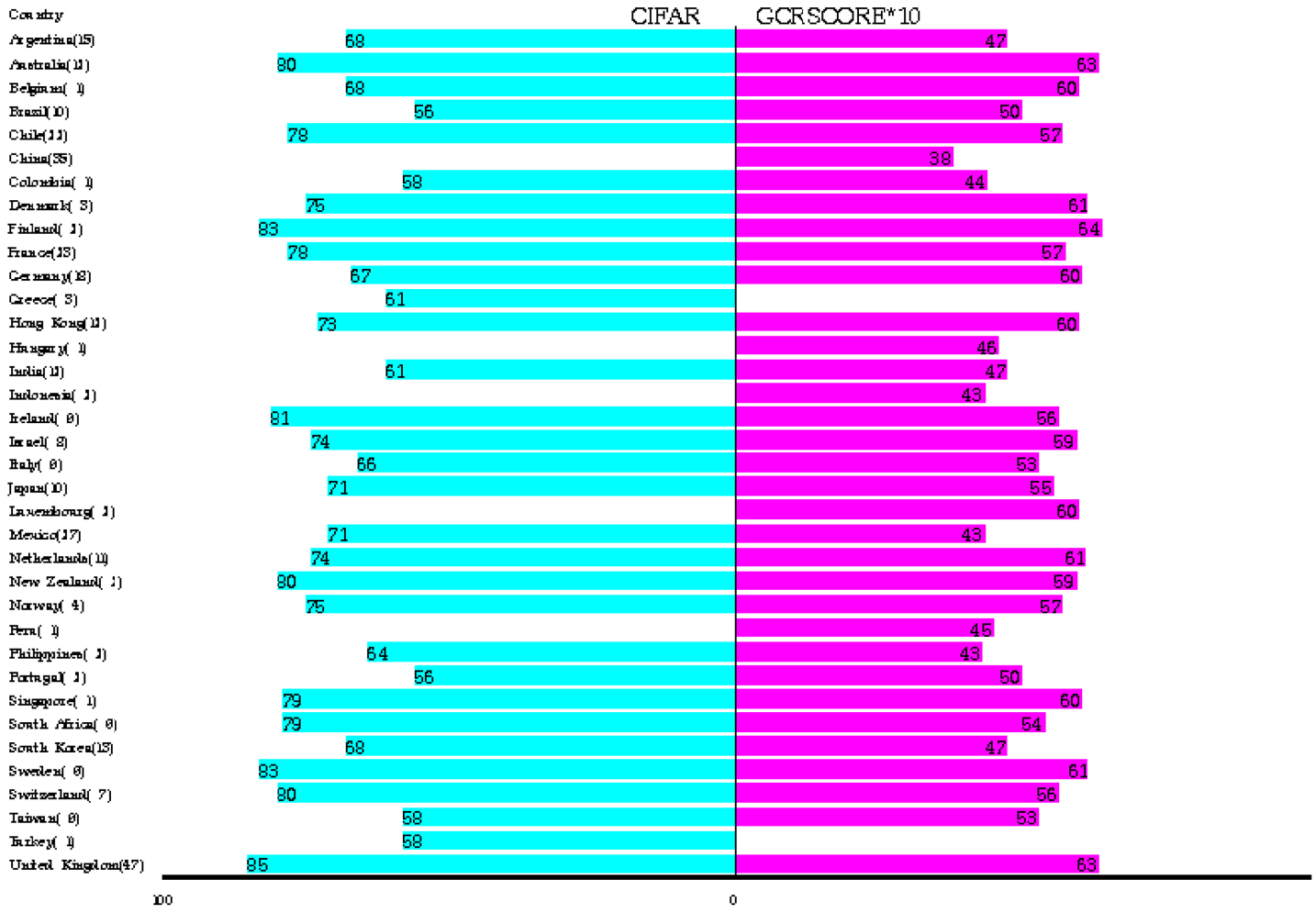

Figure 1: Home Market Information Transparency Measures. Left-side bars represent CIFAR scores, and right-side bars represent GCRSCOREs, scale up by 10.

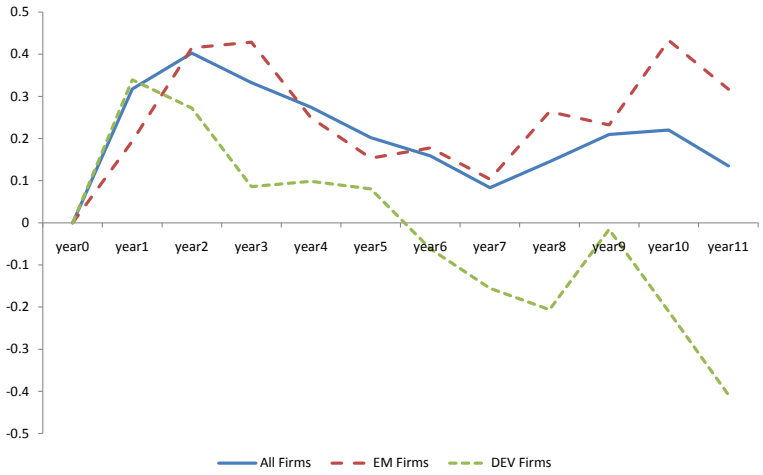

Figure 2: Average Bid-ask Spread Over the Vintage of the Listings

Table 1: Correlation Between the Home Capital Market Environment Measures

This table reports the Spearman correlation coefficient of institution quality proxies. Summary statistics of each proxy are also reported. GCRSCORE is a survey-based measure from Global Competitive Report, and proxies for information transparency. CIFAR is an accounting-standard-based measure of disclosure. ANTIDIR is a measure of minority investor protection. CIVIL is a dummy variable that equals one if a country's business law is of civil law origin, and zero if it is of common law origin.

	GCRSCORE	CIFAR	ANTIDIR	CIVIL
GCRSCORE	1.00	0.69	0.13	-0.31
CIFAR	0.69	1.00	0.36	-0.43
ANTIDIR	0.13	0.36	1.00	-0.64
CIVIL	-0.31	-0.43	-0.64	1.00
Mean	5.41	71.23	3.03	0.73
Std	0.73	8.91	1.31	0.45
Median	5.65	73.00	3.00	1.00
N	34	31	33	33

Table 2: Summary Statistics on ADRs

This table reports the summary statistics for our sample of level II and III ADRs. Means of quoted spread, log size, tangibility, DTA, and MTB of firms from different sub-sample of markets are reported, as well as the means and standard deviations of the whole sample. p-value of T-test of difference in means are reported in parentheses. SIZE is logarithmic of firm size, TANG is percentage of tangible assets in total assets, DTA is the debt-to-asset ratio, and MTB is the market-to-book ratio.

	Quoted Spread	SIZE	TANG	DTA	MTB
$GCRSCORE \geq Median$	1.72	7.70	0.32	0.26	1.93
$GCRSCORE < Median$	1.75	7.95	0.46	0.27	1.70
T-test Difference (p-value)	(0.52)	(0.01)	(0.00)	(0.18)	(0.30)
$CIFAR \geq Median$	1.70	7.63	0.34	0.26	1.95
$CIFAR < Median$	1.86	8.05	0.40	0.27	1.68
T-test Difference (p-value)	(0.03)	(0.00)	(0.00)	(0.17)	(0.20)
$ANTIDIR \geq Median$	1.70	7.70	0.38	0.27	2.02
$ANTIDIR < Median$	1.79	8.03	0.40	0.26	1.49
T-test Difference (p-value)	(0.00)	(0.00)	(0.01)	(0.22)	(0.01)
COMMON	1.63	7.28	0.34	0.25	2.68
CIVIL	1.83	8.04	0.38	0.27	1.46
T-test Difference (p-value)	(0.01)	(0.00)	(0.01)	(0.19)	(0.00)
Emerging Market Firms	1.80	7.81	0.49	0.27	1.62
Developed Market Firms	1.67	7.84	0.29	0.25	2.01
T-test Difference (p-value)	(0.05)	(0.65)	(0.00)	(0.03)	(0.02)
Sample Mean	1.71	7.82	0.39	0.26	1.82
Sample Standard Deviation	1.47	1.73	0.27	0.2	3.87
Number of Observation	1909	1909	1905	1909	1879

Table 3: Quoted Bid-Ask Spread and Home Capital Market Environment

This table reports the estimates of average quoted spread on institution quality measures of home capital markets. GCRSCORE is a survey-based measure from Global Competitive Report, and proxies for information transparency. CIFAR is a accounting-standard-based measure of disclosure. ANTIDIR is a measure of minority investor protection. CIVIL is a dummy variable that equals one if a country's business law is of civil law origin, and zero if it is of common law origin. SIZE is logarithmic of firm size, TANG is percentage of tangible assets in total assets, DTA is the debt-to-asset ratio, and MTB is the market-to-book ratio. *P*-values are calculated with White robust errors and reported in parentheses. Error Degree of Freedom and adjusted R-squares are also reported at the bottom. Superscripts a, b, and c indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	GCRSCORE	**CIFAR**	**ANTIDIR**	**CIVIL**
Intercept	4.97^{c}	5.73^{c}	4.86^{c}	4.51^{c}
	(0.00)	(0.00)	(0.00)	(0.00)
Disclosure and Governance	-0.09^{b}	-0.02^{c}	-0.10^{c}	0.35^{c}
	(0.02)	(0.00)	(0.00)	(0.00)
U.S. Market Volatility	0.09	-0.11	0.06	-0.21
	(0.92)	(0.91)	(0.95)	(0.82)
Local Market Volatility	0.003	0.05^{a}	0.002	0.003
	(0.46)	(0.06)	(0.64)	(0.54)
SIZE	-0.31^{c}	-0.32^{c}	-0.32^{c}	-0.33^{c}
	(0.00)	(0.00)	(0.00)	(0.00)
TANG	0.30^{c}	0.24^{b}	0.40^{c}	0.32^{c}
	(0.01)	(0.04)	(0.00)	(0.01)
DTA	1.06^{c}	1.07^{c}	1.06^{c}	1.06^{c}
	(0.00)	(0.00)	(0.00)	(0.00)
MTB	-0.06^{c}	-0.06^{c}	-0.06^{c}	-0.06^{c}
	(0.01)	(0.00)	(0.00)	(0.00)
Year Dummy	Yes	Yes	Yes	Yes
EDF	1785	1596	1622	1622
Adj. R-square	0.41	0.39	0.39	0.39

Table 4: Quoted Bid-Ask Spread and Home Market Information Transparency

This table reports the estimates of average quoted spreads on disclosure measure and various controls. GCRSCORE is a survey-based measure from Global Competitive Report, and proxies for information transparency. CIFAR is an accounting-standard-based measure of disclosure. ANTIDIR is a measure of minority investor protection. CIVIL is a dummy variable that equals one if a country's business law is of civil law origin, and zero if it is of common law origin. SIZE is logarithmic of firm size, TANG is percentage of tangible assets in total assets, DTA is the debt-to-asset ratio, and MTB is the market-to-book ratio. NUMANALYS is measured as the number of analysts following of that specific year. DISPERSION is dispersion of analyst EPS forecast measured as standard deviation of analysts forecast in months of calendar year prior to the end of fiscal year, and normalized by absolute value of realized EPS and square root of the number of analysts. *P*-values are calculated with White robust errors and reported in parentheses. Error Degree of Freedom and adjusted R-squares are also reported at the bottom. Superscripts a, b, and c indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Intercept	5.21^c	5.15^c	4.89^c	5.57^c	5.41^c	5.75^c	5.41^c	4.97^c	5.13^c
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GCRSCORE	-0.11^c	-0.11^c	-0.08^a	-0.05^a	-0.15^c	-0.17^c	-0.13^b	-0.16^c	-0.17^c
	(0.00)	(0.00)	(0.10)	(0.10)	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)
SIZE	-0.30^c	-0.30^c	-0.31^c	-0.34^c	-0.34^c	-0.33^c	-0.34^c	-0.21^c	-0.24^c
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
DTA	1.15^c	1.15^c	1.05^c	0.93^c	1.10^c	1.10^c	1.11^c	0.78^c	0.77^c
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
MTB	-0.06^c	-0.06^c	-0.06^c	-0.05^c	-0.06^c	-0.06^c	-0.06^c	-0.06^c	-0.05^b
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.02)
U.S. Market Volatility		0.06	0.09	-0.19	-0.23	-0.05	-0.14	-0.40	-0.80
		(0.92)	(0.89)	(0.76)	(0.74)	(0.94)	(0.84)	(0.56)	(0.17)
Local Market Volatility		0.004	0.004	0.003	0.000	0.000	0.000	0.003	-0.001
		(0.33)	(0.39)	(0.43)	(0.96)	(0.92)	(0.98)	(0.52)	(0.82)
TANG			0.29^c	0.37^c	0.30^c	0.34^c	0.33^c	0.39^c	0.41^c
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
CIVIL					0.25^c		0.20^c		0.43^c
					(0.00)		(0.01)		(0.00)
ANTIDIR						-0.06^c	-0.04		0.001
						(0.00)	(0.13)		(0.96)
DISPERSION								0.02	-0.01
								(0.88)	(0.96)
NUMANALYS								-0.04^c	-0.04^c
								(0.00)	(0.00)
EM			0.02						
			(0.79)						
Industry Fixed Effect				Yes					
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EDF	1799	1789	1784	1777	1595	1595	1594	1261	1135
Adj. R-square	0.412	0.411	0.412	0.433	0.396	0.395	0.396	0.522	0.519

Table 5: Quoted Spread and Home Capital Market Environment: Emerging and Developed Markets

This table reports the estimates of quoted spread on institution quality measures of home capital market for sub-samples of emerging and developed markets. GCRSCORE is a survey-based measure from Global Competitive Report, and proxies for information transparency. CIFAR is an accounting-standard based measure of disclosure. ANTIDIR is a measure of minority investor protection. CIVIL is a dummy variable that equals one if a country's business law is of civil law origin, and zero if it is of common law origin. SIZE is logarithmic of firm size, TANG is percentage of tangible assets in total assets, DTA is the debt-to-asset ratio, and MTB is the market-to-book ratio. Estimated on Year Dummies are not reported. *P*-values are calculated with White robust errors, and reported in parentheses. Error Degree of Freedom and adjusted R-squares are also reported at the bottom. Superscripts a, b, and c indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Panel A: Emerging Market Firms				Panel B: Developed Market Firms			
	GCRSCORE	CIFAR	ANTIDIR	CIVIL	GCRSCORE	CIFAR	ANTIDIR	CIVIL
Intercept	5.15^{c}	6.11^{c}	5.42^{c}	4.47^{c}	3.65^{c}	5.02^{c}	4.19^{c}	4.16^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Disclosure and Governance	-0.14^{c}	-0.02^{c}	-0.17^{c}	0.45^{c}	0.09	-0.01^{b}	-0.002	0.18^{b}
	(0.01)	(0.00)	(0.00)	(0.00)	(0.42)	(0.02)	(0.94)	(0.03)
U.S. Market Volatility	1.36	1.29	1.28	1.23	-0.40	-0.90	-0.63	-0.64
	(0.30)	(0.34)	(0.30)	(0.30)	(0.61)	(0.29)	(0.43)	(0.44)
Local Market Volatility	0.03	0.02	0.000	0.04^{b}	0.01	0.31^{b}	0.005	0.003
	(0.11)	(0.23)	(0.99)	(0.05)	(0.25)	(0.05)	(0.35)	(0.55)
SIZE	-0.38^{c}	-0.41^{c}	-0.41^{c}	-0.40^{c}	-0.27^{c}	-0.28^{c}	-0.28^{c}	-0.29^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
TANG	0.15	-0.15	0.03	-0.13	0.24	0.27	0.26	0.35^{a}
	(0.36)	(0.40)	(0.88)	(0.48)	(0.18)	(0.14)	(0.15)	(0.06)
DTA	1.79^{c}	2.02^{c}	1.87^{c}	1.75^{c}	0.63^{c}	0.73^{c}	0.66^{c}	0.73^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
MTB	-0.05^{b}	-0.05^{b}	-0.04^{b}	-0.04^{b}	-0.08^{b}	-0.07^{b}	-0.07^{b}	-0.07^{b}
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EDF	850	698	709	709	916	879	894	894
Adj. R-square	0.535	0.488	0.513	0.494	0.313	0.315	0.311	0.315

Table 6: Quoted Spread and Home Capital Market Environment: Two-Stage Regression Approach

This table reports the estimates of average quoted spreads on measures of home capital market environment using a two-stage regression approach. Separate regressions are estimated cross-sectionally in each year and the time series means of the coefficients are reported in the table. *P*-values referenced from a T-distribution are reported in parentheses. GCRSCORE is a survey-based measure from Global Competitive Report, and proxies for information transparency. CIFAR is an accounting-standard-based measure of disclosure. ANTIDIR is a measure of minority investor protection. CIVIL is a dummy variable that equals one if a country's business law is of civil law origin, and zero if it is of common law origin. SIZE is logarithmic of firm size, TANG is percentage of tangible assets in total assets, DTA is the debt-to-asset ratio, and MTB is the market-to-book ratio. NUMANALYS is measured as the number of analysts following of that specific year. DISPERSION is dispersion of analyst EPS forecast measured as standard deviation of analysts forecast in months of calendar year prior to the end of fiscal year, and normalized by absolute value of realized EPS and square root of the number of analysts. Superscripts a, b, and c indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Intercept	5.12^{c}	5.38^{c}	5.75^{c}	5.69^{c}	5.78^{c}	4.41^{c}	4.53^{c}	5.57^{c}	4.79^{c}	4.33^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GCRSCORE	-0.12^{a}	-0.09	-0.20^{b}	-0.19^{b}	-0.20^{b}	-0.20^{c}				-0.21^{b}
	(0.08)	(0.14)	(0.04)	(0.02)	(0.05)	(0.00)				(0.03)
Local Market Volatility	0.018	0.030	0.006	0.009	0.008	0.001	0.018	0.018	0.019	-0.012
	(0.33)	(0.18)	(0.70)	(0.60)	(0.63)	(0.97)	(0.36)	(0.75)	(0.36)	(0.42)
SIZE	-0.34^{c}	-0.35^{c}	-0.36^{c}	-0.35^{c}	-0.36^{c}	-0.22^{c}	-0.36^{c}	-0.35^{c}	-0.35^{c}	-0.23^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
TANG	-0.01	-0.02	0.04	0.05	0.04	0.26	0.06	0.02	0.14	0.27
	(0.97)	(0.91)	(0.79)	(0.72)	(0.78)	(0.16)	(0.65)	(0.91)	(0.29)	(0.19)
DTA	1.33^{c}	1.33^{c}	1.29^{c}	1.35^{c}	0.22^{c}	0.90^{c}	1.38^{c}	1.30^{c}	1.38^{c}	0.86^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
MTB	-0.24^{c}	-0.23^{c}	-0.24^{c}	-0.24^{c}	-0.24^{c}	-0.15^{c}	-0.26^{c}	-0.25^{c}	-0.25^{c}	-0.13^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
CIVIL			0.03		0.01		0.20^{b}			0.32^{c}
			(0.84)		(0.94)		(0.03)			(0.01)
ANTIDIR				-0.03	0.01				-0.07^{c}	0.01
				(0.27)	(0.71)				(0.00)	(0.63)
DISPERSION						1.16^{b}				1.207^{b}
						(0.05)				(0.05)
NUMANALYS						-0.03^{c}				-0.03^{c}
						(0.00)				(0.00)
CIFAR								-0.01^{c}		
								(0.00)		
Industry Fixed Effect		yes								

Table 7: Quoted Spreads and Time-Varying Disclosure Measure

This table reports the estimates of average quoted spreads on time-variant disclosure measure and various controls. Panel A reports the regression results of the whole sample. Panel B reports the regression results of the emerging market firms sub-sample. Panel C reports the regression results of the developed market firms sub-sample. ANTIDIR is a measure of minority investor protection. CIVIL is a dummy variable that equals one if a country's business law is of civil law origin, and zero if it is of common law origin. SIZE is logarithmic of firm size, TANG is percentage of tangible assets in total assets, DTA is the debt-to-asset ratio, and MTB is the market-to-book ratio. *P*-values are calculated with White robust errors, and reported in parentheses. Error Degree of Freedom and R-squares are also reported at the bottom. Superscripts a, b, and c indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Panel A: All Firms				Panel B: Emerging Market Firms				Panel C: Developed Market Firms			
Intercept	1.79^c	2.5^c	2.15^c	1.26^c	1.50^c	2.66^c	1.64^c	2.09^c	2.51^c	2.59^c	2.68^c	2.65^c
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
RS	1.20^b	0.90^a	0.55	1.15^a	2.18^c	0.92	2.12^c	2.30^c	-0.30	0.03	-0.90	-0.19
	(0.03)	(0.10)	(0.40)	(0.06)	(0.00)	(0.17)	(0.01)	(0.01)	(0.75)	(0.98)	(0.41)	(0.85)
U.S. Market Volatility	1.36^c	1.35^c	1.27^c	1.26^c	1.44^c	1.33^c	1.34^c	1.34^c	1.17^c	1.15^c	1.18^c	1.16^c
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Local Market Volatility	0.01	0.007	0.005	0.006	0.11^c	0.15^c	0.09^c	0.09^c	0.006	0.004	0.004	0.006
	(0.20)	(0.28)	(0.39)	(0.38)	(0.00)	(0.00)	(0.00)	(0.00)	(0.33)	(0.56)	(0.53)	(0.40)
SIZE	-0.30^c	-0.35^c	-0.33^c	-0.32^c	-0.39^c	-0.48^c	-0.42^c	-0.42^c	-0.28^c	-0.33^c	-0.31^c	-0.29^c
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
TANG	0.53^c	0.59^c	0.48^c	0.53^c	1.05^c	1.76^c	0.81^c	0.80^c	0.16	-0.07	0.31	0.21
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.39)	(0.79)	(0.12)	(0.29)
DTA	0.99^c	0.81^c	0.98^c	0.98^c	1.22^c	0.90^c	0.93^b	1.36^c	0.78^c	0.52^b	0.87^c	0.82^c
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)
MTB	-0.04^c	-0.03^b	-0.04^c	-0.04^c	-0.03^a	-0.01	-0.02^a	-0.03^a	-0.06^b	-0.05^b	-0.05^b	-0.05^b
	(0.01)	(0.02)	(0.01)	(0.01)	(0.09)	(0.16)	(0.10)	(0.07)	(0.04)	(0.04)	(0.04)	(0.04)
CIVIL			0.30^c				0.58^c				0.28^c	
			(0.00)				(0.00)				(0.01)	
ANTIDIR				-0.05^b				-0.03				-0.04
				(0.06)				(0.67)				(0.28)
Industry Fixed Effect		yes				yes				yes		
EDF	1568	1560	1387	1387	699	693	540	540	861	853	838	838
Adj. R-square	0.28	0.32	0.28	0.28	0.39	0.45	0.37	0.35	0.24	0.29	0.25	0.25

Table 8: Effective Spread and Home Capital Market Environment

This table reports the estimates of effective spreads on measures of home capital market environment. Panel A reports the regression results of the whole sample. Panel B reports the regression results of the emerging market firms sub-sample. Panel C reports the regression results of the developed market firms sub-sample. GCRSCORE is a survey-based measure from Global Competitive Report, and proxies for information transparency. CIFAR is an accounting-standard-based measure of disclosure. ANTIDIR is a measure of minority investor protection. CIVIL is a dummy variable that equals one if a country's business law is of civil law origin, and zero if it is of common law origin. SIZE is logarithmic of firm size, TANG is percentage of tangible assets in total assets, DTA is the debt-to-asset ratio, and MTB is the market-to-book ratio. NUMANALYS is measured as the number of analysts following of that specific year. DISPERSION is dispersion of analyst EPS forecast measured as standard deviation of analysts forecast in months of calendar year prior to the end of fiscal year, and normalized by absolute value of realized EPS and square root of the number of analysts. *P*-values are calculated with White robust errors and reported in parentheses. Error Degree of Freedom and adjusted R-squares are also reported at the bottom. Superscripts a, b, and c indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
				Panel A: ALL Firms			
Intercept	3.49^c	4.31^c	3.43^c	3.72^c	4.37^c	4.13^c	4.14^c
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GCRSCORE	-0.03				-0.10^b	-0.09^a	-0.09^a
	(0.44)				(0.05)	(0.07)	(0.09)
CIFAR		-0.01					
		(0.00)					
US Market Volatility	0.39	0.29	0.29	0.49	0.32	-1.10	-1.27
	(0.65)	(0.76)	(0.76)	(0.60)	(0.74)	(0.26)	(0.19)
Local Market Volatility	0.003	0.060	0.002	0.000	-0.001	-0.001	-0.001
	(0.55)	(0.02)	(0.66)	(0.94)	(0.79)	(0.78)	(0.75)
SIZE	-0.32^c	-0.34^c	-0.34^c	-0.34^c	-0.35^c	-0.24^c	-0.24^c
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Tangibility	0.22^b	0.14	0.23^b	0.30^c	0.28^b	0.24^b	0.17
	(0.04)	(0.23)	(0.05)	(0.01)	(0.02)	(0.03)	(0.22)
DTA	0.76^c	0.76^c	0.76^c	0.78^c	0.82^c	0.41^c	0.33^b
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.03)
MTB	-0.04^c	-0.03^c	-0.03^c	-0.03^c	-0.03^c	-0.01^a	-0.01^a
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.07)	(0.09)
CIVIL			0.17^c		-0.03	0.11	0.11
			(0.01)		(0.67)	(0.11)	(0.15)
ANTIDIR				-0.09^c	-0.07^c	-0.05^b	-0.03
				(0.00)	(0.00)	(0.04)	(0.16)
Dispersion						0.10^a	0.09^a
						(0.08)	(0.10)
Number of Analysts						-0.02^c	-0.02^c
						(0.00)	(0.00)
Industry Fixed Effect							Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EDF	1769	1581	1607	1607	1579	1123	1115
Adj. R-square	0.281	0.282	0.278	0.285	0.290	0.325	0.333
				Panel B: Emerging Market Firms			
Intercept	3.57^c	4.54^c	2.88^c	3.52^c	4.99^c	5.47^c	5.63^c
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GCRSCORE	-0.15^c				-0.26^a	-0.14	-0.17
	(0.01)				(0.10)	(0.33)	(0.26)
CIFAR		-0.02^c					
		(0.00)					
US Market Volatility	1.48	2.04	1.98	2.05	1.99	-1.35	-1.21
	(0.29)	(0.21)	(0.22)	(0.20)	(0.22)	(0.46)	(0.50)

continued on next page

Table 8 – continued from previous page

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Local Market Volatility	0.06^{b}	0.05^{a}	0.07^{b}	0.03	0.03	-0.01	0.01
	(0.03)	(0.07)	(0.02)	(0.31)	(0.31)	(0.66)	(0.85)
SIZE	-0.37^{c}	-0.41^{c}	-0.38^{c}	-0.40^{c}	-0.44^{c}	-0.29^{c}	-0.32^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Tangibility	0.29^{a}	0.10	0.08	0.29	0.45^{b}	0.15	0.53^{b}
	(0.08)	(0.64)	(0.67)	(0.13)	(0.02)	(0.39)	(0.03)
DTA	1.25^{c}	1.43^{c}	1.36^{c}	1.23^{c}	1.51^{c}	1.24^{c}	0.97^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
MTB	-0.03^{c}	-0.03^{b}	-0.03^{b}	-0.02^{b}	-0.03^{c}	-0.08^{c}	-0.05
	(0.00)	(0.05)	(0.02)	(0.03)	(0.01)	(0.01)	(0.16)
CIVIL			0.01		-0.28^{a}	-0.19	-0.25
			(0.93)		(0.09)	(0.27)	(0.16)
ANTIDIR				-0.18^{c}	-0.13^{b}	-0.12^{b}	-0.08
				(0.00)	(0.02)	(0.02)	(0.16)
Dispersion						0.05	0.04
						(0.41)	(0.49)
Number of Analysts						-0.03^{c}	-0.02^{b}
						(0.01)	(0.02)
Industry Fixed Effect							Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EDF	846	695	706	706	678	489	481
Adj. R-square	0.268	0.253	0.244	0.281	0.300	0.368	0.402

Panel c: Developed Market Firms

Intercept	3.07^{c}	4.14^{c}	3.73^{c}	3.74^{c}	2.16^{b}	1.53^{a}	1.07
	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.09)	(0.34)
GCRSCORE	0.09				0.21^{a}	0.20^{a}	0.26^{b}
	(0.38)				(0.09)	(0.08)	(0.03)
CIFAR		-0.01					
		(0.24)					
US Market Volatility	-0.33	-1.03	-0.62	-0.66	-0.86	-0.17	-0.94
	(0.77)	(0.37)	(0.59)	(0.57)	(0.45)	(0.30)	(0.40)
Local Market Volatility	0.004	0.380^{c}	0.000	0.002	0.005	0.01	0.01
	(0.47)	(0.01)	(0.98)	(0.64)	(0.37)	(0.22)	(0.32)
SIZE	-0.31^{c}	-0.32^{c}	-0.33^{c}	-0.31^{c}	-0.34^{c}	-0.22^{c}	-0.23^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Tangibility	0.16	0.14	0.24	0.14	0.28^{a}	0.33^{b}	0.01
	(0.34)	(0.41)	(0.16)	(0.40)	(0.10)	(0.04)	(0.97)
DTA	0.47^{c}	0.52^{c}	0.55^{c}	0.47^{c}	0.52^{c}	0.00	-0.21
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.96)	(0.25)
MTB	-0.04^{c}	-0.03^{c}	-0.04^{c}	-0.04^{c}	-0.04^{c}	-0.01	-0.01^{a}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.14)	(0.08)
CIVIL			0.18^{b}		0.53^{c}	0.51^{c}	0.49^{c}
			(0.03)		(0.00)	(0.00)	(0.00)
ANTIDIR				0.01	0.12^{c}	0.09^{b}	0.06
				(0.64)	(0.00)	(0.03)	(0.19)
Dispersion						0.48^{c}	0.53^{c}
						(0.01)	(0.01)
Number of Analysts						-0.03^{c}	-0.02^{c}
						(0.00)	(0.00)
Industry Fixed Effect							Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EDF	904	867	882	882	880	611	603
Adj. R-square	0.305	0.313	0.311	0.307	0.320	0.345	0.352

Table 9: Adverse-Selection Component of Spreads and Home Capital Market Environment

This table reports the estimates of adverse selection component of spreads on measures of home capital market environment. Panel A reports the regression results of the whole sample. Panel B reports the regression results of the emerging market firms sub-sample. Panel C reports the regression results of the developed market firms sub-sample. GCRSCORE is a survey-based measure from Global Competitive Report, and proxies for information transparency. CIFAR is an accounting-standard-based measure of disclosure. ANTIDIR is a measure of minority investor protection. CIVIL is a dummy variable that equals one if a country's business law is of civil law origin, and zero if it is of common law origin. SIZE is logarithmic of firm size, TANG is percentage of tangible assets in total assets, DTA is the debt-to-asset ratio, and MTB is the market-to-book ratio. NUMANALYS is measured as the number of analysts following of that specific year. DISPERSION is dispersion of analyst EPS forecast measured as standard deviation of analysts forecast in months of calendar year prior to the end of fiscal year, and normalized by absolute value of realized EPS and square root of the number of analysts. *P*-values are calculated with White robust errors and reported in parentheses. Error Degree of Freedom and adjusted R-squares are also reported at the bottom. Superscripts a, b, and c indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Panel A: ALL Firms					
Intercept	0.72	1.12	1.56	1.37	1.27
	(0.94)	(0.91)	(0.88)	(0.90)	(0.90)
GCRScore	-0.10^{c}				-0.11^{b}
	(0.00)				(0.02)
CIFAR		-0.01^{c}			
		(0.00)			
US Market Volatility	4.98	4.92	2.77	3.58	4.10
	(0.72)	(0.73)	(0.85)	(0.80)	(0.77)
Local Market Volatility	0.004	0.040	0.004	0.004	0.002
	(0.29)	(0.12)	(0.29)	(0.29)	(0.58)
SIZE	-0.24^{c}	-0.25^{c}	-0.26^{c}	-0.25^{c}	-0.26^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Tangibility	0.17^{a}	0.14	0.19^{a}	0.25^{b}	0.17
	(0.10)	(0.20)	(0.07)	(0.02)	(0.12)
DTA	0.84^{c}	0.82^{c}	0.81^{c}	0.81^{c}	0.85^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
MTB	-0.08^{c}	-0.08^{c}	-0.07^{c}	-0.08^{c}	-0.07^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
CIVIL			0.32^{c}		0.25^{c}
			(0.00)		(0.00)
ANTIDIR				-0.06^{c}	0.00
				(0.00)	(0.98)
Year Dummy	Yes	Yes	Yes	Yes	Yes
EDF	1470	1316	1340	1340	1316
Adj. R-square	0.486	0.448	0.459	0.452	0.461
Panel B: Emerging Market Firms					
Intercept	5.47^{c}	6.57^{c}	4.45^{c}	5.26^{c}	5.98^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GCRScore	-0.16^{c}				-0.22^{a}
	(0.00)				(0.10)
CIFAR		-0.02^{c}			
		(0.00)			
US Market Volatility	-0.20	-0.35	-0.22	-0.23	-0.24
	(0.73)	(0.58)	(0.72)	(0.71)	(0.70)
Local Market Volatility	0.030	0.020^{a}	0.040	0.010	0.020
	(0.15)	(0.33)	(0.10)	(0.60)	(0.37)
SIZE	-0.31^{c}	-0.34^{c}	-0.31^{c}	-0.33^{c}	-0.35^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Tangibility	0.00	-0.19	-0.20	-0.10	0.04

continued on next page

Table 9 – continued from previous page

	(1)	(2)	(3)	(4)	(5)
	(0.99)	(0.24)	(0.22)	(0.55)	(0.83)
DTA	1.19^{c}	1.25^{c}	1.10^{c}	1.24^{c}	1.21^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
MTB	-0.15^{c}	-0.17^{c}	-0.14^{c}	-0.14^{c}	-0.14^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
CIVIL			0.34^{c}		0.21
			(0.01)		(0.14)
ANTIDIR				-0.12^{c}	-0.05
				(0.00)	(0.31)
Year Dummy	Yes	Yes	Yes	Yes	Yes
EDF	704	583	593	593	569
Adj. R-square	0.610	0.562	0.561	0.574	0.577

Panel C: Developed Market Firms

Intercept	2.26	2.64	2.39	2.17	2.43
	(0.83)	(0.80)	(0.00)	(0.83)	(0.81)
GCRScore	0.01				0.10
	(0.90)				(0.38)
CIFAR		-0.01^{c}			
		(0.01)			
US Market Volatility	1.18	1.89	0.99	1.30	-0.46
	(0.93)	(0.89)	(0.94)	(0.93)	(0.97)
Local Market Volatility	0.010	0.050	0.005	0.010	0.010
	(0.17)	(0.73)	(0.25)	(0.11)	(0.13)
SIZE	-0.20^{c}	-0.20^{c}	-0.22^{c}	-0.20^{c}	-0.23^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Tangibility	0.16	0.18	0.25	0.16	0.28^{a}
	(0.29)	(0.26)	(0.13)	(0.32)	(0.08)
DTA	0.50^{c}	0.55^{c}	0.57^{c}	0.50^{c}	0.55^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
MTB	-0.06^{c}	-0.05^{c}	-0.06^{c}	-0.06^{c}	-0.06^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
CIVIL			0.18^{b}		0.45^{c}
			(0.02)		(0.00)
ANTIDIR				0.00	0.10^{c}
				(0.88)	(0.01)
Year Dummy	Yes	Yes	Yes	Yes	Yes
EDF	716	730	730	730	728
Adj. R-square	0.358	0.366	0.361	0.361	0.372

Table 10: C2 Adverse Selection Measure and Home Capital Market Environment

This table reports the estimates of alternative non-spread based adverse selection measure on measures of home capital market environment. Panel A reports the regression results of the whole sample. Panel B reports the regression results of the emerging market firms sub-sample. Panel C reports the regression results of the developed market firms sub-sample. Dependant Variable C2 is estimated from the coefficients c_{2it} of $r_{it}(\tau) = c_{0it} + c_{1it}r_{it}(\tau-1) + c_{2it}T_{it}(\tau-1)r_{it}(\tau-1) + \varepsilon_{it}(\tau)$, where r_{it} is the stock return of ADR i in year t, τ is an indicator for days in year t, $T_{it}(\tau)$ is the natural logarithm of the daily turnover detrended by its mean over the past 200 observations. GCRSCORE is a survey-based measure from Global Competitive Report, and proxies for information transparency. CIFAR is a accounting-standard based measure of disclosure. ANTIDIR is a measure of minority investor protection. CIVIL is a dummy variable that equals one if a country's business law is of civil law origin, and zero if it is of common law origin. SIZE is logarithmic of firm size, TANG is percentage of tangible assets in total assets, DTA is the debt-to-asset ratio, and MTB is the market-to-book ratio. The regressions are estimated cross-sectionally for each year, and the mean of resulting estimates are reported. *P*-value in parentheses are referenced from T-distribution. Superscripts a, b, and c indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: All Firms				
	GCRSCORE	CIFAR	ANTIDIR	CIVIL
Intercept	0.08	-0.08	0.51	1.25
	(0.96)	(0.98)	(0.80)	(0.48)
Disclosure and Governance	0.25	0.02	0.07	-0.47
	(0.12)	(0.43)	(0.59)	(0.33)
SIZE	-0.31	-0.34^{a}	-0.26	-0.28
	(0.12)	(0.10)	(0.18)	(0.15)
DTA	1.11	0.67	1.32	1.47
	(0.50)	(0.70)	(0.48)	(0.43)
MTB	-0.40^{b}	-0.34^{b}	-0.39^{b}	-0.41^{b}
	(0.02)	(0.04)	(0.03)	(0.03)
Panel B: Emerging Market Firms				
	GCRSCORE	CIFAR	ANTIDIR	CIVIL
Intercept	8.41^{c}	5.45	5.37^{c}	3.60^{a}
	(0.01)	(0.25)	(0.01)	(0.07)
Disclosure and Governance	-0.68^{a}	-0.01	-0.31^{a}	0.07
	(0.06)	(0.75)	(0.06)	(0.92)
SIZE	-0.73^{c}	-0.70^{c}	-0.68^{c}	-0.63^{c}
	(0.00)	(0.01)	(0.00)	(0.01)
DTA	0.39	0.77	0.96	1.50
	(0.80)	(0.65)	(0.56)	(0.39)
MTB	-0.70^{a}	-0.61	-0.76^{a}	-0.66
	(0.09)	(0.12)	(0.07)	(0.11)
Panel C: Developed Market Firms				
	GCRSCORE	CIFAR	ANTIDIR	CIVIL
Intercept	-7.29^{a}	1.09	-0.83	-0.14
	(0.07)	(0.81)	(0.74)	(0.96)
Disclosure and Governance	1.29^{a}	0.00	0.45^{a}	-0.20
	(0.08)	(0.99)	(0.08)	(0.68)
SIZE	-0.16	-0.28	-0.22	-0.16
	(0.51)	(0.29)	(0.32)	(0.54)
DTA	2.09	1.78	2.16	2.35
	(0.38)	(0.43)	(0.37)	(0.32)
MTB	-0.55^{c}	-0.33	-0.52^{b}	0.40^{a}
	(0.01)	(0.14)	(0.04)	(0.07)

Table 11: Excess ADR Returns and Home Capital Market Environment

This table reports the time series (monthly) means of λ_4, the loadings on home capital market environment. $\lambda_{4,t}$ of each month from 2002 to end of 2006 are estimated from

$$r_t - r_{ft} = \lambda_{0,t} + \lambda_{1,t}\hat{\omega}_{wd,t} + \lambda_{2,t}\hat{\omega}_{smb,t} + \lambda_{3,t}\hat{\omega}_{hml,t} + \lambda_{4,t}HCME + \varrho_t,$$

where $HCME$ are our proxies for home capital market environment. $\hat{\omega}_{wd,t}$, $\hat{\omega}_{smb,t}$, and $\hat{\omega}_{hml,t}$ are estimates for each firm month from

$$r_\tau - r_{f\tau} = \alpha + \omega_{wd}(r_{wd\tau} - r_{f\tau}) + \omega_{smb}SMB_\tau + \omega_{hml}HML_\tau + \zeta_\tau,$$

with 36 months of data prior to the month. $r_{wd\tau}$ is the U.S. dollar return of world market index; SMB_τ and HML_τ are, respectively, the Fama-French (1992) size and market-to-book factor returns. *P*-value in parentheses are referenced from T-distribution. Superscripts a, b, and c indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	GRCSCORE	CIFAR	ANTIDIR	CIVIL
Disclosure and Governance	-0.51^a	-0.02	-0.18	0.63
	(0.06)	(0.51)	(022)	(0.18)

Table 12: Quoted Bid-Ask Spread and SOX

This table reports the estimates the impact of SOX on home capital market environment effect. Dependant variable is the average quoted spread. GCRSCORE is a survey-based measure from Global Competitive Report, and proxies for information transparency. CIFAR is a accounting-standard-based measure of disclosure. ANTIDIR is a measure of minority investor protection. CIVIL is a dummy variable that equals one if a country's business law is of civil law origin, and zero if it is of common law origin. HCME*Sox is an interaction term. It equals to disclosure or governance variable times a dummy that equals one if it is before 2002 and zero otherwise. SIZE is logarithmic of firm size, TANG is percentage of tangible assets in total assets, DTA is the debt-to-asset ratio, and MTB is the market-to-book ratio. *P*-values are calculated with White robust errors and reported in parentheses. Error Degree of Freedom and adjusted R-squares are also reported at the bottom. Superscripts a, b, and c indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	All Firms				EM Firms				DEV Firms			
	GCRSCORE	CIFAR	ANTIDIR	CIVIL	GCRSCORE	CIFAR	ANTIDIR	CIVIL	GCRSCORE	CIFAR	ANTIDIR	CIVIL
Intercept	6.46^{c}	7.18^{c}	5.93^{c}	5.32^{c}	6.45^{c}	7.24^{c}	6.16^{c}	5.35^{c}	4.71^{c}	5.07^{c}	4.46^{c}	4.34^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Disclosure and Governance	-0.23^{c}	-0.02^{c}	-0.11^{c}	0.39^{c}	-0.31^{c}	-0.02^{c}	-0.22^{c}	0.00	-0.07	-0.01^{a}	-0.02	0.26^{b}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(1.00)	(0.61)	(0.08)	(0.57)	(0.03)
HCME*Sox	0.39^{c}	0.02^{c}	0.03	-0.28^{b}	0.29^{c}	0.01	0.07	0.01	0.31^{b}	-0.01	0.00	-0.14
	(0.00)	(0.01)	(0.47)	(0.02)	(0.00)	(0.49)	(0.19)	(0.96)	(0.05)	(0.53)	(0.95)	(0.35)
US Market Volatility	-11.47	-42.39	-22.43	-41.01	146.50	141.43	139.11	140.33	-70.79	-138.64	-96.51	-95.77
	(0.85)	(0.52)	(0.73)	(0.53)	(0.18)	(0.17)	(0.16)	(0.19)	(0.39)	(0.12)	(0.26)	(0.27)
Local Market Volatility	0.32	5.27^{c}	0.10	0.21	5.69^{c}	4.80^{b}	1.48	6.40^{c}	0.41	36.54^{b}	0.12	-0.01
	(0.39)	(0.01)	(0.83)	(0.64)	(0.01)	(0.02)	(0.51)	(0.00)	(0.42)	(0.02)	(0.82)	(0.99)
SIZE	-0.34^{c}	-0.35^{c}	-0.36^{c}	-0.35^{c}	-0.44^{c}	-0.47^{c}	-0.46^{c}	-0.44^{c}	-0.30^{c}	-0.30^{c}	-0.30^{c}	-0.32^{c}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Tangibility	0.30^{b}	0.20	0.48^{c}	0.34^{b}	0.74^{c}	0.64^{b}	1.05^{c}	0.54^{b}	-0.17	-0.27	-0.25	-0.16
	(0.04)	(0.23)	(0.00)	(0.03)	(0.00)	(0.02)	(0.00)	(0.04)	(0.47)	(0.25)	(0.28)	(0.47)
DTA	0.94^{c}	0.90^{c}	0.90^{c}	0.89^{c}	1.53^{c}	1.62^{c}	1.48^{c}	1.53^{c}	0.37^{a}	0.41^{a}	0.35	0.39^{a}
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.10)	(0.07)	(0.12)	(0.07)
MTB	-0.05^{c}	-0.05^{c}	-0.05^{c}	-0.05^{c}	-0.03^{b}	-0.03^{b}	-0.03^{b}	-0.03^{b}	-0.07^{b}	-0.07^{b}	-0.07^{b}	-0.07^{b}
	(0.00)	(0.00)	(0.01)	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EDF	1776	1587	1613	1613	841	689	700	700	907	870	885	885
Adj. R-square	0.444	0.412	0.415	0.415	0.575	0.525	0.547	0.519	0.343	0.348	0.343	0.347