ESSAYS ON THE SARBANES-OXLEY ACT AND FOREIGN ISSUERS LISTED IN THE U.S.: MARKET VALUE AND INFORMATION MEASURES

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Abstract

This dissertation studies foreign firms' shareholder value and earnings-related information measures in relation with the implications of the Sarbanes-Oxley Act of 2002. Chapter One addresses the value implications and empirically tests the changes in market values of foreign firms around SOX related announcements, and how it varies across home country legislative characteristics. My findings on market reactions provide mixed evidence. SOX related announcements exhibit the expected sign, but statistical significant is limited. Results from cross-sectional analysis are partially aligned with the bonding hypothesis implications. My findings suggest that the market reaction for cross-listed firms from countries with common-law origin and, consequently, better investor protection is not statistically different than firms from civil law originated jurisdictions and, consequently, weaker investor protection. Chapter Two studies the earnings-related information environment for foreign firms following the enactment of SOX Act in comparison with earlier periods. In particular, I empirically analyze the change in forecast accuracy, dispersion among the analysts' forecasts, and the informativeness of earnings announcements. My analysis suggests there was no significant improvement or deterioration in forecast accuracy and informativeness of earnings announcement in the post-SOX period relative to pre-SOX period. However, my findings suggest some improvement in forecast dispersion of foreign firms for the post-SOX period.

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CHAPTER 1 – ESSAY 1: THE SOX ACT AND MARKET VALUE OF FOREIGN

ISSUERS

1.0   INTRODUCTION

In response to the collapse of major corporate names due to accounting scandals, the U.S. Congress passed the Sarbanes-Oxley Act (SOX hereafter), to restore public trust and so-called "investor confidence" in U.S. capital markets. However, the enactment of the Act has considerably increased the hurdle of accessing U.S. equity markets, due to direct and unintended costs associated with SOX compliance.

The SOX Act established new requirements mandating stricter disclosure and governance rules. These new requirements affected all public companies on U.S exchanges that have securities registered with the SEC[1]. As a result of the additional burden imposed by SOX compliance, corporations responded in various ways to free themselves from the Act, either by going private or by deregistering and being traded on OTC market (Leuz, Triatis and Wang (2007), Engel, Hayes and Wang (2004)). However, the evidence on the value effect of SOX rules on foreign firms listed on U.S. exchanges is limited and controversial. This chapter contributes to this area, by examining the Sarbanes Oxley Act of 2002 and the association with the foreign firms' shareholder value. In this study, I investigate the value effect of stricter

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[1] The Act applies to any issuer, including any non-US issuer, that has securities registered under Rule 12(b), Rule 12(g) or Rule 12(d) and is required to file reports under Rule 13(a) the Securities Exchange Act of 1934 (the "Exchange Act"). The Act does not apply to issuers who merely submit information under Rule 12g3-2(b) of the Exchange Act. On March 27, 2007, the SEC published Release No 34-55540 with Rule 12h-6, to amend Rule 12(g) that ease the de-registration process for foreign issuers. Hence, the Act contains no explicit exemption for foreign issuers unless the issuer terminates registration by filing Form15F.

disclosure and governance rules for foreign firms listed on U.S exchanges in the aftermath of SOX.

The SOX is a unique opportunity to study the shareholders' value effect. It is imposed exogenously on all firms listed on exchanges, i.e. the analysis is not affected by the endogeneity of firms' choices. Being the most comprehensive Act since The Securities Exchange Act of 1934, the SOX Act and its implications for public companies have been the focus of attention both for academicians and its practitioners. However, there is no consensus on the effects of the Act on firm value. Various studies (Zhang (2007); Li, Pincus and Rego (2006)) analyzed the value implication for U.S. firms and documented controversial results. Zhang (2007) finds a significant decline in U.S. share prices during the events leading to the adoption of SOX. Li et. al (2006) report that share prices actually increased. Few other studies (Smith (2007), Litvak (2007b)) investigated the foreign firms listed on the U.S. exchanges and reported negative market reaction by 5-10 %. While my study attempts to answer a similar research question undertaken by Litvak (2007b), there are some differences in my approach. In my study, I adjust for possible cross-correlation with alternative methods and I extend the analysis by documenting intraday market reactions around the announcements. However my overall results are mixed and limited in terms of statistical significance to support the hypothesis. My findings do not suggest any significant difference in average market reaction between the foreign issuers from well-governed legislations versus weakly-governed legislations. This observation is weak to support 'Bonding Hypotheses. Regarding my approach, I include only the announcements that reveal new information about the legislation. And I support my decision to exclude these events with the insignificant abnormal returns[2] associated with these events at daily and intraday periods. In

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[2] The terms "abnormal returns" and "excess return" are used synonymously hereafter.

addition, I address the possible cross-sectional correlation in abnormal returns due to common announcement dates by reporting adjusted test statistics. For the cross-sectional association between value effect and firm characteristics, I follow a portfolio time-series methodology introduced by Sefcik and Thompson (1986). And lastly, I extend my analysis with intraday returns and provide empirical evidence on intraday returns following SOX-related announcements.

Using a sample of 674 foreign firms listed in the U.S. within the SOX legislative and administrative period, I study the following empirical questions: a) What are the economic implications of each legislative announcement leading to SOX and administrative announcements after the Act? b) Is the net effect of stricter disclosure and the governance rules imposed by SOX Act on foreign firms value-enhancing or value-destroying? c) What are the links of these empirical findings with the 'Bonding Hypothesis'? d) And finally, how does the strength of investor reaction to stricter rules by foreign firms differ cross-sectionally in terms of firm-level and country-level growth, size factors, and risk-taking behavior?

My findings are mixed about the value implication of SOX announcements. Relative to U.S. domestic firms, foreign firms' excess return is less negative on average. However, empirical evidence based for the 'Bonding Hypothesis' is not clear and mixed for univariate and multivariate analysis. In multivariate regressions, market reaction for foreign issuers from countries with common-law origin and better investor protection is not statistically significant when compared to firms from civil-law originated jurisdictions and weaker investor protection. Specifically, the change in shareholders' value is heterogeneous among firms and covariates with the firm characteristics (size, growth opportunities) but not with the home country legislation characteristics.

Regarding the change in shareholders' value associated with individual SOX announcements; I document the following observations:

- Both U.S. firms and foreign issuers are associated with negative price reactions on average when WorldCom revealed information on June 25, 2002 about the massive fraud. It is highly significant for U.S. firms' based on intraday returns and marginally significant for foreign firms based on daily MVMR regressions.

- Agreement by the US Senate and House and the filing of Conference report on July 25, 2002 is associated with negative but statistically insignificant market reaction.

- The SEC's announcement on August 27, 2002 requiring all exchange listed firms to certify financial statements as part of SOX is also associated with negative but insignificant market reaction.

- Harvey Pitt's announcement on October 9, 2002 that increased the probability of requiring foreign issuers to comply with SOX is associated with negative and statistically significant reaction on average, for both U.S. and foreign issuers' indices.

- The SEC's announcement on proposals for section 404, 406 and 407 is associated with negative market reaction, but significant only for the S&P500 index.

Regarding the determinants of changes in market value, I find the following:

- Firm size is negatively related to market reaction. This is not consistent with the disproportionate net effect on small firms, but it is aligned with prior studies.

- The association of growth opportunities is captured mainly by the GDP growth, a country-level measure. The estimated coefficient is negative as expected both for country-level measure and firm-level measures but statistically significant only for the country-level growth measure.

- Market based and accounting based risk-taking measures are not significantly associated with the average market reaction.

- The difference between foreign issuers from weakly-governed versus well-governed legislations is not statistically significant and the findings neither contradict nor support the 'Bonding Hypothesis'.

The rest of the paper is organized as follows: In Section 2.1, I provide background on cross-listing alternatives and the required compliance for foreign issuers and overview of the legislative chronology for the SOX Act. In Section 2.2, I review the related literature on SOX and the implications for capital markets and for the cross-listed firms. In Section 2.3, I present my hypotheses. In Section 3, I discuss the data sources and sample selection for foreign firms. Section 3.2 discusses the methodologies, multivariate market regression model and the Sefcik and Thompson (1986) methodology to study cross-sectional relations between price reactions and firm characteristics In Section 4, I present the descriptive statistics for my sample and overall market reaction around SOX announcements. Section 4.2 analyzes market reaction to each SOX announcement. Specifically, section 4.2.2 presents the findings for the change in shareholders' value for daily returns as well as providing the results at intraday level. Section 5 is devoted to cross-sectional analysis of shareholders' value and firm & country characteristics. Section 6 discusses the robustness of the results and Section 7 concludes the chapter.

2.0 INSTITUTIONAL DETAILS, LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 INSTITUTIONAL DETAILS

2.1.1 Foreign ISSUERS[3] Listed on U.S. Equity Markets

2.1.1.1 Cross-Listing Mechanisms

Past studies of foreign issuers documented empirical findings that support various motivations to access U.S. equity markets. Foreign firms cross-list on U.S. markets to minimize costs that is borne due to segmented markets (Karolyi 1998, 2006), to raise capital, to enjoy greater liquidity (Errunza and Losq 1985, Karolyi 1998, Foerster and Karolyi 1999, Lins, Strickland and Zenner 2004), to gain prestige and corporate visibility through analyst coverage (Bris, Cantale and Nichiotis (2006), Zingales (2007)), and to utilize their stock as currency for International Merger & Acquisition activity (Benos and Weisbach (2003), Ammer, Holland, Smith and Warmack (2006)). Another motivation for accessing U.S. markets is based on agency theory rather than a transaction cost explanation. A group of studies (La Porta et al. (1998, 2002 and 2003))

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[3] The term "foreign issuer" is defined in Securities Act Rule 405 [17 CFR 230.405]. A foreign issuer is any issuer that is a foreign government, a national of any foreign country or a corporation or other organization incorporated or organized under the laws of any foreign country.

document empirical evidence pertaining to the relationship between the legal protection of investors and the development of financial markets. Legal bonding based on a 'Bonding Hypothesis' was first argued by Stulz (1999) and Coffee (1999, 2002). Based on this explanation, high quality firms from a legal environment with weak institutions can borrow other country's institutional environment by listing in that market and enjoy higher market valuation and lower costs of capital in return (e.g., Doidge 2004, Doidge Karolyi and Stulz 2004, Hail and Leuz 2005).

A foreign issuer may list on U.S. exchanges a) through direct listing via public offerings, b) through a depository program, c) through a dual-listing program adopted by Canadian and Israeli firms, or d) through 'Global Registered Shares'. Foreign public offerings are issued and traded as ordinary shares on U.S. exchanges.

Global shares are securities that are issued and traded in the same form in the home country and in U.S. markets and shareholders have the same privileges in both markets[4]. These shares are issued in the U.S. and registered in different countries, thereby making them foreign securities[5]. 'DaimlerChrysler', 'UBS', and the Swiss chemical company 'Celanese' are a few examples of Global Shares issued since 1998[6]. Global Registered Shares should not be confused

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[4] Global Shares enable 24-hour securities trading. Global Shares are tracked in a single global registry, and trade is conducted in the home currency of each market.
http://www.nyse.com/about/education/1095056911801.html

[5] Global Registered Shares (GRS) are similar to an ordinary share except that investors can trade them on multiple stock exchanges around the world in many currencies. ADRs, by contrast, are dollar-denominated certificates traded only in the United States. CFO Magazine November 12, 2001

[6] Karolyi, George Andrew, "DaimlerChrysler AG, the First Truly Global Share" (September 1999). Dice Center Working Paper No. 99-13.

with American Depositary Receipts (ADRs[7]) or Global Depositary Receipts (GDRs), which are domestic securities representing a foreign (outside the U.S.) interest.

Due to similarities in clearance and settlement rules between U.S. securities markets and Canadian, Israeli securities markets, these exchanges have developed effective mechanisms that allow same securities to be listed on a U.S. exchange and on a home market. Dual-listing is available through the dual-listing programs of NASDAQ and NYSE.

However, other than country-specific reasons, most foreign firms cross-list in the U.S. through American Depositary Receipt or Global Depositary Receipt programs. American Depositary Receipts (ADRs) are claims on securities of foreign firms traded on foreign exchanges. ADRs were first developed in 1927 in an era of physical securities and physical settlement as a means to facilitate the transfer of ownership of foreign securities in the United States. An ADR facility may be 'sponsored' or 'unsponsored' based on the relationship between the depository bank and the issuer. Sponsored ADRs are initiated by a formal agreement between the issuer and the depository bank. An unsponsored facility is established by the depositary acting on its own, usually in response to a perceived interest among U.S. investors in a particular foreign security that is not traded on a U.S. exchange. Sponsored ADR facilities are described by the market participants in terms of three categories based on the extent to which the foreign

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[7] Since 1983, the SEC's regulations have made a distinction between ADRs and American depositary shares ("ADSs"). Under this distinction, an ADR is the physical certificate that evidences ADSs (in much the same way as a stock certificate evidences shares of stock), and an ADS is the security that represents an ownership interest in deposited securities (in much the same way as a share of stock represents an ownership interest in a corporation). Although conceptually accurate, it appears that ADR market participants largely do not differentiate between ADRs and ADSs. In this release, the term ADS is not used, and the term ADR may, depending on the context, refer to either the physical certificate or the security evidenced by the certificate.

company has sought to access U.S. capital markets. They are identified by the markets in which they are available or the rules and regulations associated with their structure. A `Level I' category is a sponsored facility traded in over-the-counter markets. A `Level II' facility denotes ADRs quoted on a national securities exchange when the ADRs have not been offered in a public offering in the United States (but are publicly traded in one or more markets outside the United States). A `Level III' facility refers to ADRs quoted on a national securities exchange following a U.S. public offering. Level I, II, and III ADRs are publicly available to investors in the U.S. Global Depository Receipts (GDRs) are offered to investors in two or more markets outside the home country, and have a U.S. leg pursuant to 'Rule 144A' and 'Regulation S' under the Securities Act of 1933, and are also called `Level IV' ADRs or RegS/144A ADRs.

Level I ADRs are traded over-the-counter (OTC) markets via Pink Sheets and/or on the OTC Bulletin Board (OTCBB). Level I issuers do not need to file form 20-F with the SEC because Rule 12g3-2(b)[8] provides exemption from the reporting requirement under the Securities Exchange Act of 1934 for depository receipts and certain foreign firms. It takes nine weeks on average to establish a Level I program[9].

Level II ADRs list on any of the U.S. national exchanges such as the New York Stock Exchange (NYSE), the American Stock Exchange (Amex) and the National Association of

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[8] Under section 12(g) of the Securities Exchange Act of 1934, non-U.S. issuers with total assets exceeding U.S. $10 million and a class of equity security held of record by 500 or more U.S. shareholders become subject to the registration and reporting provisions of the Act. Paragraph (b) of Rule 12g3-2 exempts certain DRs and certain foreign securities from reporting under the Act provided that they furnish the SEC with the information they are requested to disclose in their home country.

[9] Citigroup Depository Receipts Information Guide http://wwss.citissb.com/adr/pdf/InfoGuide05.pdf

Securities Dealers Automated Quotation System (NASDAQ). A Level II issuer must comply with the individual exchange's requirements, and the issuer must register under the Securities Act of 1933 and report under the Securities Exchange Act of 1934. These issuers file a Form F-6[10] registration statement with the SEC and periodically submit a 20-F. On average, a Level II ADR program establishes an exchange-traded program within 15 weeks.

A Level III program, otherwise similar to a Level II ADR, includes additional public offerings to U.S. investors. It provides the issuer with the ability to raise capital by accessing the broadest U.S. investor base. As the initial public offering, Level III issuers submit Form F-1 to the SEC for securities registration, whereas they submit form F-6 to register the depository receipts. The ADR issuer also hires an investment bank to underwrite the offering and to market the depository receipts to U.S. investors. Level III ADRs are also required to file form 20-F annually and to submit form F-2 or F-3 for any follow-on offerings. It takes 15 weeks on average to establish a Level III program.

Private placement ADRs, i.e., GDRs, such as Rule 144A Depository Receipts (RADRs) and Regulation S (Reg S) Depository Receipts, are programs that are privately placed in the U.S. Rule 144A was adopted by the SEC in 1990 in conjunction with the adoption of Regulation S. This change greatly increased the liquidity of privately placed securities by allowing Qualified Institutional Buyers (QIBs) to resell these repository receipts privately to other QIBs without a holding requirement and other formalities. Rule 144-A and Reg S programs do not have to be registered under the Securities Act of 1933, and do not have to comply with the periodic reporting requirements of the Securities Exchange Act of 1934. Issuers can raise capital through private placements with RegS/144A DR programs as Level III ADRs do by utilizing security

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[10] Securities and Exchange Commission 17 CFR 239.36

offerings. Their trading is facilitated by PORTAL, the NASD's quotation system. Due to the lower hurdle for compliance requirements, a RegS/144A program is usually established within only 7 weeks.

2.1.1.2 Reporting Requirements Applicable to Foreign Issuers [11]

Foreign issuers must comply with the individual exchange requirements in conjunction with the Securities Act of 1933 and the Securities Exchange Act of 1934[12]. Under the Exchange Act, foreign firms need to file annual reports, i.e., form 20-F[13]. 6-K forms should also be filed similar to the 8-K required for U.S. issuers. DR issuers are not required to comply with Regulation FD, but many of them do voluntarily comply with the requirements imposed by Regulation FD[14]. ADR issuers are also exempt from filing Proxy Statements[15] unless (i) more than 50% of outstanding shares are held by U.S. citizens, or (ii) more than 50% of the assets are in the U.S, or (iii) the majority of the executives are U.S. citizens.

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[11] SEC International Reporting and Disclosure Issues in the Division of Corporate Finance Nov 1, 2004, http://sec.gov/divisions/corpfin/internatl/cfirdissues1104.htm

[12] Foreign issuers with total assets in excess of $10,000,000 and a class of equity securities held of record by 500 or more persons, of which 300 or more reside in the United States, are subject to registration under Section 12(g) of the Securities Exchange Act of 1934.

[13] Form 20-F requires comprehensive disclosure about the company, including information about its business operations and its financial statements, similar to the 10-K form for U.S. issuers.

[14] Citigroup Depository Receipts Information Guide http://wwss.citissb.com/adr/pdf/InfoGuide05.pdf

[15] Regulation 240.3a-12-3(b) under the Exchange Act exempts foreign private issuers from the proxy regulations.

Foreign issuers are not exempt from the SOX Act. However, there are some provisions specific to them mainly to accommodate different practices in the Audit committee[16], and an extended timeline for compliance, especially with Section 404. The SEC offered an extended timeline for foreign firms to comply, and amended provisions for country-specific governance forms, tailored mostly for German and Japanese issuers[17]. Appendix A provides the compliance dates for domestic and foreign issuers based on the most recent SEC announcement of August 9, 2006[18]. All foreign issuers with securities registered under Securities Exchange Act 1934 should comply with the SOX Act. Hence this includes all foreign issuers with ordinary shares, global shares and dual listings that are traded on NYSE, NASDAQ and Amex. For ADRs, only Level III and Level II programs are required to comply with the SOX Act, since other ADR programs are not SEC registered and not listed on exchanges such as NYSE, NASDAQ and Amex.

2.1.2   The Sarbanes Oxley Act Chronology

Following the corporate scandals and the market value lost as a result; year 2002 was the period when the Congress and the regulators rushed to respond the problems that led to the so called "loss of investor confidence". Appendix B.1 presents the table of announcements leading to

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[16] Foreign private issuers that file their annual reports on Form 20-F already are required to identify the members of their audit committee in their annual reports. For these listed issuers, however, the SEC mandates the requirement that these issuers must disclose if the entire board is serving as the audit committee.

[17] Not requiring foreign audit firms to provide registration information to PCAOB where provision of such information would violate home country law, and allowing non-management employees to serve as audit committee members, consistent with German Corporate Law.

[18] Aug. 9, 2006 SEC Release No. 2006-136 http://www.sec.gov/news/press/2006/2006-136.htm

SOX, and Appendix B.2 provides the detailed description of the corresponding announcements with the precise date and time when it was first public.

The first noteworthy announcement related to SOX was on January 17, 2002 (EST 13:30)[19]. At a news conference, SEC chairman Harvey Pitt made the first call for the overhaul in corporate rules. He proposed a new organization to oversee the accounting profession for public firms. He stated that all disciplinary actions or decisions should be subject to oversight by the SEC and added "The body should be empowered to perform investigations, bring disciplinary proceedings, publicize results, and restrict individuals and firms who have failed to meet ethical or competent standards from auditing public companies."

Later in April 16th 2002 (EDT[20] 18:44)[21], House of Representatives' (HR) Financial Services committee approved the proposal for H.R 3763 (Oxley Bill). Approval came in a 49-12 vote, interestingly with the (relatively) weakest consensus among all SOX legislative polls. Committee chairman Michael Oxley addressed the panel and stated that "President Bush has asked us to move on his plan and our committee is sending a solid, bipartisan legislative product to the House floor". This statement revealed information on the outlook of the bill for coming months. Soon in H.R, Oxley Bill passed quickly on April 24th 2002. However, after the markets were closed the day before on April 23rd 2002 (EDT 17:22)[22], State Attorney General Eliot

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[19] Reuters News 17 January 2002 18:30 GMT, "Proposed Auditor panel needs powers-US SEC's Pitt"

[20] Daylight saving for US is observed for the following dates: For 2002: April 7th – October 27th; For 2003: April 6th – October 26th.

[21] Dow Jones News Service 16 April 2002 22:44 GMT "House Panel Adopts Accounting Reform Bill In 49-12 Vote"

[22] Associated Press Newswires 23 April 2002 21:22 GMT "Spitzer asking Congress to address alleged Wall Street conflicts"

Spitzer addressed the Congress and raised the conflict of interest issue for sell-side analysts. Spitzer's speech for bringing the conflict of interest issue for sell-side the analysts under attention is an important piece of information regarding the rules governing capital markets, because later in 2002 there is a significant legislative outcome related to this announcement; know as 'Global Settlement'[23]. Due to this major confounding event, I do not consider this date in cross sectional analysis but report the result for abnormal return.

There was no apparent announcement until June 18th 2002 (EDT 14:52)[24], when Senate Banking committee approved the proposal for S.2673 (Sarbanes Bill). In a 17-4 vote, the committee backed the proposal offered by its chairman, Sen. Paul Sarbanes, but there were some objections. The Banking Committee also rejected an amendment offered by Sen. Phil Gramm, which would have left any decision on restricting consulting services up to the new accounting oversight body. Gramm argued that smaller businesses would not be able to afford separate auditors for accounting and consulting and stated "We're writing into law things we shouldn't." He said that he wants the new board PCAOB, to take the lead in this area, avoiding heavy-

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[23] On December 20, 2002 Securities and Exchange Commission Chairman Harvey L. Pitt, New York Attorney General Spitzer, North American Securities Administrators Association President Christine Bruenn, NASD Chairman and CEO Robert Glauber, New York Stock Exchange Chairman Dick Grasso, and state securities regulators announced an historic settlement $1.4 billion Global Settlement, includes penalties and funds for investors, with the nation's top investment firms to resolve issues of conflict of interest at brokerage firms. The "global settlement" concludes a joint investigation begun in April by regulators into the undue influence of investment banking interests on securities research at brokerage firms. The settlement will bring about balanced reform in the industry and bolster confidence in the integrity of equity research.

[24] Reuters News 18 June 2002 18:52 GMT "UPDATE 1-US Senate panel passes post-Enron accounting bill"

handed interference from Congress. Sen. John Ensign, R-Nev. who voted against the bill also supported him and warned "We may be doing more harm with this legislation than good,".

When the announcement of WorldCom's "massive fraud" hit the U.S. Capital markets; the sluggish legislative process received a boost from the Congress. On June 25th 2002 (EDT 18:26)[25], WorldCom's board of directors made an announcement stating that the company has engaged in 'massive fraud' overstating its earnings before interest, taxes, depreciation and amortization by $3.6 billion over the last five quarters. Following this critical announcement, SEC chairman Harvey Pitt stated that he would speed up the process to create a public accountability board, and added that the SEC would begin to talk to government officials and corporate representatives and investors to get suggestions for who might serve on the board. This announcement is also considered similarly by other studies. In her study, Zhang argue that the revelation of the WorldCom scandal in late June boosted rulemaking activities[26]. In addition, Li, Pincus and Rego (2005), after consulting to former SEC chief Accountant Lynn Turner, also conclude that this event has changed the political atmosphere and provided more support for the proposals[27]. Furthermore, there is anecdotal evidence supporting the WorldCom announcement being an eye-opener and having implications in terms of changing the support and hence likelihood of Bill passing. According to Dow Jones newswires on June 26, 2002[28], Leon Panetta,

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[25] Dow Jones News Services, 25 June 2002 22:26 GMT "WorldCom Improperly Booked $3B In Expenses -Sources "

[26] Please see earlier version of Zhang's study, Zhang (2005) page 5.

[27] Please see Li, Pincus and Rego (2005) page 6.

[28] WorldCom/Reform -2: Could Boost Sarbanes Reform Plan 26 June 2002 Dow Jones News Service 18:29 GMT

the former White House chief of staff who was co-chair for the NYSE committee that developed the exchange's governance plan, said WorldCom's apparent example of betraying the trust of its shareholders makes it "that much more urgent" to develop tough governance guidelines for companies. Also same newswire mentioned that in a statement on Wednesday June 26, the SEC stated that the events at WorldCom "further demonstrate the need for comprehensive market regulatory reforms that the (Bush) administration, the Congress and the SEC have been advocating and implementing".

Next day, on June 26th 2002 (EDT 19:01)[29] SEC approved an order directed to approximately 1,000 of the nation's largest companies saying that chief executive and chief financial officers must certify the accuracy and veracity of the disclosures and their financial statements by mid-August. SEC issued the list of the top 945 U.S. publicly-traded companies with revenues greater than $1.2 Billion whose financial statements must be certified as accurate by their chief executive and financial officers.

Later on July 15th 2002, (EDT 18:43)[30] Senate proceeded with the Sarbanes Bill and passed by an overwhelming 97-0 vote. The voting result suggests that the outcome was highly expected, and hence I do not anticipate this announcement to reveal any unexpected new information to the market and yet to yield significant market reaction. I do not include this date in my cross sectional analysis but report the price reaction consistent with the above argument.

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[29] Reuters News, 26 June 2002 23:01 GMT "UPDATE 1-SEC issues list of firms needing CEO certification"

[30] Reuters News, 15 July 2002 22:43 GMT "U.S. Senate passes sweeping corporate reform bill"

Next day on July 16th (EDT 13:42)[31], HR caught up with the Senate and voted to toughen their version of the bill to match the standards of a Senate bill. HR 5118 Bill, which passed with overwhelming bipartisan support of 391-28, and added criminal penalties to earlier version HR 3763 passed by the House in April[32].

Later in the following week, with the efforts in conference committee, two bills addressing the similar issues were merged. The importance of this event is not the evidence of 'mutual agreement' only, but the conference report itself. According to the HR.3763 Legislative Actions chronology from Thomas Library of Congress[33], the conference report is filed on July 24 at 10:09 pm. This final report is the first document that discusses the SOX sections in detail; including Section 404 for internal control[34]. The first day that the markets can capitalize on this information is July 25, when it was voted and agreed by the H.R and the Senate. On July 25th 2002 (EDT 8:00)[35] conference report, preserving much of a Senate bill requiring stricter

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[31] Associated Press Online 16 July 2002, 17:42 GMT "Senate Bill to Curb Corporate Fraud"

[32] New measures raised to 20 years the time behind bars for wire and mail fraud, double the ten-year penalty, which was already twice the existing penalty in current law for those crimes. New bill also created a new crime of securities fraud with a maximum 25 years in prison - more than double the 10-year term approved by the Senate.

[33] Thomas Library legislative information from the Library of Congress

H.R. 3763 http://thomas.loc.gov/cgi-bin/bdquery/z?d107:h.r.03763:

S. 2673 http://thomas.loc.gov/cgi-bin/bdquery/z?d107:s.02673:

[34] The Library of Congress, for the 107th Congress Public Company Accounting Reform and Investor Protection Act of 2002 (Engrossed Amendment as Agreed to by Senate)[H.R.3763.EAS]

[35] Reuters News 25 July 2002, 16:11 GMT "US House and Senate reach pact on corporate reform."

oversight of auditors but adopting stiffer criminal penalties, approved both in the Senate and the

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And finally, on July 30th 2002, (EDT 8:02)[36] President signed the Sarbanes-Oxley Bill into law. However, this was already expected given president's calls to accelerate the legislative process. I do not anticipate this announcement to contribute any new unexpected information and exclude it for cross-sectional shareholders' value analysis. But I do report result for the abnormal return consistent with my expectation.

Since the SOX Act became a law fairly quick in order to respond corporate scandals in U.S., implementation period brought more complications than the legislative period. Announcements related to the administrative practices of the Act are therefore revealing more important and unexpected information than the legislative events. This is especially true for the foreign issuers who were hoping to get exemptions. SEC started rulemaking activities and acted promptly on August 27th 2002 (EDT 12:23)[37] by approving the rule that require chief executives and financial officers of all publicly listed companies on US stock exchanges, including foreign companies, to certify personally the accuracy of their financial statements. This move by the SEC came as the first surprise to the foreign issuers which had raised objections with the SEC. They were anticipating an exemption, or at least a compromise measure. SEC commissioners said they had already considered the issue of whether to require foreign companies to certify their financial statements on June 26 2002, when they announced the one time certification requirement. Alan Beller, director of the SEC's division of corporate finance, said the fact that it

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[36] Associated Press Newswires, 30 July 2002, 12:02 GMT "Bush signs legislation designed to combat corporate fraud"

[37] Financial Times, 27 August 2002, 16:23 GMT "SEC rule to include foreign companies"

was not proposed at that time, reflected a desire to move incrementally on the issue, not a possible exemption. And he added that foreign companies had lived with other U.S. legal requirements for decades, and that the new rules were generally formulated. "I think it is a broad enough concept that foreign private issuers ought to be able to live with it."[38]

Second shock for foreign issuers came on October 8th 2002 (EDT 16:08)[39], during a public comment by the SEC's chairman Harvey Pitt. Speaking by a video link to a financial group in London, SEC Chairman Harvey Pitt addressed foreign issuers concerns on compliance requirements. Harvey Pitt stated that the SEC has limited room for maneuver in granting exemptions to non-US companies, and must respect the will of Congress. After his speech, foreign firms' hope for exemption vanished even more. In addition, SEC Corporate Finance division director Alan Beller, speaking to the same group in London added "We cannot promise that our final rules will always accord with your concerns, but we do promise to listen and carefully evaluate them," and stated that as the SEC writes rules to implement the law, "foreign companies can expect that many of the new rules will apply to them,"[40]. These statements revealed important surprises for foreign issuers' hope for an exemption and the SEC's support for their argument. Both Harvey Pitt's and Alan Beller's comments support the idea that SEC could not promise any exemption, which had vanished the hope for exemption.

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[38] SEC may exempt non-US accountants" FT.com 8 October 2002, By Andrew Parker in London, Adrian Michaels in New York and Francesco Guerrera in Brussels. "

[39] Dow Jones News Service, 8 October 2002 20:08 GMT "SEC Urges Non-US Firms To Voice Sarbanes-Oxley Concerns"

[40] FT.com October 8th 2002 by Lydia Adetunji "SEC include foreign issuers"

Just one week after addressing foreign firms' concerns, on October 16th 2002 (EDT 10:51)[41], SEC moved quickly to implement the corporate reforms ordered by the U.S. Congress, and the proposed rules implementing the SOX Sections. SEC backed rules forcing companies to disclose more about their internal controls (Section 404) and codes of ethics (Section 406) and the rule requiring companies to disclose if their boards' audit committee has any 'financial experts' on it (Section 407). The proposals required all issuers with 'registered securities' to comply with these rules, including the foreign issuers. This announcement is important for foreign firms' compliance requirement.

Later on November 5th 2002 (EST 18:03)[42], Chairman Harvey Pitt resigned under pressure. In a letter to President Bush, Pitt stated "the turmoil surrounding my chairmanship" had made it difficult to stay in the job. "Rather than be a burden to you or the agency, I feel it is in everyone's best interest if I step aside now, to allow the agency to continue the important efforts we have started." There were no objections and The White House quickly accepted his resignation. However, the resignation came on an important date, the date of U.S. general election. I report the result for this announcement as well but do not include it in my analysis due to the confounding event.

Another important announcement for foreign issuers came early in the new year on January 8th, 2003 (EST 11:25)[43]. SEC proposed amendment to permit companies from countries such as Germany and Japan to maintain their established corporate governance practices. The biggest concessions involved the independence of company audit committees. Germany pointed

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[41] Reuters News, 16 October 2002 14:51 GMT "U.S. SEC proposes annual internal control reports"

[42] AP Online 5 November 2002 23:03 GMT "Harvey Pitt Resigns As SEC Chairman"

[43] Reuters News 8 January 2003 16:25 GMT "SEC gives OK to fitness plan for audit committees."

out that its two-tier structure of management and supervisory boards often led to employee representatives making decisions on audits. Countries such as Japan and Italy complained that company audit committees were not always staffed by people who were also board directors. These provisions include: allowing non-management employees to serve as audit committee members, consistent with "co-determination" and similar requirements in some countries; allowing shareholders to select or ratify the selection of auditors, also consistent with requirements in many foreign countries; allowing alternative structures such as boards of auditors to perform auditor oversight functions where such structures are provided for under local law; and addressing the issue of foreign government shareholder representation on audit committees. The SEC proposed that such structures would be allowed "where provided for under local law"[44].

2.2   RELATED LITERATURE

2.2.1   SOX Literature

Since the Securities Exchange Act of 1934, the Sarbanes-Oxley Act is arguably the most sweeping and important U.S. federal securities legislation affecting public companies and other participants in U.S. capital markets. The reforms in the Act are broad-ranging and include new or enhanced provisions affecting disclosure requirements for public companies, their governance

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[44] Also not requiring foreign audit firms to provide registration information to PCAOB, where provision of such information would violate home country law. Allow non-management employees to serve as audit committee members, consistent with German Corporate Law

mechanisms and the auditor oversight. The SOX Act discusses the new requirements under 11 main titles. The first title, Section 101, establishes a new independent agency, Public Company Accounting Oversight Board (PCAOB) to oversee, regulate, inspect and discipline the services provided by the audit industry for public companies. The Act also covers topics such as limited non-audit services from audit firms (Section 201), and all independent audit committees (Section 301) with a financial expert serving as a member (Section 407). The SOX Act also mandates additional disclosure requirements, such as CEO/CFO certification of financial statements (Section 302), disclosing transactions involving directors, officers and shareholders with more than a 10% interest (Section 403), as well as prohibiting to extend personal loans to directors and officers (Section 402). And finally, the most debated and costliest section for establishing internal control mechanisms and the assessment reports required from the management and the audit firm (Section 404 a-b). Not surprisingly, having such a broad impact on U.S. Securities Law, the SOX Act attracted much attention and became a focus of debate among finance scholars as well.

A majority of the recent empirical literature analyzed the relationship between the SOX Act and U.S. firms. These studies mainly analyze the compliance cost and the value effect of the Act, as well as corporate actions to adapt to the post-SOX era. In this respect, Asthana et al. (2004) and Eldridge and Kealey (2005) studied the direct cost effects of the Act and documented significant increase in average audit fee. In addition, Linck, Netter and Yang (2006) documented increased average costs for the services of boards of directors, mainly due to increased demand and compensation for independent directors as well as D&O insurance. Relating to the implicit costs of the SOX Act, Gifford and Howe (2004), and Cohen, Dey and Lys (2007) provided empirical evidence of reduced incentive-based compensation in post-SOX era, and documented

increased managerial distraction, risk aversion and dampened corporate investments as a result. Moreover, many policymakers and corporate executives argue that the SOX Act had a chilling effect on the risk-taking behavior of U.S. corporations[45]. In this respect, a recent working paper by Bargeron, Lehn and Zutter (2007) documented evidence in line with this argument. Their findings suggest that compared to U.K. benchmarks, U.S. firms have shown reduced investment in risky projects in the post-SOX era, based on both financial and equity-based measures.

Other series of recent papers study the strategic responses of firm managements to free themselves from the stricter rules and additional costs associated with the SOX Act. Engel, Hayes and Wang (2004) argue that the Act is associated with an average increase in the rate of decisions 'to go private'. In line with this finding, Leuz, Triantis and Wang (2007) documented that about 200 U.S. companies voluntarily deregistered (going dark) their shares with the SEC following the enactment of the SOX Act. Relating the SOX Act to the M&A market, Kamar, Karaca-Mandic and Talley (2007) documented that the SOX Act induced small firms to exit capital markets through acquisitions by private firms. Moreover, Marosi and Massoud (2004) studied the factors associated with these decisions and their results suggest that firms with fewer growth opportunities and greater insider ownership are more likely to go dark in the post-SOX era.

An ill-conceived legislation and regulation can have unintended effects that extend well beyond the tangible dollars and cents costs that economists, accountants and policymakers may

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[45] Adrian Michaels "After A Year Of U.S. Corporate Clean-Up, William Donaldson Calls For A Return To Risk-Taking" FinancialTimes.com. July 24, 2003. Also the testimony of Chairman Alan Greenspan Federal Reserve Board's semiannual monetary policy report to the Congress Before the Committee on Financial Services, U.S. House of Representatives July 15, 2003

focus on[46]. One of these unintended effects is the gradual migration of financial transactions and securities offerings overseas, especially to London. An additional group of studies focused on the migration to SOX-free environments at the global level, specifically the competition between U.K. and U.S. markets for international listings following the SOX Act. In this respect, Doidge, Karolyi and Stulz (2007) documented that the cross-listing trend reduced both in the U.S. and in the U.K. following the Act. The difference is explained mainly by firm profiles and by the structural increase in AIM listings. It is argued that exchange listing in U.S. has unique governance benefits for foreign firms. They argue that these benefits have not been seriously eroded by SOX and cannot be replicated through a LSE listing. In a similar study, Piotroski and Srinivasan (2007) also provided empirical evidence that is in line with Doidge et al. (2007). They documented that lost deals involve firms that are on average smaller and less profitable. They also argue that nearly all of the firms listed in the U.S. after SOX are from emerging markets. They interpret this being consistent with large, high quality firms from weak institutional environments being drawn by the enhanced bonding benefits of a U.S. listing after SOX.

Moreover, several working papers study the association between the change in U.S. firms' shareholders' value and the SOX Act. However, the findings in this area are controversial. Li, Pincus and Rego (2006) analyzed market reactions to events surrounding the SOX Act. They documented significant positive returns associated with events resolving the uncertainty of the SOX becoming law. Moreover, they argue that the abnormal returns are positively related to the extent of firms' earnings management. With a similar motivation, Rezaee and Jain (2005) documented significant positive abnormal return around legislative events that increased the likelihood of the Act's passage. In contrast, Zhang (2007) documented significantly negative

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[46] AEI Peter J. Wallison, Sarbanes-Oxley Impairing Corporate Risk-taking (Cont.)? September 28, 2007

abnormal returns around legislative events leading to the passage of the Act. She argued that the cumulative unadjusted market reaction around SOX announcements is around -15.35% to -12.53%. After adjusting for the expected return, she estimates cumulative abnormal return as -8.21% to -3.76% by different measures. Zhang argues that the coverage of more events in her study than previous papers drives the negative price reaction in her study. Finally, Berger et al. (2005) examined the value-weighted portfolios of domestic versus foreign private issuers and documented more negative abnormal returns for the foreign firm portfolio.

Other recent working papers study the cross-sectional relationship between market value and governance practices in place. In this respect, Aggarwal and Williamson (2006) found empirical evidence that SOX complaint practices are associated with higher market value if adopted before they became mandatory. They argued that this evidence suggests that the market rewards governance practices efficiently without external interference from regulators. In addition, for their sample of financial services firms Akhigbe and Martin (2006) found that firms with more independent boards had a stronger positive response to the passage of Sarbanes-Oxley compared to that of firms with less independent boards.

There are two working papers, Smith (2007) and Litvak (2007a) that study foreign issuers and the value effect of the SOX Act. In this respect, this chapter analyzes the same question and extends the market reaction for SOX announcements to intra-day level. In addition, the sample of cross-listed firms and SOX-related events used in this study are more comprehensive than Smith (2007). Litvak (2007a) implements an alternative matching approach rather than a market model for the event study. With methodologies that address possible cross-correlation, the results for the statistical tests in this study control for possible biased test statistics. Using the Sefcik and Thompson (1986) approach, which is extensively used in regulation event studies in the finance

and accounting literature, this study contributes to the empirical evidence provided on the value effect of SOX on cross-listed firms. Moreover, this chapter analyzes and document empirical evidence for the association between risk-taking behavior and the SOX value effect. Furthermore, I provide evidence at the intra-day level price reaction following the SOX announcements.

2.2.2 Cross-Listing Literature

Early literature emphasized the importance of market segmentation and the higher liquidity in U.S. markets on cross-listing decision. Studies in this area provided evidence that one motivation for foreign firms to cross-list or to enlist on a foreign exchange is to minimize the costs due to segmented markets (Karolyi, 1998, 2006). Karolyi (1998) argued that the perceived benefits of U.S. markets and SEC registration are access to greater capital, greater liquidity lower cost of capital, heightened corporate prestige, and greater investor protection. As a result of the expected savings in financing costs, these firms enjoy greater liquidity in capital markets, lowered cost of capital and access to capital in greater amounts than in their home markets (e.g. Errunza and Losq 1985, Karolyi 1998, Foerster and Karolyi 1999, Lins et al. 2004).

Other studies on foreign listing emphasize governance related factors and discuss additional motivation for cross-listing based on agency problems rather than the transaction costs. This stream of literature argues that U.S. listing is a credible bonding mechanism for better investor protection and examines the bonding motivation for foreign listings (Stulz 1999, Coffee 1999, 2002). Through cross-listing, firms can overcome the shortcomings of the home country's institutional environment and jurisdictions by adopting other countries' capital market practices. Using this explanation, high quality firms from weak institutional environments list their shares

on U.S. exchanges. This race to the top is motivated mainly by their desire to opt into better investor-protective laws. Under this hypothesis, adopting the U.S. institutional environment bonds the management's interest with shareholders' from not expropriating corporate assets. By committing to stricter legal environments, cross-listed firms signal their quality and separate themselves from the pool of firms coming from their home country. (e.g. Doidge 2004, Doidge et al. 2004, Hail and Leuz 2005). As a return, managerial commitment to the stricter legal and regulatory environment is rewarded by higher market valuation and lower cost of capital (Doidge 2004, Doidge, Karolyi and Stulz 2007). Since an important gain of better governance is a superior ability to raise capital, firms from weak institutional environments that have a higher need for capital are able to capitalize even more through managerial bonding mechanisms as opposed to issuers with fewer growth opportunities. Hence, another factor in the value of cross-listing for the firm is a conditional one: growth opportunities conditional on the institutional environment.

2.3   HYPOTHESES

2.3.1   Reaction to Individual Events Leading to the SOX

Various industry surveys[47] and academic studies (e.g. see, Elridge and Kealey (2006), Asthana, Balsam and Kim (2004), Boulton, Lehn and Segal (2006)) have documented considerable out-of-pocket costs associated with the Act. These costs are especially related to the internal control requirements of Section 404 and the extra audit fees paid to outside auditors. However, ill-conceived legislation and regulations can have unintended effects that extend well beyond the tangible dollar costs that economists, accountants and policymakers may focus on[48]. Consistent with this, various studies document diverse unintended consequences of the Act and its chilling effect on capital markets, as discussed in the literature review. In addition to the direct compliance cost, previous findings on the unintended effects suggest that the period following the Act is associated with increased demand and compensation for (independent) directors (Linck, Netter and Yang (2006)), lowered investments due to increased liability and less

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[47] A survey of corporate boards released by RHR International and Directorship reveals annual Sarbanes-Oxley compliance costs average $16 million -- a jump of 77 percent from the year before, Nov. 19, 2004. Other studies include CRA International "Sarbanes-Oxley Section 404 Costs and Implementation Issues: Survey Update 2005" and "Sarbanes-Oxley Section 404 Costs and Implementation Issues: Survey Update Spring 2006", Foley & Lardner LLP "The Cost of Being Public in the Era of Sarbanes-Oxley" June 15, 2006.

[48] AEI Peter J. Wallison, Sarbanes-Oxley Impairing Corporate Risk-taking (Cont.)? September 28, 2007

incentive-based compensation for executives (Cohen, Dey and Lys (2007)), in addition to a deterioration in risk taking activity (e.g. see, Bargeron, Lehn and Zutter (2007), Litvak (2007a)). However, despite the consensus on SOX's cost consequences, there is no agreement on the net value effect of SOX announcements. Recent studies of shareholders' value around SOX-related announcements reported both positive and negative net value effects. (e.g. see, Li, Pincus and Rego (2006), Rezaee and Jain (2005), Zhang (2007), Kamar et. al (2007)). Given the controversial findings of previous studies, I do not postulate on the direction of the net effect. However, under the maintained hypothesis that the stock price correctly incorporates all the costs and benefits of any exogenous event, including the SOX Act, I argue the following hypothesis:

Hypothesis 1: *Price reaction around the SOX events will reflect the net economic impact of each announcement leading to the Act. Thus, if the SOX's net effect is value reducing, then the market reaction to individual events increasing (or decreasing) the probability of passing the Act and the likelihood of including the foreign issuers for compliance will be associated with a negative (or positive) market return. If the SOX's net effect is value enhancing, then the market reactions will be vice versa.*

2.3.2 Shareholders' Value and association with Firm characteristics

Because a large fraction of the SOX compliance cost is fixed (Elridge and Kealey (2006)), imposing the same set of rules and control requirements on large and small firms would imply higher unit costs for smaller firms. And as documented by the previous empirical studies, SOX has a disproportionate effect on small firms (e.g. see, Linck, Netter and Yang (2006), Kamar, Karaca-Mandic and Talley (2007)). Evidence by these studies on the firm characteristics and the SOX Act suggests a disproportionate effect on firms with different characteristics. In this

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respect, Kamar, Karaca-Mandic and Talley (2007) document small firms and high growth firms being impaired by SOX. Likewise, it has been argued that potential criminal liability established by the Act may have unintended effects, such as dampened managerial incentives to take risks as well as reduced trust and cooperation within organizations. SOX may also have affected the ways in which corporate information is produced and distributed (e.g. see, Linck, Netter and Yang (2007), Bargeron, Lehn and Zutter (2007) and Griffin and Lont (2005)). In a study relating to risk-taking measures, Bargeron et al. (2007) document reduced investment on risky projects relative to U.K. benchmark both in financial and equity-based risk measures. In line with their findings, Litvak (2007a) documents results consistent with the view that SOX induced cross-listed firms to take less risky projects, which places a particular burden on riskier and high growth firms.

Based on this evidence, I propose the following hypothesis:

Hypothesis 2: *Small firms, firms with better growth options, and more risk-taking activities will be especially disturbed by the 'one-size-fits-all' SOX requirements. Hence, the market reaction to SOX announcements by these firms will be stronger. This suggests that growth and risk-taking measures will be negatively related, and the size measure will be positively related on average with the overall value effect of the SOX announcements.*

2.3.3 Change in Shareholders' Value and association with Country-level measures:

Following the enactment of the SOX Act, having registered stock on U.S. exchanges has placed an additional compliance burden on public firms. By no surprise, additional rules and the compliance requirements associated with the SOX increased the cost of accessing the U.S. capital markets (e.g. see, Asthana et al. (2004), Elridge and Kealey (2005), Cohen, Dey and Lys

(2007), Linck, Netter and Yang (2007)). However, stricter rules mandated by SOX may strengthen the credibility of the bonding mechanism for firms that commit to these standards, thus increasing the expected benefits (Piotroski and Srinivasan (2007)). This credible bonding mechanism may imply some benefit for some foreign firms, since the higher compliance requirements offer them the opportunity to separate themselves from the pool of firms from their home country. Foreign issuers that inherit potential agency problems due to their country-level institutional and legal environments would benefit from this commitment to stricter disclosure and governance standards. These firms would capitalize on the SOX requirements if the 'Bonding Hypothesis' is a key decision factor for them to list on U.S. exchanges. Given the rearrangement in cost and the benefit for the foreign issuers, the perceived net economic effect of these enhanced requirements is a function of the additional gains due to the bonding mechanism net of costs associated with the SOX. In addition, since a significant gain of the bonding is the ability to raise capital at a lower cost (Doidge, Karolyi and Stulz (2004)); firms with a higher need for external financing and with more growth opportunities would capitalize even more on the bonding benefits. Whether the net economic gain associated with more credible bonding outweighs the economic cost of compliance by stricter SOX requirements is an open question. How this economic gain is related to country and firm-level governance, growth factors is also an important question. Based on the bonding literature and under the maintained assumption that the SOX requirements are stricter relative to the pre-SOX environment and additional compliance to SOX is credible, I propose the following hypothesis:

Hypothesis 3: *Price reaction around SOX events will reflect the net economic effect of the Act requirements given the motivation to cross list. Hence, under the 'Bonding Hypothesis', the net benefit of SOX will be a function of additional value due to the bonding benefit. Market*

reaction of foreign issuers subject to SOX would be based on the expected net benefit of SOX requirements, i.e.

i.   Firms with an inferior institutional environment and investor protection would experience a higher net effect associated with SOX rules than firms from countries with a better environment.

ii.   Since empirical evidence documents the lower cost of capital and higher valuation as a result of bonding through cross listing, it follows that firms from weakly-governed countries that have better growth prospects and a 'higher demand for financing' will capitalize even more on the commitment for stricter rules. Thus, after controlling for firm characteristics and industry factors, foreign issuers from weakly-governed legislations and with more growth opportunities will be positively associated with the overall market reaction.

Empirical Implications of the Hypotheses for the proxy variables:

In my empirical analysis, I use variables that are commonly used in corporate finance and governance literature to proxy for firm characteristics and country-level governance factors.

Firm Size:

I use book value of total assets and the market value of equity as firm-size measure. As discussed in the previous section, smaller firms experience a disproportionately higher unit cost of compliance since a large fraction of the SOX compliance cost is fixed. Hence, there are economies of scale in SOX compliance, and small firms might be particularly affected as a result. This effect has already been documented for U.S. firms (Eldridge and Kealey (2005), Linck et al. (2006), Holmstrom and Kaplan (2003)). Another justification for this relation would be based on the governance explanation. Since small firms' inherited agency problems are

different than those of large firms due to the environment they operate (Lehn, Patro and Zhao (2006)), uniformly mandated 'one-size-fits-all' governance practices will have unintended cost effects especially for small firms. Consistent with either explanation, I expect the size measure to be positively related with the market reaction on announcements leading to SOX.

Growth Opportunities:

Similar to the size measure, the association between growth opportunities and market value can be explained under two views, i.e. by limited resources or by governance practices. According to the former explanation, high growth firms may not able to update their internal control systems in a timely manner, which would make them more likely to experience delays and increased compliance costs. Alternatively, due to inherited agency issues in their nature (Lehn et al. (2006)), growth firms may be disproportionately affected by 'one-size-fits-all' governance practices.

I use a market-to-book ratio of total assets, which is a commonly used proxy for investment opportunities. I also use sales growth as a measure of a firm's growth opportunities. Same as Doidge, Karolyi and Stulz (2006), I have calculated it as the 3-year geometric average of annual growth in sales prior to 2001.

As a standalone variable, consistent with previous studies, I expect growth proxies to be negatively related with market reaction after controlling for size. However, conditional on the bonding benefit, this measure proxies also for the financing need, and I expect the growth measure (growth measure interacted with institutional environment), to be positively associated with the overall market reaction, as implied by Hypothesis 2.

Risk Taking measures:

Bargeron, Lehn and Zutter (2007) document that relative to the U.K. benchmark, U.S. firms reduced risk-taking activities in the post-SOX era. Following this paper, I study the risk-taking measures in cross-sectional relation with the SOX net effect on shareholders' value. Following Bargeron et al. (2007), I use capital expenditure and R&D expenditure over total assets as accounting-based risk measures that account for the level and types of investments. As three stock-based measures which capture the market's assessment of firms' equity risk, I use beta of foreign issuers' stock vis-à-vis the FTSE index (excluding the US), stock return volatility, and the root mean square error from the market model. In line with previous studies, I anticipate these risk-taking measures to be negatively related with the market reaction to SOX announcements.

Legal Origin and Shareholder Rights Score:

As a proxy for the institutional environment and investor protection, I use law-based variables, legal origin and the shareholder rights score from La Porta et al. (1998, 2003). Consistent with Hypothesis 3, I anticipate a positive relation between a weaker institutional environment and investor protection with the market reaction around SOX announcements.

Control Factors – ROA, Leverage, Industry, Country level growth measure

As a measure of profitability, I use the ROA for the year 2001, calculated as EBIT (Earnings before interest and taxes) over the book value of assets. Leverage is computed as book value of debt over book value of assets. In my cross-sectional analysis, I also use industry fixed effects that would capture the common industry-specific SOX effect within each industry. To control for alternative country characteristics and trends affecting all companies in their

respective markets, I use the following country-level factors: GDP growth, and total market capitalization over GDP. Since GDP is not a forward-looking measure, GDP growth is measured as the 3 year geometric average of annual GDP growth post 2002. This variable controls for growth opportunities due to country characteristics. I also use total market capitalization over GDP to control for the level of capital markets and financing opportunities in the home country.

3.0 SAMPLE SELECTION AND EMPIRICAL METHODOLOGY

3.1 SAMPLE

3.1.1 Foreign Issuers Sample

I form an initial sample of foreign issuers using a combination of four different sources, three Depository Banks'[49] and CRSP-Compustat databases. I use Factiva news source to identify the ADRs that are either upgraded to or downgraded from national exchanges. This information is vital to assess the sub-sample of foreign issuers that are required to comply with SOX. In addition to sample of issuers from Depository Banks' databases, I also identify the foreign issuers from CRSP-Compustat database by 'financial incorporation', 'share code' and 'company

[49] Bank of New York (BNY) DR Directory provides information on currently active ADR programs. BNY database also provides information on the active ADR programs as well as the terminated issues. Citigroup's (CITI) Depository Receipt Service's Universal Issuance Guide also provides information on ADRs, but only for the currently active programs. Although the database defines some listings as "inactive", these ADRs are not the terminated listings. For Citibank database, this inactive definition identifies the ADR programs that have switched their depository banks from Citibank to others. I verified this information after contacting Citibank's Depository Receipt Service department. JP Morgan's (JPM) ADR Universe database includes information on ADR programs but only for the active programs. JPM database provides specific level status but this information is the most recent level for the ADR program.

name' identifiers. Besides the foreign issuers listed through ADR program, I also gather the sample of Non-ADR issuers from Compustat and DataStream databases. I use 'financial incorporation' and 'share code' descriptions from Compustat database and Country description from Thomson One Banker WorldScope database. This sample includes mostly foreign issuers other than depository programs, such as dual-listings, foreign public offerings and Global Shares.

Later, I verify the foreign issuers sample with the available information from several sources. For the issuers listed on NYSE, I verify the listing date and the share type information with the Non-US issuers' database for year 2002 available from NYSE[50]. For issuers listed on NASDAQ, I use NASDAQ International Companies information available from the NASDAQ website[51]. I also verify the Israeli issuers with the TASE (Tel Aviv Stock Exchange) information available[52]. I utilize Thomson Global (Worldscope), for F-1 filings to verify level information for Level III ADRs. I use the Factiva news source to identify the events for exchange upgrades / downgrades. This way, I identify the accurate listing information around the SOX announcements. For termination, acquisition, bankruptcy, deregistration and status information, I utilize CRSP delisting information, in conjunction with the Factiva announcements and SEC Form-15[53] deregistration filings under Worldscope and SEC Edgar database.

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[50] Last accessed October 2, 2007, NYSE Non-U.S. Data: Complete list of Non-U.S. Listed Issuers http://www.nyse.com/marketinfo/datalib/1022221393065.html

[51] Last accessed October 2, 2007, NASDAQ International Companies ttp://www.nasdaq.com/asp/NonUsOutput.asp

[52] Tel-Aviv Stock Exchange Dual Listed bt Securities Law http://www.tase.co.il/TASEEng/MarketData/Stocks/MarketData/MarketData.htm?action=2&dualTab=2&SubAction

[53] SEC Form 15, Certification and notice of termination of registration under Section 12(g) or suspension of duty to file reports under Sections 13 and 15(d), SEC2069

Figure 1 demonstrates the new and the cancelled listings grouped by ADRs and other programs on an annual basis. U.S. markets experienced strong growth in foreign listings and the number of issuers have increased ever since 1990. The number of foreign issuers listed on U.S. exchanges was stable through 2000-02 periods and has dropped considerably following the year 2002. Post-SOX period experienced fewer number of new issues and higher number of terminated programs compared to pre-SOX period. The negative growth over the post-SOX period is mostly attributable to drop in the number of new listings rather than terminated listings, and this holds both for ADR and Non-ADR listings.

Table 1 summarizes my sample and the survival information for the foreign issuers that are active around the SOX legislative events. To get this sample, I use several filters on the initial sample. I exclude Investment Funds, Investment Trusts and issuers from countries known as tax havens, such as Bermuda, Barbados, Marshall Islands, Cayman Islands, Bahamas, British Virgin Islands and Belize[54]. For issues with different classes[55], I only include the issues with the one-share-one-vote scheme. Final sample includes 888 listings, starting as early as 1930. This sample includes all foreign listings up to December 30, 2006, which have price data on CRSP database. Table 1 provides further classification of the foreign issuers based on their listing status around and after the SOX Act. There are 135 issues that are terminated before the enactment of the SOX Act, and 79 foreign firms accessed U.S. equity markets after the enactment of SOX. There are 674 foreign issuers that are active around the SOX legislative events. The final sample

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[54] "Places in the sun, Survey: offshore finance" Feb 22nd 2007 From The Economist print edition http://www.economist.com/surveys/displaystory.cfm?story_id=8695139

[55] There were five dual class issues in my sample; Telefonos De Mexico SA De CV, Transcom Worldwide SA, Royal Dutch Shell Plc, Embotelladora Andina SA, Sociedad Quimica Minera De Chile.

for my analysis consists of these 674 foreign issuers, where approximately 62% of them listed through ADRs and 38% listed through other means. I conduct the event study analysis based on this final sample of foreign issuers.

3.1.2   Financial and Market Price Data

I cross-referenced the sample with CRSP and Compustat databases for pricing and financial data. For the financial data, I use the observation for the most recent fiscal year prior to December 2001. Following the previous studies (Piotroski and Srinivasan (2007), Dodige, Karolyi and Stulz (2007)), I use the values for the fiscal year ending in 2001 to compute these measures.

Firm level sales growth is measured as the three-year geometric average of annual growth. Leverage is defined as the total debt divided by total assets. ROA is used as the profitability measure and is computed as the earnings before extraordinary items divided by total assets. I use market-to-book and GDP growth as firm level and country level growth proxies. Market-to-book is the market value of assets divided by total assets at the end of fiscal year 2001. The market value of assets is calculated as the long-term debt plus book value of preferred stock plus market value of common stock.

For risk taking proxies, I use similar accounting-based and stock-based measures as Bargeron, Lehn and Zutter (2007). Accounting-based measures of the level and risk of corporate investment are (i) the ratio of R&D expenditures to assets, (ii) the ratio of capital expenditures to assets, and (iii) the ratio of cash holdings to assets. Stock-based measures of risk are (i) the standard deviation of monthly stock returns, (ii) the estimated beta from the market model, and (iii) root mean square error from this market model. Market model is estimated using daily returns over the year 2001, vis-à-vis FTSE Global index excluding U.S. markets.

3.1.3   Country Level Data

For legal origin grouping I use La Porta et al. (1998) classification. For countries that are not covered by their sample, I use JURIST[56] database and CIA Factbook to identify the legal origin. I also use Shareholder Rights Score from La Porta et al. (1998) as country level governance proxy. For the countries that are not covered by La Porta et al. (1998), I obtain Shareholder Rights Score from Pistor, Raiser and Gelfer (2000).

As a market benchmark in the market model, I use global indices of developed countries excluding U.S. Both FTSE and Morgan Stanley Capital International (MSCI) have indices in this structure. For this purpose I use 'FTSE W World Ex US'[57] and 'MSCI World Ex US'[58] indices. I gather price data for these indexes from Thomson One Banker-DataStream.

I also use factors for the size of the capital market and growth opportunities at country level. I use market capitalization divided by GDP (Gross Domestic Product) as the proxy for

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[56] University of Pittsburgh, Law School database

[57] The FTSE All-World ex US Index comprises Large (83%) and Mid (17%) cap stocks providing coverage of Developed and Emerging Markets (47 countries) excluding the US. The index is derived from the FTSE Global Equity Index Series (GEIS), which covers 98% of the world's investable market capitalization.

http://www.ftse.com/Indices/

[58] The MSCI World Index is a free float-adjusted market capitalization index that is designed to measure global developed market equity performance. As of June 2006 the MSCI World Index consisted of the following 22 developed market country indices: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland and the United Kingdom.

http://www.msci.com/equity/indexdesc.html

capital markets' size measure (Doidge et. al 2007), and three-year geometric average of annual GDP growth as the proxy for the country specific growth opportunity. I use the World Bank WDI dataset from country level data[59].

3.1.4   SOX Announcements Data

I identify the set of announcements related to SOX from several sources. For the chronology of the legislative events leading to the passage of SOX, I use Thomas Library of Congress for the 107th Congress[60]. I include the events that reveal significant information which affects the Act becoming law. For the administrative events after June 30th 2002 when Act became law, I use SEC's 'Proposed Rules'[61] and 'Final Rules'[62] archives for 2002 in addition to the event sample used by previous studies. I use Factiva news source to identify the exact time of the earliest announcement related to each event. I also use Factiva database, to check for any confounding event. I exclude announcements that interfere with an important confounding event that would affect capital markets. An announcement date is treated as confounding event if there is any other announcement with significant implications and/or legislative outcomes. And there were

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[59] World Development Indicators Online (WDI) provides direct access to more than 700 development indicators, with time series for 208 countries and 18 country groups from 1960 to 2006, where data are available.

[60] Thomas Library legislative information from the Library of Congress

H.R. 3763 http://thomas.loc.gov/cgi-bin/bdquery/z?d107:h.r.03763:

S. 2673 http://thomas.loc.gov/cgi-bin/bdquery/z?d107:s.02673:

[61] SEC Proposed Rules 2002 http://www.sec.gov/rules/proposed/proposedarchive/proposed2002.shtml

[62] SEC Final Rules 2002 http://www.sec.gov/rules/final/finalarchive/finalarchive2002.shtml

two cases like this in my sample. I also exclude the events with highly expected outcomes, such as Senate passing the Sarbanes Bill by 97-0 vote, and the President signing the Act.

Appendix B.1 provides the list of events leading to the passage of SOX, as well as the administrative events after the passage along with date and time information. Appendix B.2 provides the details for each SOX announcement. Corresponding event windows are adjusted for the announcements made after or before trading hours. These 15 legislative and administrative events cover announcements by the SEC, meetings by the House and the Senate committees, reports and votes for the Oxley Bill and the Sarbanes Bill, announcements related to foreign issuers' compliance, proposal for SOX sections and propositions for foreign issuers and other related events. There are ten legislative events including July, 30th 2002 when the Act was signed into law by President Bush. There are five subsequent administrative events after the enactment of the Act; mainly the proposed SEC rules for the SOX sections, resignations from the SEC, and SEC provisions to accommodate foreign firms' audit committees. I excluded four announcements from the cross-sectional analysis, two due to other confounding events, and another two due to expected outcome. However, for the sake of robustness, I report the market reactions to these announcements and the CAR return estimates including these events.

3.2   EVENT STUDY METHODOLOGY

3.2.1   Multivariate Market Regression (MVRM)

To assess the value implication of SOX Act for foreign firms I analyze the market reaction of foreign issuers around the SOX related announcements. I estimate the excess returns around these SOX legislative and administrative events using event study approach. I use multivariate regression model (MVRM) which was first suggested by Izan (1978) and used extensively in finance and accounting literature[63] for regulatory announcements during the same calendar date. MVRM approach estimates the abnormal returns as the coefficient of each dummy variable for the event period rather than prediction errors. Detailed discussion for this method is provided by Binder (1985a, 1985b), Thompson (1985) and Karafiath (1988).

Regulatory events usually involve no single well defined announcement; rather there are multiple announcements, such as committee, House, or Senate approval during legislative and administrative process. Hence multivariate framework provides easier setting for events with multiple announcements. MVRM methodology is similar to Seemingly Unrelated Regression

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[63] Smirlock and Kaufold (1987), Karafiath and Glascock (1989), Cornett and Tehranian (1989,1990), De Jong and Thompson (1990), Eyssell and Arshadi (1990), Demirguc-Kunt, and Huizinga (1993), Madura, Tucker, and Zarruk (1992, 1993), Unal, Demirguc-Kunt, and Leung (1993), Clark and Perfect (1996), Cornett, Davidson, and Rangan (1996), Johnson and Sarkar (1996), Bin and Chen (1998), Cosimano and McDonald (1998), Sinkey and Carter (1999), and Stewart and Hein (2002) are examples of empirical studies that use such an approach in examining the significance of a wide variety of events.

(SUR) system with one equation for each firm. MVRM assumes that disturbances are independent and identically distributed within each equation, but their variances differ across equations. It also assumes that the contemporaneous covariance of the disturbances is nonzero, whereas the non-contemporaneous covariance all equal zero across equations (Theil 1971). The real advantage of the MVRM framework over the standard methodology lies in its ability to allow abnormal returns to differ across firms, including signs, and to easily test joint hypothesis (Binder 1998). This feature makes this methodology the robust choice for regulator events.

MVRM estimates the individual equations with GLS method, but the estimated coefficients are identical to OLS method. Parameter estimation security by security is equivalent to OLS estimates of the entire system. OLS has an advantage of simplicity yet still provides unbiased parameter estimates. However, in comparison to GLS approach (EGLS estimated var-covariance matrix), OLS is less efficient. However, Hughes and Ricks (1984b) have shown that the t-test for an equally weighted MVRM model on the hypothesis that the average abnormal return during common announcement period equals zero is equivalent to F test in SUR system. Similarly Thompson (1985) shows that if there is a common event date for all firms, CAR test can be implemented using an equally weighted portfolio as the dependent variable. In line with this, Schipper and Thompson (1985) suggest that same result could be achieved more easily by examining a portfolio of firms and estimating the average abnormal return(s) rather than the SUR system. EGLS coefficients can be interpreted as coefficients on a portfolio of the underlying firms having weights $P = \left(I'S^{-1}I\right)^{-1}S^{-1}I$. If S, estimated covariance matrix of residuals is chosen to be scalar, the portfolio weights imply an EW portfolio. Therefore, the significance of EW portfolio event parameter estimate provides a valid hypothesis test on the mean, even if the

assumption of a common event parameter across sample is false. Portfolio method avoids EGLS regressions and yet provides unbiased parameter estimates and test statistics.

The MVRM is applied over 2 year period, 6 months before the first announcement, 1 year legislation period and 6 months after the last announcement. I estimate abnormal returns (ARs) as the coefficients for dummy variables for each SOX announcement, and the cumulative abnormal returns (CARs) as the coefficient for a single dummy variable for all announcements.

In addition to the t-statistics for EW portfolios, I report the t-statistics for the standardized abnormal returns. Abnormal returns are standardized by residual standard deviation estimate from the individual regressions following the Boehmer Musemeci and Poulsen (1991) approach based on Patell (1976). Cross-sectional t-statistics are calculated for standardized abnormal returns and reported as t-std as discussed in Appendix C.1. Standardization serves mainly two purposes: It adjusts t-statistics for the fact that event-period residual is an out of sample prediction and hence it will have a higher standard deviation, known as event induced variance. Standardization, as applied before forming portfolios, allows for heteroskedastic event day residuals and prevents firms with large standard deviation to dominate the test. This approach accounts for heteroskedasticity in abnormal return across firms, and event induced variance. I also report t-statistics for non-parametric Wilcoxon Sign test for null hypothesis of equal probabilities to observe (+) and (-) abnormal return which is robust to any assumption about the underlying distribution.

In addition to test statistics from MVRM, I report t-statistics that incorporate contemporaneous correlation from covariance matrix. This approach is based on the inference on average cross correlation on abnormal returns across firms, instead of full covariance matrix estimation as in GLS approach (Schipper and Thompson (1985)). Kolari and Pyonnen (2006)

suggest t-statistic adjustments for standardized Patell and BMP approaches using residual estimates from stock return regression, which accounts for the contemporaneous cross-correlation. Appendix C.2 provides the details for correlation adjustment for t-statistics.

3.2.2   Portfolio Approach for Cross-Sectional Analysis:

As discussed earlier, the mean stock price reaction may not be significantly evident on announcement date due to cross-sectional variations in market reactions, which may be driven by different country and firm characteristics. Actually, this is what Hypothesis 2 and 3 investigate, the cross-sectional association of firm and country characteristics on market reaction. A typical method of testing this relation of firm characteristics on market reactions is to run cross-sectional regressions of abnormal returns on the characteristics of interest. However, for common event dates as in many regulatory event studies, the analysis is likely to have cross-sectional heteroskedasticity and cross correlation in residuals, which can lead to biased standard errors of the coefficients.

To address this issue, I use the weighted portfolio approach proposed by Sefcik and Thompson (1986) to test these hypotheses. This approach, being a MVRM method, is a multivariate extension of Mandelker (1974), Jaffe (1974) which incorporates the contemporaneous correlation of residuals in to the estimation process. It generates unbiased standard errors and parameter estimates that account fully for heteroskedasticity and interdependence in cross-sectional disturbance. Sefcik and Thompson (1986) suggest a weighting approach to form factor portfolios and to estimate unbiased test statistics for cross regression of abnormal returns on firm characteristics using overtime regressions, and Appendix C.3 provides the details of portfolio weights for each factor in a cross-sectional setting.

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If the abnormal return of the N firms around the events of interest are hypothesized to be related with K (firm, industry and country) characteristics, and F is a NxK matrix of these characteristics, then set of portfolio weights W is a KxN matrix $= \left(F'F\right)^{-1}F'$. Each row of W produces a portfolio that corresponds to only one characteristic and independent from the impact of all the other $K-1$ characteristics. This procedure estimates the coefficients from the MVRM one at a time for each characteristic, instead of cross-sectional regression estimating all at once. However, unlike the cross-sectional regression, standard errors of these estimates account fully for the cross correlation and heteroskedasticity in firm disturbances.

4.0   DESCRIPTIVE STATISTICS

Table 2 provides industry classifications for the foreign issuers sample based on the two-digit North America Industry Classification System (NAICS). Panel A displays the industry distribution for the sub-samples of ADR and non-ADR listings. Foreign issuers are mainly from the manufacturing, mining & oil, and information industries. ADR and non-ADR foreign issuers are comparable in terms of their industry distribution. The mining-oil-gas extraction industry is slightly skewed toward non-ADR listings due to the number of Canadian firms from this industry utilizing the dual-listing program. Panel B displays the industry distribution for foreign issuers from legislations with Common Law versus Civil Law origins. Other than Canadian firms in the mining-oil-gas extraction industry contributing to the Common Law sub-sample, foreign issuers with Common and Civil Law origins are comparable in terms of their industry distribution.

Table 3 provides the statistics for foreign issuers' country distribution, percentage of ADR and non-ADR listings from each country, and listing weights within the country. Most of the foreign issuers are incorporated in Canada, England, Israel, the Netherlands and France. Approximately 60% of all non-ADRs are represented by Canadian firms, and 25% are represented by Israeli firms. Cross-listing through direct-listing is comparatively easier for these two legislations using the dual-listing option. Only Dutch firms have equal representation for both ADR and non-ADR listings. Issuances from most of the other countries seem to be highly

skewed, either to ADR or non-ADR listings. The ADR sample is mainly represented by firms incorporated in England, France and Japan, and these countries have low non-ADR listings.

4.1   FIRM AND COUNTRY CHARACTERISTICS

Table 4 provides summary statistics for growth, size, and risk-taking measures along with the other firm and country characteristics. Panel-A presents the statistics for the full sample. Approximately 42% of all foreign issuers are from legislations with a common law legal origin and 43% have a Shareholder Rights score below the median. Although the mean value is very close, the correlation between the 'Legal Origin' measure and 'Shareholders Rights Score' measure is only 0.53. Hence, approximately 42-43% of all foreign issuers are from weakly governed legislation by either measure. In 2001 U.S. dollar value, the average foreign issuer had a size of $18 billion in assets and $7.7 billion in market capitalization. The mean leverage for foreign issuers was around 40%, and they experienced a 4.6% ROA for the fiscal year 2001. The average market-to-book asset ratio was 1.86, and they experienced an average growth of 37% in sales. The average volatility in stock returns was 4.5% with a mean beta of 0.92. For firms with R&D expenses for fiscal year 2001, the average R&D-to-asset ratio was 8.3%, and they had on average a 6.5% capital expenditure-to-asset ratio.

Panel-B displays the summary statistics for the sub-sample of legal origin. For countries with a Common Law legal origin, 80% have a Shareholder Rights score above the median. In general, two samples of foreign issuers which are slightly different from each other in terms of size, growth, and risk taking measures are comparable in terms of market risk, leverage, and capital expenditure-to-asset ratio. Interestingly, foreign issuers from Civil Law legislations are

larger in average size but generate more cash in terms of profitability and are slightly more leveraged. In terms of growth opportunities, the market-to-book ratio is comparable but slightly lower for Civil Law firms. They also experienced smaller growth in sales for the pre-SOX period. Moreover, in terms of risk measures, Common Law firms experience higher volatility in stock return and unsystematic risk. However, the mean 'market beta' is comparable between Common and Civil Law firms. Common Law firms also invest more in R&D and hold more cash relative to foreign issuers from Civil Law countries.

Table 5 provides the Pearson correlation among firm and country-level characteristics used in the cross-sectional analysis. The correlation between Legal Origin and the Shareholder Rights score is 53.2%. As expected, risk-taking measures are positively correlated with each other; therefore, they are considered one at a time in the cross-sectional analysis. The profitability measure ROA is negatively correlated with all the risk-taking measures other than capital expenditure over asset. This suggests that firms at the high end of the risk-taking distribution are also generating less cash. This is consistent with these firms being early in their growth stage, exercising risky projects and not generating enough cash. Two size measures, total assets and market capitalization are also positively correlated, as expected.

4.2 THE SOX ACT AND MARKET REACTION TO ANNOUNCEMENTS

4.2.1 Overall Market Performance of Foreign Issuers vs. U.S. and Global Indices

As a first step in assessing the relationship between the SOX Act and shareholders' value for foreign issuers, I examined the overall performance of the markets[64] [The U.S. market is represented by the 'S&P 500' while Global Markets other than the U.S. are represented by the 'FTSE Index for Developed Countries, excluding U.S.', and foreign issuers listed in the U.S. are represented by the 'VW Cross-Listed Index']. Figure 2 presents the Buy-and-Hold performance of a 'value-weighted foreign issuers' portfolio along with the 'S&P 500' and 'FTSE index for Developed Countries excluding U.S.' (FTSE index hereafter). Figure 3 displays the difference in Buy-and-Hold performances (i.e., BHAR) between each market for relative comparison. Market performances are calculated over the June 2001–August 2003 period, starting approximately 6 months before the first SOX announcement and continuing to 6 months after the last announcement. The SOX legislative period is marked between Jan 17, 2002 and Jan 08, 2003. On average, the performance for the first six months before the SOX period is approximately - 5% for all markets. This level is marked in Figure 1, to infer Buy-and-Hold performance from Jan 17, 2002, the date of the first SOX-related announcement.

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[64] I also used the Center for Research in Security Prices (CRSP) value weighted US index (vwretd) to represent the U.S. market; and the MSCI World Index excluding the U.S. to represent global markets, but the results are not sufficiently different to warrant presentation. Availability of the intraday S&P 500 returns motivates reporting the S&P 500 results for comparison with the intraday results.

There are three main observations that deserve further attention. First, over the six months prior to the SOX period, foreign issuer portfolio performance is comparable to both the S&P 500 and FTSE index. Even throughout the period following September 11th 2001, the foreign issuers' performance follows that of the largest 500 U.S. firms. Later, both foreign firms' and S&P 500 firms' performance diverge from the FTSE Index through 2001 Fall, but they catch up in the following three months.

Secondly, with S&P500 performing the worst, all three portfolios underperformed throughout the legislative year 2002. Over the year 2002, with U.S. capital markets going through scandals and regulative changes, S&P 500 buy-and-hold performance is around -20% and underperforms by -8% relative to both FTSE index and foreign issuers listed in the U.S. How much of this underperformance is associated with the regulative changes and is attributable to SOX announcements deserves further analysis.

Finally, the performance of the foreign issuers' portfolio also diverges from the FTSE index and mostly underperforms throughout the year 2002. However, the overall BHAR performances of these two indices are approximately the same around -12% by the end of 2002. Whether this deviation between the performance of foreign issuer portfolios and the FTSE index is associated with SOX announcements is an important question to be analyzed.

4.2.2 Market Reaction to Individual Events – Daily Return Analysis

The next step in my analysis is the market reaction to SOX related announcements, to see how much of the underperformance throughout the year 2002 is attributable to SOX announcements. Table 6 provides the market reaction on the 15 SOX related announcement dates. This list of SOX events includes four events that are excluded from later analysis which infer aggregate

market responses related to the SOX events. As discussed in the previous section, two of them are excluded because of other confounding events that reveal significant information for the U.S. market. In addition, two more are dropped due to highly expected outcomes[65], such as the Senate passing the Sarbanes Bill by a 97-0 vote on July 16, 2002, and the President signing the Act on July 30, 2002. Reported results are consistent with the view that the market reactions for these highly expected events are not statistically significant, which is in line with the above argument.

The SOX chronology used in this study covers 11 announcements related to the enactment of the SOX Act that reveal new information about the Act becoming law and is free of any confounding events. For statistical tests on the announcement dates, I follow Mitchell and Netter (1989) who studied the provisions of the House proposal triggering the 1987 stock market crash. Time series return data from pre- and post-event periods provide variance estimates to test the statistical significance. The source of the pre-event time series data is the 150 trading days preceding the first announcement on January 17, 2002, and the source of the post-event time-series data is the 150 trading days following the last announcement on January 8, 2002. The post-event time series data allow for a permanent increase in the variance of the stock returns due to the Act. This does not address the potential problem of increased variance during the event period. However, again following Mitchell and Netter (1989), I use an alternative estimate, suggested by Brown and Warner (1985), by doubling the variance based on nonevent time series data. All t-statistics with three different variance estimates are reported in Table 6[66].

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[65] As a robustness check, Section 6 reports the results including these announcements as well.

[66] T-statistics based on the pre-event period variance are reported in parenthesis, t-statistics based on the post-event period variance are in brackets, and t-statistics based on doubling the pre-event period are in braces

Index returns reported in columns 6-9 are average market reactions, but this does not consider the expected return given the trend in global markets. For this purpose, I use MVRM model with FTSE index excluding the U.S. market as a benchmark. Columns 10 & 11, "MVRM US" and "MVRM Frgn." provide the excess returns for U.S. firms and the foreign issuers vis-à-vis global markets. Since the MVRM model is estimated for equal-weighted portfolios, the test statistics addresses contemporaneous correlation.

In Table 6, Panel A presents the results for the legislative announcements leading to the SOX Act, and Panel B covers the administrative events after SOX was signed by the President. An EW foreign issuer's portfolio declined in value by -4.0% over 11 announcements that reveal new information about SOX Act becoming law and free of any confounding events. The EW U.S. index declined by -4.62% whereas the S&P 500 declined by -7.96%. This result is consistent with prior studies reporting considerable market value (unadjusted) lost by U.S. firms. Zhang (2007) reported unadjusted -12.53% to -15.35% shareholders' value lost for her sample of U.S. firms and her events sample.

Over the SOX announcement dates, Global Markets excluding the U.S. (represented by FTSE index) gained 2.53% on average. Relative to Global Markets, the S&P500 lost around -10.49% (-7.96% - 2.53%), which is close to the index's BHAR underperformance for the year 2002 relative to the FTSE index. The EW portfolio of U.S. firms lost approximately -7.15% (-4.62% - 2.53%), shareholders' value on average over the SOX events, relative to the FTSE index. However this result does not hold using the MVRM approach as the expected return model. The EW U.S. portfolio's daily market reaction is an insignificant 0.23% on average after accounting for the trend in Global Markets using the MVRM method. Using the MVRM

approach, an EW portfolio of foreign issuer's daily market reaction is 1.95% on average, but not statistically.

The market reaction analysis around SOX announcements is mixed, depending on the methodology used. However; the difference in average market reaction between foreign issuers and U.S. firms' indices suggests possible bonding explanation in Hypothesis 3.

Market Reaction to Individual SOX Announcements:

As an extra step to assess the value effect of the Act, I analyzed the market reaction for each announcement. Market reactions for the two announcements excluded due to highly anticipated outcomes (Senate passing the Sarbanes Bill by 97-0 vote and the President signing the Bill) are not significant. Also, the excess return when the House passed the Oxley Bill on 24 April, 2002, the same date Attorney General Eliot Spitzer addressed the Congress on analysts' conflict of interest issues, is not significant. However, the market response when Chairman Harvey Pitt resigned on November 5, 2002, the same date as the U.S. general elections, is positive and significant for EW US both for index returns and MVRM regression. All these events are excluded from the overall market reaction and from cross-sectional analysis in the next section.

The first SOX related announcement was on January 17 2002, when SEC chairman Harvet Pitt proposed changes to accounting industry oversight. The market response both for U.S. firms and foreign issuers is positive but not significant. The EW US and EW foreign issuers' index gained 0.70% and 0.81%, respectively. Using MVRM, abnormal returns are only moderate and not significant at 0.07% and 0.23%, respectively.

Later when the H.R. Financial Service approved the proposal for the Oxley Bill by 49-12, average excess return for U.S. firms using MVRM is zero. Market reaction for foreign issuers is 0.87% and also not statistically significant.

Later when the Senate Banking committee approved the proposal for the Sarbanes Bill by 17-4 on June 18, 2002, both foreign issuers' and U.S. firms' portfolios are associated with -0.04% and -0.18% market reaction respectively, but statistically insignificant. MVRM estimates are also similarly, negative and not significant.

On June 25, 2002 at 18:26 EDT, WorldCom Inc. announced the fraud involving inflated EBITDA figures. The next day, both U.S. firms and foreign issuers are associated with negative, -0.84% and -1.19% index returns respectively, but they are not statistically significant. However, based on MVMR regression it is marginally significant for foreign issuers with a -1.10% return.

The following day, the SEC approved the CEO/CFO certification due in mid-August for the fiscal year. Interestingly, the market reaction for this one-time certification is positive, on average, U.S. and foreign firms at 1.15% and 1.76% respectively, but not significant using different variance estimates. Since the FTSE index is also associated with a positive return on this date, the MVRM estimate is even lower and again not significant. This is consistent with the findings of Bhattacharya et al. (2006) that certification announcement is a non-event for their sample of U.S. firms.

On July 16, 2002 when the House passed the amended Oxley Bill HR 5118 with stiffer punishments for wrongdoing, both foreign issuers' portfolios and U.S. firms associated with insignificant negative reactions. S&P500 is associated with moderate negative market reaction of -1.84% but it is also not significant in statistical means. However, based on MVMR regression

excess return is positive and marginally significant for U.S. firms. This positive price reaction for U.S. firms is not consistent with the expected (-) sign.

On July 25, 2002 when the conference committee report was agreed by the Senate and the House, both U.S. firms and the foreign issuers are associated with negative returns, -0.32% and -1.29% respectively, but not statistically significant. This report is the first document to reveal the details of SOX's main sections including 404. Interestingly, the foreign issuers' reaction is stronger than U.S. firms', which maybe due to the fact that the conference report included an amendment for the definition of 'issuer' including foreign firms as well[67]. Another interesting observation is that the value-weighted index of 22 developed countries excluding the U.S. reacted positively and statistically significantly by 2.42% on the same date.

As discussed earlier, administrative announcements following the passage of the Act are more important than legislative events in terms of compliance requirements and complications in practice. Two events after the SOX Act was signed and became law are especially critical for foreign issuers. These two announcements revealed critical information on SOX becoming mandatory for foreign issuers as well. On August 27, 2002 SEC approved the annual CEO/CFO certification requirement for all registered public firms including foreign firms. However, market returns are insignificant for foreign firms based on EW index and MVRM returns.

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[67] The Library of Congress Thomas: HR 3763 Major Legislative Actions http://www.congress.gov/cgi-bin/bdquery/z?d107:HR03763:@@@X Consideration CR H5462-5480 Roll No 358, 148 Congressional Record S6687, 7/25/2002 12:06 pm

The second surprise for foreign firms came on October 9, 2002, the next day following Pitt Harvey's announcement after trading hours. Mr. Pitt admitted 'limited room for maneuver'[68] for possible exemptions and the SEC Finance Division director Mr. Beller stating 'foreign firms should live with it'[69] were not welcomed by foreign firms. Foreign issuers' market reaction for this event date is -1.93% and is statistically significant, which is consistent with the expected sign. Interestingly, EW U.S. firms and S&P500 also lost -2.43% and -2.73% respectively, a significant shareholders' value on the same date.

On October 16, 2002, the SEC proposed rules for Section 404, 406 and the 407 of the Act. Both U.S. and foreign firms declined by -1.16% and -0.99% respectively, but it is significant only for S&P500 with a -2.41% return. Although these rules are milestones for the SOX compliance requirement, it is arguable whether this announcement revealed any new information or not.

And finally, the SEC proposed provisions to accommodate governance practices by foreign legislations on January 8, 2003. These provisions addressed mainly the concerns of German and Japanese firms, non-management employees and government representation serving on audit committees, along with other accommodations. However, the foreign issuers' market reaction was insignificant for index and MVRM returns, -0.73% and 0.02% on respectively. Since these provisions do not disclose information related to U.S. firms, the market reaction by U.S. firms is insignificant with -0.66% and 0.13% for EW index and MVRM returns on this event date.

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[68] FT.com October 8th 2002, By ANDREW PARKER IN LONDON, ADRIAN MICHAELS IN NEW YORK AND FRANCESCO GUERRERA IN BRUSSELS. "SEC may exempt non-US accountants"

[69] FT.com October 8th 2002 by Lydia Adetunji "SEC rule to include foreign companies"

Overall, the findings on the individual events are weak to provide evidence to support Hypothesis 1, especially for MVMR estimates. The estimated daily index returns and the market reactions on SOX announcements are consistent with the expected signs and but very limited in statistical significance.

4.2.3   Market Reaction to Individual Events – Intraday Analysis

This section looks for empirical evidence on the change in shareholders' value around specific SOX announcements using intraday returns. Five of the announcements related to SOX were made after the market had closed the prior trading day, and six were made during trading hours. To the extent that the market became immediately aware of the announcements and their implications, the market response for those six announcements should have occurred during the early trading hours. Even though the results are weak due to short event windows, the U.S. market represented by the S&P500[70] and EW foreign issuers moved in the predicted direction with significant market reactions for S&P500 on WorldCom (25-Jun-02) and no exemption (08-Oct-02) announcements. Overall, results for intraday price reaction are weak and statistically significant only for two critical events.

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[70] Availability of the intraday S&P 500 returns motivates using and reporting the S&P 500 results to represent U.S. market with the intraday results. Due to disproportionate value effects being more pronounced on small firms, a VW index will understate the overall value effect.

4.2.3.1 Intraday Methodology

I followed the study by Mitchell and Netter (1989) to analyze the S&P 500 and foreign issuers'
portfolio reactions to SOX announcements at the intraday level. Appendix B.1 provides the exact
time of the announcement for each event. For announcements during the trading hours, I
calculated the 1-hour return after the announcement. For announcements after trading hours, I
calculated the 3 hours return from 9:30a to 12:30p on the next trading day. For announcements
made before trading hours, I use the 4-hour intraday return for the same trading day.

A time series of intraday returns from pre and post-event periods provide variance
estimates to test the statistical significance. Similar to daily return analysis, the pre-event period
is 150 intraday trading periods before the first announcement and the post-event period is 150
intraday trading periods following the last announcement. The post-event time series data allow
for a permanent increase in the variance of the stock returns due to the Act. This does not address
the potential problem of increased variance during the event period. However, I use an
alternative suggested by Brown and Warner (1985) to double the variance based on a nonevent
time series. In Table 6, t-values based on the pre-event period variance are in parentheses, t-
values based on the post-event period variance are in brackets, and t-values based on doubling
the pre-event period are in braces.

4.2.3.2 Intraday Market Reactions

Columns 12 & 13 in Table 6 report the S&P 500 return and the EW foreign issuers' portfolio
from the close of the day of the announcement through 12:30p on the event day for
announcements made after trading hours. Using the pre- and post-event period variances, the
S&P return has the overall expected sign. However, it is statistically significant only for the two
announcements that have the strongest daily reactions.

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When WorldCom announced fraud on June 25, 2002 at 18:26, the S&P 500 declined by -1.91% within the first 3 hours on June 26, 2002. It is significant at the 0.05 level using both pre-event and post-event variance estimates. However, it is only marginally significant using the event induced variance estimate. Interestingly, the intraday market reaction is stronger than the daily return, which dropped by -0.27%. On the same announcement, the EW Foreign issuers' portfolio is associated with -0.47% price reaction within the first 3 hours. This suggests that the market reacted in the anticipated direction during the first few hours and compounded the new information fairly quickly.

Another interesting observation is on October 9, 2002 following the announcement by SEC's Chairman Harvey Pitt who addressed foreign issuers' concerns for possible exemption. The S&P 500 declined by -1.78% during the first 3 trading hours and it is statistically significant at the 0.10 level. The EW portfolio of foreign issuers also lost -2.23% shareholders' value but it is not statistically significant. The daily market reaction on the same date was -2.73% and -1.93% for S&P 500 and foreign issuers respectively. Market reactions for both U.S. and foreign issuers' portfolios have the expected sign and the average intraday reaction is less than the daily reaction.

Although the market reactions are weak and not significant for other announcements, overall they have the expected sign. Test statistics using pre-event and post-event variance estimates are similar, which suggests no permanent shift in the variance of stock returns due to SOX announcements. As anticipated, using double the pre-event variance estimate to control for event-induced variance, test statistics are weaker.

Overall, the results using the intraday market reactions are weak and aligned with the findings for daily returns. The intraday returns are statistically significant only for two events, which is limited support for Hypothesis 1.

5.0   CROSS SECTIONAL ANALYSIS OF SHAREHOLDERS' VALUE

5.1   CHANGE IN SHAREHOLDERS' VALUE AND FIRM & COUNTRY CHARACTERISTICS

The focus in this section is on the determinants of average shareholders' value lost due to SOX announcements. First, under the maintained hypothesis that stock prices correctly incorporate all the cost and benefit of the SOX Act, less negative overall response by foreign issuers relative to U.S. firms suggests the possibility of additional benefits for some foreign firms. Under Hypothesis 3, I argue that there are additional benefits for foreign firms from weakly governed legislations under the 'Bonding Hypothesis'. Second, previous studies document a disproportionate net-effect for small, high-growth firms (Linck, Netter and Yang (2006), Kamar, Karaca-Mandic and Talley (2007)) and provide evidence for reduced risk taking behavior associated with SOX (Bargeron, Lehn and Zutter 2007, Litvak 2007a). I investigate the association between shareholders' value and the cross-sectional characteristics at univariate and multivariate settings.

5.1.1   Univariate Results

Table 7 provides the cumulative abnormal return for the foreign issuers' portfolio and the U.S. firms' portfolio. Panel A provides the results for the subgroups of SOX compliance, non-

complaint OTC listings versus SOX mandated listings on organized exchanges. Since OTC traded listings are not registered under the Securities Act of 1933, SOX compliance is not mandatory for these firms. Within the group of exchange-listed issues, Panel B displays the findings by the exchange listed: Amex, NASDAQ and NYSE. Along with the t-statistics for EW portfolios (t-car), I report t-statistics adjusted by the BMP approach (Appendix C.1) for event-induced variance (t-scar), and further adjusted by the KP approach (Appendix C.2) for possible cross-correlation (t-scar adj) and the test statistics for the non-parametric Wilcoxon sign test. The percentage of observations with a positive reaction from non-parametric test helps to document whether the impact is widespread or not.

Average market reaction by foreign issuers is -5.19% and statistically significant by all measures, even after fully accounting for possible cross-correlation. Approximately two thirds (67.98%) of all foreign issuers listed on exchanges lost shareholders' value around SOX announcements. The average market reaction by OTC-listed foreign firms is positive but not statistically significant. Due to a small sample size for OTC-listed firms, statistical inference is limited for this group.

Consistent with the findings for the overall market reaction from the previous section, U.S. firms react more negatively around SOX announcements than foreign firms using the event study approach. 72.33% of all exchange-listed U.S. firms had a negative market reaction, and lost -6.61% shareholders' value on average, around SOX announcements. Findings for the exchange-listed U.S. firms are also statistically significant by all measures. Market reaction by OTC-listed U.S. firms is also negative, but it is weaker than the exchange-listed sub-group.

Furthermore, Table 7 Panel B reports result for NYSE, NASDAQ or Amex-listed foreign issuers and U.S. firms along with the OTC-traded listings. Although OTC-listed U.S. firms'

average market reaction is negative and statistically significant by some measures, statistical significance does not hold once the t-statistic is corrected for cross-correlation. The market reaction by the issuers listed on NASDAQ is higher than those listed on NYSE, but this spread is more pronounced for U.S. firms. This does not hold with Hypothesis 2 and is inconsistent with disproportionate size effect, since firms listed in NASDAQ are relatively smaller. Findings are statistically significant by all measures both for the foreign and U.S. samples. One interesting observation is that approximately 66% of NASDAQ listed U.S. firms and 63% of NASDAQ listed foreign firms react negatively, whereas it is approximately 84% and 73% respectively for those listed with NYSE. Hence, SOX impact seems to be more widespread in NYSE firms, and a negative market reaction is more likely for a typical NYSE firm than a NASDAQ-listed firm.

Hypothesis 3-a argues that the net-effect of stricter disclosure and compliance requirements is a function of country level factors due to the inherited agency problems of country legislation and institutional environments. Therefore, by studying sub-groups of foreign issuers by their jurisdictions, I shed more light on the association between SOX events and foreign firms' reactions to SOX announcements.

Table 8 provides the mean CARs for the exchange-listed foreign issuers by country legislation proxy. I use LLSV (1998) classification to group each jurisdiction as being Common or Civil Legal origin. I also use the Shareholder Rights Score from LLSV (1998) as a country level investor protection proxy. Panel A presents the result for the sub-groups of home country legislation characteristics i.e. 'Legal Origin', and the Institutional environment measure, i.e. median 'Shareholder Right Score'. In Panel B, results are provided for each country with at least three foreign issuers listed in U.S. exchanges.

Ordinal relation in price reaction across different institutional environments is mixed for investor protection and legal origin measures. Foreign issuers from Civil Law countries react more strongly and more negatively than issuers from Common Law countries. However, foreign firms from countries with above median shareholder rights score react more negatively than those from below median shareholder rights score. Results are significant by all measures, but for issuers from Civil legal origins and issuers from below median score countries, statistical significance is limited, once we adjust for t-statistics for cross-correlation. This suggests market reaction for these issuers from weak investor protection countries not being statistically different than zero. This observation is not inconsistent but mixed to support the 'Bonding Hypothesis' that stricter disclosure and compliance rules provide additional benefits for the listings from weakly governed capital markets.

Further sub-groups of legal origin are also presented in Table 8 Panel A. Foreign issuers from the legislations with English legal origin lost an average market value of -4.95% around SOX announcements. A negative impact across this sample is widespread: approximately 67% of these firms reacted negatively. The market reactions for issuers from French and German originated legislations are stronger but not statistically significant for French legal origins once adjusted for cross correlation. Scandinavian firms' market response is not significant but the sample size is limited for this group. Results for the country sub-groups (countries with at least three listings) are provided in Panel B. Overall results are consistent with the previous findings, but the sample size is limited for most of the countries.

5.1.2 Cross Sectional Analysis: Country-Firm Characteristics and Risk Taking Measures

Using a multivariate setting, this section investigates the association between the average shareholders' value lost around SOX announcements and the country and firm characteristics that are documented to be associated with SOX compliance costs and unintended consequences. I conduct a cross-sectional analysis to assess which firm-level and country-level characteristics are associated with a reduction in shareholders' value. For this purpose, I implement the Sefcik and Thompson (1986) approach (discussed in Appendix C.3) in a MVRM setting to address the possible cross-correlation across abnormal returns so that the standard errors are not negatively biased.

Table 9 presents the results for the size and growth measures after controlling for firm, industry, and country factors. All regressions control for leverage, ROA, and also country-level measures such as institutional environment, growth, and capital market development measures. All regressions include industry fixed effects to control for otherwise un-captured industry characteristics that are associated with the SOX Act's net effect. In panel A, I use the Shareholder Rights Score as a measure for institutional environment and a dummy variable equal to 1 for weakly governed legislation (foreign issuers from countries with Shareholder Rights Score below median). Size and growth opportunity factors also interact with this measure to allow the effect of firm characteristics to vary with the institutional environment.

Among the control variables, the country-level growth measure 'GDP Growth' is negatively related to market reaction, as expected, and the coefficient is highly significant. This observation is consistent with Hypothesis 2's implication for growth opportunities, and suggests that foreign firms from countries with better growth prospects experience more negative net effect due to SOX. This is consistent with SOX compliance having disproportionate effect on

high-growth firms. The country-level capital market measure Market Capitalization over GDP, which controls for financing opportunities in the home country, is not significant for any of the regressions. Similarly, coefficients on firm-level financial distress (leverage) and profitability measures (ROA) are not statistically significant. However, results for these firm-level control variables are consistent with previous studies (Zhang 2007, Smith 2006, Litvak 2007b) both in sign and statistical significance.

Regressions 1-4 study the firm size measure and their association with the market reaction. Consistent with Litvak (2007b) but contrary to Hypothesis 2 and other studies (Kamar, Karaka-Mandic and Talley 2007, Linck, Netter and Yang 2006), the size measure is not positively related to the market reaction to SOX. Firm size measures (Log(Asset) and Log(Market Capitalization)) are negatively and significantly related with the average market reaction to SOX announcements. One possible explanation is that additional bonding benefit would be driven by some firm characteristics that are negatively associated with firm size. Regressions 2 & 4 include the 'Shareholder Rights Score' measure along with the interaction variable. The coefficient on the 'Shareholder Rights Score' variable is positive, consistent with the 'Bonding Hypothesis' explanation, but it is not statistically significant. This observation is not strong enough to support Hypothesis 3 and the bonding explanation, that the net effect of SOX is less negative for firms from weakly governed legislations. The coefficient for the size interaction term is not significant. Due to its lower correlation with other factors, the total assets value is used as firm size measure in other regressions.

Regressions 5-10 analyze the firm level growth measures. As expected, coefficients for 'Sales Growth' and 'Market-to-Book' measures are negative but they are not statistically significant. Yet, for the results not reported, these factors are significant at the 0.10 level when

the country-level growth measure (GDP growth) is excluded. Since foreign issuers are usually large and well established firms, insignificant coefficient for firm level growth measure would be due to limited variation across firms from the same country after controlling for country level growth opportunities. However, the negative coefficient on growth proxies, both at the country and firm level, is consistent with Wintoki (2007) and supports Hypothesis 2, suggesting that the firms that operate in uncertain environments face higher compliance costs as a result of uniform governance rules. Regressions 6–8 include the 'Shareholder Rights Score' measure along with the interaction variable. The coefficient on the 'Shareholder Rights Score' variable is positive but not statistically significant. The coefficient for the interaction with growth measures is not significant either. The positive sign for interaction with sales growth is consistent with Hypothesis 3-b, suggesting that foreign firms from weaker institutional environments and with a greater demand for financing, capitalizing more on the bonding benefit; but weak in statistical means to support. Due to its lower correlation with other factors, the 'Market-to-Book' measure is used as the firm-level growth proxy in other regressions.

Panel B, presents the regression results using the Legal Origin as the institutional environment measure. This identifier defined as 1 for the issues from Civil Law legislations. Overall, the results are similar to Panel A with the Shareholder Rights Score measure. Coefficients for both of the firm size measures, total assets and the market capitalization are negative and statistically significant. The country-level growth measure 'GDP Growth' is negatively related to average market reaction, and the coefficient estimate is statistically significant. However, neither 'the Sales Growth' nor 'Market-to-Book' measure are statistically significant. The coefficient for 'Leg Origin' is positive but this difference in average market

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reaction between well-governed legislations versus weakly governed legislations is not significantly different than zero, also with 'Legal Origin' measure.

Table 10 presents my findings for the association between the risk taking measures and the change in shareholders' value around SOX announcements. I employ stock-based and accounting-based risk taking measures, used by Bargeron, Lehn and Zutter (2007). As discussed in Section 3.1.2, accounting-based measures are the ratio of R&D expenditures to assets, the ratio of capital expenditures to assets, and the ratio of cash holdings to assets. Stock-based risk taking measures are the standard deviation of monthly stock returns, the estimated beta from the market model vis-à-vis the FTSE Global index, and the root mean square error from this market model. In addition to firm and country-level control variables used in the previous analysis, all regressions include size, growth, and institutional environment measures. Similar to the previous analysis, results are reported using industry-fixed effects to control for otherwise un-captured industry characteristics associated with the SOX net effect.

Regressions 1-6 study the stock-based risk taking measures, along with the interaction variable with an institutional environment dummy. All market-based risk taking measures have negative but insignificant coefficients. The coefficient for the interaction variable is also negative and not statistically significant. Regressions 7-12 consider the risk taking measures based on accounting measures. Similar to stock-based measures, the coefficient estimates are not significant for measures either. Across all the regressions, the coefficient for the 'Shareholder Rights Score' variable is positive but not statistically significant. Findings for the firm size measure are the same as in the previous analysis, except for regressions 8-10, R&D and Capex ratio as risk taking measures. The coefficient for firm size is negative but not significant for these regressions. Results for other control variables are the same as for previous findings.

6.0   ROBUSTNESS AND ADDITIONAL TESTS

I followed various stress tests to assess the robustness of the reported findings. Univariate results and the findings in regression analysis are robust to the choice of benchmark Global Index. For the results not reported, abnormal return estimates on SOX announcements and the CAR results do not change significantly if one employs 'MSCI World Ex US' index instead of 'FTSE W World Ex US'.

Furthermore, for the variance estimates in Table 6, I also computed variance estimates for shorter and longer periods surrounding the event window. Using 50, 100 and 200 trading days prior to January 17, 2002 and post January 8, 2002, the same four announcements are significant but at the 0.10 level.

In addition, I repeated the analysis in Table 7 Panel A & B including the two SOX announcements with highly expected outcomes, i.e. the Senate passing the Sarbanes Bill by 97-0 vote on July 15, 2002, and the President signing the Act on July 30, 2002. Reported results from Table 6 already provide insignificant market returns associated with these dates and suggest no new information being revealed with these announcements. Univariate results including these announcements are reported in Table 11 Panel A & B. Overall, the results are similar to those reported in Table 7. Average market reaction for exchange-listed firms being negative, it is less negative for foreign issuers relative to U.S. firms. Moreover, same as Table 7, firms listed in

NYSE are associated with more negative price reaction relative to NASDAQ firms, which is consistent with the negative coefficient for the size measure.

Results based on LLSV (1998) measures are reported in Panel B of Table 11 and similar to Table 7 Panel A, and suggests mixed findings for foreign issuers from weakly governed institutional environments versus issuers from better governed environments. The legal origin measure suggests a contradicting -2.12% average difference in abnormal returns between Civil versus Common law issuers, whereas the Shareholder Rights Score measure suggests insignificant difference.

Table 5 suggests possible correlation between La Porta et al. (1998) measures and the risk taking proxies I used, especially for the Legal Origin measure. Although I have used the Shareholder Rights score measure, which is correlated only with the Beta, as the institutional environment factor in Table 10, the coefficient estimates for the risk taking measures may be misstated due to this correlation. To assess the robustness of findings in Table 10 for risk taking measures, I repeated the analysis without the 'Share Rights Sc.' and the results are reported in Table 12. Overall, the coefficient estimates are similar to those in Table 10, with size measure having negative and significant coefficient, and risk measures having negative but insignificant coefficients.

7.0   CONCLUSION AND FUTURE RESEARCH

In this chapter, I study the shareholders' value effect of SOX announcements on foreign firms using a sample of foreign issuers that were listed in the U.S. around the SOX period. My analysis on the average market reaction provides mixed evidence for Hypothesis 1. Findings based on index returns suggest that there is an overall reduction in shareholders' value for foreign firms associated with the SOX announcements. However, the estimates based on MVMR regressions and intraday analyses are weaker in statistical significance. Overall individual SOX announcements are associated with the expected sign, but statistical significance is limited to few announcements only.

Specifically, the change in shareholders' value is different across firms and covariates with the firm characteristics (size, growth opportunities) but not significantly different based on the home country legislative characteristics. Firm size is negatively related to the market reaction. This observation is not consistent with the Hypothesis 2 explanation that SOX has a disproportionate net effect on small firms. Association of growth opportunities is consistent with Hypothesis 2 and mainly captured by the country level growth prospect rather than the firm-level measure. The estimated coefficient is negative but statistically significant only for country-level GDP growth. Risk taking measures are associated negative but insignificant coefficients.

Based on the univariate findings in Table 7 Panel A; relative to U.S. domestic firms, foreign firms' excess return is less negative on average. Further multivariate analysis suggests

limited and insignificant findings for the bonding hypothesis. To this end, empirical evidence does not support Hypothesis 3. Average price reaction by cross-listed firms from countries with common-law origin and consequently better investor protection is not significantly different than firms from civil law originated jurisdictions and consequently weak investor protection.

CHAPTER 2 – ESSAY 2: THE SOX ACT AND THE INFORMATION ASYMMETRY

1.0   INTRODUCTION

The Sarbanes-Oxley Act and its impact on the capital markets attracted endless discussions throughout the year 2002 and has been debated even more since it became law on July 30, 2002. As discussed in Section 2.2 of the previous chapter, various studies provide empirical evidence for the transformation in U.S. equity markets as a result of this new set of rules.

The majority of recent empirical studies have analyzed direct compliance costs, the value effect of the Act and corporate actions to adapt in the post-SOX era (e.g., see Asthana et al. (2004), Eldridge and Kealey (2005), Lick, Netter and Yang (2006)). Another series of papers studied the strategic responses of firms to free themselves from strict rules and additional costs associated with the SOX (e.g., see Engel, Hayes and Wang (2004), Leuz, Triantis and Wang (2007), Kamar, Karaca-Mandic and Talley (2007), Marosi and Massoud (2004)). However, an ill-conceived legislation and regulation can have unintended effects that extend well beyond the tangible dollars and cents that economists, accountants and policymakers may focus on[71]. Supporting this idea, another group of studies documented results relating to the unintended effects of new SOX-mandated requirements that throw in additional compliance costs for public firms in soft dollars (e.g., see Gifford and Howe (2004), Cohen, Dey and Lys (2007), Bargeron, Lehn and Zutter (2007)). One of these unintended effects is the gradual migration of security offerings overseas, especially to London. An additional stream of studies focused on this migration to the SOX-free environment in international markets, specifically the competition

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[71] AEI Peter J. Wallison, Sarbanes-Oxley Impairing Corporate Risk-taking (Cont.)? September 28, 2007

between U.K. and U.S. markets for international listings following the SOX Act (e.g., see Doidge, Karolyi and Stulz (2007), Piotroski and Srinivasan (2007)).

Furthermore, another group of studies question the explicitly stated objective of the Act "to improve the accuracy and the reliability of corporate disclosures"[72],[73]. The motivation to analyze whether or not this objective has been achieved has also spurred a number of studies that examined the implications of the SOX on the extent of earnings management and various aspects of public disclosure quality (e.g., see Cohen, Dey and Lys (2007), Lobo and Zhou (2006), Heflin and Hsu (2004), Entwistle, Feltham and Mbagwu (2006)), Begley, Cheng and Gao (2007)).

My findings in this essay complement these studies that analyze the information environment after SOX, and extend the results related to foreign issuers. In particular, in this chapter, I empirically examine the forecast accuracy of analysts, disagreement among the analysts' forecasts and the change in informativeness of earnings announcement. This work is mainly performed to shed light on the earnings-related information environment before and after SOX. In particular, I test for changes in forecast accuracy, dispersion among analysts' forecasts and the informativeness of earnings announcements for foreign issuers relative to comparable U.S. firms, for periods before and after SOX.

My analysis yields the following results: after extending previous findings to foreign firms, there is no significant improvement or deterioration in earning forecast accuracy for

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[72] "To protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws, and for other purposes." The Sarbanes-Oxley Act of 2002 PUBLIC LAW 107–204—JULY 30, 2002, page 1. Available at http://www.sec.gov/about/laws/soa2002.pdf

[73] SEC Chairman William H. Donaldson's Testimony Concerning the Impact of the Sarbanes-Oxley Act on April 21, 2005, http://www.sec.gov/news/testimony/ts042105whd.htm

foreign issuers in the post-SOX era relative to the 1995-97 and 1998-2000 periods. This observation does not support H1-Null, but holds with H1-a. Moreover, the results are consistent with the Act's enhanced disclosure requirements not contributing any additional information for the U.S. firms. For my sample of U.S. firms, I have found no evidence that the accuracy and the forecast dispersion improved in the post-SOX period. Partially aligned with Begley, Cheng and Gao (2007), I observe that the forecast accuracy and dispersion for U.S. firms has not significantly improved in the post-SOX period relative to 1995-97 and 1998-00. Moreover, my findings suggest that forecast accuracy and dispersion have not deteriorated either in the post-SOX period relative to early periods.

However, the findings on forecast dispersion suggest some improvement for the foreign issuers in the post-SOX period relative to both 1995-97 and 1998-2000 periods. Yet, this does not hold for the U.S. firm sample. Hence, the results are partially aligned with the H1-Null hypothesis for forecast dispersion, and suggest a significant improvement in forecast dispersion in the post-SOX period relative to the pre-SOX periods only for the foreign issuers. In addition, there is deterioration in both forecast accuracy and dispersion for the 1998-2000 period, which is statistically significant for both foreign issuers and comparable U.S. firms.

Moreover, my analysis suggests that in the post-SOX period, there is no significant change in the informativeness of a given earnings surprise, which is consistent with Cohen, Dey and Lys (2007). In addition, my study extends their findings to foreign firms and documents that this observation also holds for foreign issuers. This does not support H2-Null, but it is consistent with the alternative H2-a. This result suggests that mandated governance rules and new section 404 control systems have not improved the integrity of public information by lowering the risk of wrong practices and have not contributed to the information content of the earning

announcement. The results are robust and hold for alternative estimation periods and for an alternative information content measure used by Cohen, Dey and Lys (2007).

The rest of the paper proceeds as follows: in Section 2, I review the literature on SOX with implications for information asymmetry and develop my hypotheses. In Section 3, I discuss the data and determinants of forecast accuracy, dispersion and the informativeness of a given surprise used in the study. In Section 4, I present the results for the univariate analysis and the findings from panel regression analysis. After the robustness assessment in Section 4.3 with an alternative information measure, I conclude my study in Section 5.

2.0   THE SARBANES OXLEY ACT OF 2002 AND THE IMPLICATIONS FOR INFORMATION ASYMMETRY

2.1   ENHANCED DISCLOSURE REQUIREMENTS, THE EARNING FORECAST AND THE INFORMATIVENESS OF A GIVEN SURPRISE

Accurate and reliable information through disclosure is a major component of public equity that is required to alleviate the information discrepancy between management and outside investors. Therefore, the degree of information asymmetry between the management and the public investors can be eased by the extent of disclosure and the accuracy of this information.

The benefits of more information and reliable disclosure have been extensively examined in previous literature (e.g., see Diamond and Verrecchia (1991)). In a study of disclosure policies, Lang and Lundholm (1996) document that firms with more informative disclosure policies, as measured by the ratings from the Financial Analysts Foundation, have more analyst following, less dispersion among individual analysts' forecasts, and less volatility in forecast revisions. In line with these studies, Swaminathan (1991) documents improved forecasts by analysts and lowered dispersion among these forecasts following the implementation of the SEC's line of business disclosure requirements for multiple-segment firms. Consistent with the idea that the increased disclosure and additional information reduce information asymmetries, Piotroski (1999) provides empirical evidence on the discretionary reporting. In this study, he

reports that the discretionary expansion of segment reporting is also associated with an increase in analysts' forecast accuracy and a decrease in the forecast dispersion.

However, as discussed by various studies, recent corporate scandals have raised concerns about the integrity of financial disclosure and information asymmetry between the management and investors (e.g., see Jain, Kim and Rezaee (2006), Rezaee (2002)). The Congress responded to these corporate failures by enacting the most far-reaching reform in business practices in the U.S., the SOX Act of 2002, which establishes enhanced disclosure requirements and a new internal control mechanism and mandates uniform governance rules.

2.1.1 Related Literature

The Sarbanes-Oxley Act, enacted in mid-2002 in the wake of the Enron and WorldCom scandals, aimed to improve the accuracy and reliability of corporate financial disclosures[74]. In addition to considerable interest in the value effect of SOX and the corporate reactions to free themselves, there are various studies that analyze the intended goal of the new law and the regulatory changes on the information environment in the U.S. capital market. In this chapter, I focus on whether the Act has served this so-called objective for the foreign issuers to improve investor confidence through enhanced disclosure requirements and to provide more accurate and reliable information.

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[74] "To protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws, and for other purposes." The Sarbanes-Oxley Act of 2002 PUBLIC LAW 107–204—JULY 30, 2002, page 1. Available at http://www.sec.gov/about/laws/soa2002.pdf

"The Law of Unintended Consequences?" by Mark Hulbert, The New York Times, 4 November 2007

In a study of information asymmetry related to the SOX, Jain, Kim and Rezaee (2006) documented wider bid-ask spreads, lower depths, and higher spreads in the period surrounding corporate scandals relative to post-SOX.

Cohen, Dey and Lys (2007) documented an increasing trend in earnings management in the period prior to the passage of SOX over 1987-2001 and a reversal of it in the period after SOX. They also provided evidence that the absolute informativeness of earnings increased steadily over time, and that there was no significant change in the earnings informativeness following the passage of the SOX. Lobo and Zhou (2005) analyzed conservatism in financial reporting and documented less income-increasing earnings management in the year of CEO/CFO certification relative to the prior year. In line with Cohen et al (2007), they documented that the level of abnormal accruals is lower in the post-SOX period relative to pre-SOX. In addition, Heflin and Hsu (2004) found a significant decline in the probability that reported earnings meet or beat analysts' forecasts in the post-SOX period.

A different group of studies analyzed other aspects of the public disclosure in relation with the SOX mandated rules. In this regard, Entwistle, Feltham and Mbagwu (2006) documented a significant decline in the percentage of firms reporting pro-forma earnings following the SOX. Cohen, Dey and Lys (2007) documented a lower level of option-based compensation for the post-SOX period. Furthermore, Begley, Cheng and Gao (2007) studied the quality of the information in capital markets and association with the governance reforms. They documented that the passage of SOX was associated with a temporary increase in public and private information quality measures immediately following the Act's adoption, but that this improvement was not maintained over a longer period. One year after the Act, private and public information quality both declined and continued to stay slightly below their pre-SOX levels.

However, they studied the information measures over the two year period after the enactment of SOX, relative to the year 2001.

To sum up, papers that have studied the implications of SOX on the information available to investors provide conflicting results. Previous studies documented less earnings management practices in the post-SOX period. In terms of information accuracy, some studies report short-lived (less than 1 year) improvements in quality measures, but comparable or deteriorated information measures in the longer horizon relative to the pre-SOX period. Moreover, these studies did not examine the change in the information environment in the post-SOX period, especially for the foreign issuers. Given the documented difference in market reaction around the SOX announcements for foreign issuers vs. U.S. firms in the previous chapter, it is important to analyze the transformation in the information environment after the SOX Act for foreign issuers relative to the U.S. firms.

2.2   HYPOTHESIS DEVELOPMENT

The Act's stated goal[75] was to improve the quality of financial reporting and the investor confidence. The critics of SOX mainly point to the high costs of compliance, especially the implementation of the internal control mechanism, Section 404. The proponents of the SOX on the other hand, argue the improved financial disclosure as the payoff for the new procedures.

The SOX Act is a complex legislation, containing an assortment of features with implications for the quality and the quantity of the information available to public investors.

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[75] See footnotes 60, 61and 62.

Although earnings-related information is not the only type of information SOX addresses, enhanced reporting is clearly a target in general, as demonstrated by the stated objective of the Act and by the sections aimed at addressing these issues.

Regarding the extent of disclosure, Section 302(a) requires that a company's chief executive and chief financial officer personally certify the accuracy of its financial statements and Section 906 imposes stiff fines and penalties for reporting misleading financial data. Moreover, Section 401(a) requires enhanced disclosure for off-balance sheet transactions, which addresses the fraudulent practice by Enron Corporation.

In addition, SOX also introduces new requirements that are aimed at improving the integrity and reliability of the information by eliminating wrongdoings and fraudulent practices. To serve this purpose regarding the integrity and the reliability, SOX imposes uniform governance rules with minimum levels of board and audit committee independence, requires a financial expert within the audit committee and requires the establishment and assessment of the internal control system. Specifically, SOX sections include a number of requirements for a corporation's governance structure, like requiring that the board's audit committee be independent (Section 301-a) with a member with financial expertise (Section 407) and that the outside auditor have no conflicts of interest (Section 303). In addition, Section 501 of the SOX Act includes rules that address the conflict of interest by the securities analysts and their treatment by the Registered Securities Associations. These provisions mainly limit analysts' roles in IPOs, eliminate their supervision by the broker and dealers in order to improve the objectivity of their research and provide investors with more useful and reliable information[76].

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[76] The SOX Act, Section 501 Treatment Of Securities Analysts By Registered Securities Associations (a) Rules Regarding Securities Analysts

The Act imposes these and other strict rules regarding the composition of the board and sub-committees with implications on the level of disclosure and the information integrity of this information in the post-SOX era. These requirements are introduced with the idea that mandating uniform governance rules can detect and eliminate wrong practices and lead to public information quality and restore investor confidence. Based on this premise, I investigate the information quality for foreign issuers to shed light on whether the stated objective by the regulators is achieved and observed empirically in the market. Specifically, I examine information measures to detect possible structural changes in the forecast accuracy, disagreement among analysts to forecast earnings and the informativeness of a given surprise in the post-SOX period with enhanced disclosure and mandated governance rules.

If SOX requirements with enhanced disclosure by public firms help more information to be disseminated to the market and help investors to access more accurate and reliable information, then analysts' forecast will benefit from this improvement as well. Hence, in the post-SOX period, measures of forecast accuracy and the disagreement among analysts can reveal this shift in the extent of public information in the post-SOX era. Furthermore, if the mandated governance rules and the internal control mechanisms help to control wrongdoings by a firm's management and to improve reliability of the available information, then one would expect informativeness of earnings to be improved in the post-SOX period where these rules are in place.

In this regard, I focus on two research questions to empirically analyze whether the Act has achieved any reform in the information available to investors and the integrity of this information. First, I investigate the earnings forecast accuracy and the dispersion among analysts' forecast in relation to the enhanced disclosure in the post-SOX period. Second, I

investigate the strength of the market reaction to earnings surprises (i.e., informativeness of earnings announcement) before the Act and for the post-SOX period with the mandated governance rules and internal control mechanisms in place.

To the extent that the enhanced disclosure requirements introduced by the Act bring improved transparency for investors in the post-SOX period relative to early periods, it is likely that the information asymmetry would be less severe following SOX compliance. If SOX has led to more and better information being available, on average, the analyst's earning forecasts would be more accurate in the post-SOX period. Moreover, the dispersion among forecasts by individual analysts should be smaller as well. In sum, I propose the following hypothesis:

Hypothesis 1:

H1-Null: *If the Act serves the promised purpose to lessen the information asymmetry by providing more disclosure, firms will have smaller forecast errors and less dispersion among analysts' forecasts.*

H1a-Alternative: *If the SOX requirements do not serve the promised purpose, following the SOX Act, forecast accuracy and the dispersion among analysts' forecasts will not be statistically different relative to the pre-SOX period.*

Furthermore, since the Act was mainly triggered by corporate scandals, including the fraudulent behavior by Enron and massive fraud by WorldCom, another objective was to address these issues by improving the integrity and the reliability of the information available to investors through new rules. Hence, I hypothesize that:

Hypothesis 2:

H2-Null: *If the SOX-mandated governance rules and the costly internal control mechanisms help to detect fraudulent behavior and to improve information integrity, then the*

informativeness of a given earnings surprise, i.e., the ERC, will improve on average, implying

larger ERCs in the post-SOX period relative to pre-SOX.

H2a-Alternative: *If the SOX-mandated governance rules and the costly internal control*

mechanism do not have a significant contribution to detect fraudulent behavior and to improve

integrity, then the informativeness of a given earnings surprise, i.e., the ERC, will not be

significantly different in the post-SOX period relative to pre-SOX era.

Using the sample of foreign issuers and the sample of U.S. firms comparable in market

capitalization, I test the hypotheses listed above that relate the change over time in forecast

accuracy, dispersion and the ERC in the post-SOX period after accounting for firm

characteristics and other determinants. I use a sample of foreign issuers listed in the U.S.

exchanges over the 1995-2005 period, excluding the 2001-02 period of corporate scandals and

legislative events. I conduct my analysis by dividing the sample period into three periods, similar

to Bargeron, Lehn and Zutter (2007), by subdividing the pre-SOX period into two sub-periods.

This approach not only provides more evidence, but also provides robustness for the results due

to the shortcomings of a 'comparison over time' methodology. For the post-SOX period, I focus

on the three year 2003-05 period. This allows entirely capturing the effects of SOX's gradual

implementation and being fully effective[77].

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[77] Mandated audit committee rules were not effective until 2004.

3.0   SAMPLE AND THE EMPIRICAL DESIGN

3.1   SAMPLE

I use my sample of foreign issuers as discussed in Chapter 2, Section 3.1.1. This sample of foreign issuers includes ADRs and other foreign listings excluding Investment Funds, Investment Trusts and issuers from countries known as tax havens. The sample period is over Jan/1995-Dec/2000 and Jan/2003-Dec/2005. Following the study by Bargeron, Lehn and Zutter (2007), I exclude the interim period of Jan/2001-Dec/2002 due to the corporate scandals and SOX legislative events surrounding the U.S. markets. Moreover, since Regulation Fair Disclosure (Reg. FD) went into effect in 2000-Q4 (October 23, 2000), eliminating two years of observation partially addresses the possible effect of this confounding event. I carry out a matched sample design and form a sample of U.S matching firms for each 3-year period. For the matching sample of U.S. firms, I require that each firm has Compustat and CRSP data and I/B/E/S analysts forecast data with a minimum of three analysts providing forecasts. For the first observation in each period, each foreign issuer is matched with a U.S. firm that has the closest market capitalization with a maximum of 20% difference. Over this 3-year period, the matching firm is the same unless it gets de-listed or dropped from the data sources. For the few cases like this, I use the second best match for the remaining years in that 3-year period. I repeat this procedure

for each period. As a result, foreign issuers may have a different matching firm for different periods.

My primary source of data for the information related measures is the 'Institutional Brokers Estimates System', i.e., the I/B/E/S database. As the consensus forecast, I use the median forecast for earnings per share (EPS) reported for the month closest to, but preceding with maximum of 3 months, the date in which actual earnings are released. For my sample, I require that each firm has a minimum of three analysts providing forecasts. For the foreign issuers (mostly Canadian issuers) that report financial statements denominated by different currencies, I adjust actual and median EPS forecasts by reporting currency/U.S. dollar parity from the I/B/E/S database.

All firm characteristics constructed from the Compustat database are measured at the end of the fiscal year preceding the year of forecast. Then, I cross reference my sample with CRSP for the price data. For consistency between CRSP stock prices and EPS data from I/B/E/S, I further adjust actual and median EPS forecasts using stock split factors. Hence, I use currency adjusted pre-split forecasts and actual reported values in my analysis.

3.2   EMPIRICAL DESIGN

To the extent that the enhanced disclosure requirements introduced by the Act bring improved transparency for investors in the post-SOX period relative to early periods, it is expected that the information asymmetry issue will be less severe following the SOX Act. If SOX has led to more and better information being available, on average, the analyst's earnings

forecast would be more accurate in the post-SOX period. Moreover, the dispersion in forecasts among individual analysts should be smaller as well.

For my univariate analysis, I first examine the mean and median measures of forecast accuracy, dispersion and other measures for foreign issuers and U.S. matches for the periods before and after the enactment of the SOX Act. Next, I investigate the change over time in a multivariate regression setting after accounting for confounding changes in firm characteristics. As a first step, a separate regression is estimated for each 3-year period. In the second step, I use the same specifications with time fixed effects to capture the average change over different periods.

3.2.1 Forecast Accuracy and Dispersion

As proxies for asymmetric information, I use the accuracy of consensus forecasts and the dispersion among forecasts, same as Thomas (2002). These measures are based on the most recent observation in a [-3,-1] month window prior to the earnings announcement date. Similar to Thomas (2002), I analyze the forecast characteristics for the shortest possible forecasting horizon in order to minimize the optimism bias that appears to exist in forecasts made early in the fiscal year. (e.g., see O'Brien (1988), Easterwood and Nutt (1999)).

In addition, Barron, Kim, Lim and Stevens (1998) show that mean forecast error and mean dispersion are also (inverse) functions of the quality of public and private information. To this extent, as common in the literature, forecast error and forecast dispersion are also used as proxies for public and private information quality, respectively. (e.g., see, Begley, Cheng and Gao (2007)).

Forecast Error, the primary measure of information asymmetry, is computed as the absolute difference between the actual earnings and the median forecast divided by the stock price five days[78] before the earnings announcement date. Periods with more transparency and firms with a larger difference in information asymmetry between managers and outsiders regarding earnings are expected to be associated with larger forecast errors. As an alternative measure, I use forecast dispersion, which is computed as the standard deviation of analysts' forecasts deflated by the stock price five days before the earnings announcement date. This measure accounts for the disagreement among analysts, which can result from lack of available information about the firm. Hence, larger information asymmetry is expected to be associated with greater dispersion. As mentioned before, these forecast measures, analysts' forecast errors and the forecast dispersion are also used as information quality measures, with forecast errors being used to judge the public information quality and dispersion used to judge the private information quality (Barron et al. (2002), Gu (2004)).

In regression analysis, I include firm characteristics that are documented by prior studies to be related with these forecast measures. As documented by the previous literature (Atiase (1985), Barron et al. (2002)), larger firms attract more analysts following, and more information available about them. In addition, smaller firms are more likely to suffer from the asymmetric information and bad reporting quality. As a result, if there is any potential benefit they should benefit the most from these new rules. Hence, a firm's size is expected to be positively associated with the forecast accuracy and negatively with the forecast dispersion. As a measure of firm size, I include log of book value of total assets (BA) at the end of the previous fiscal year.

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[78] I use market price ten days before the announcement date if the price five days before is missing.

Same as Alford and Berger (1999), I use volatility of residuals as a proxy for the price relevant information about the firm disseminated daily to the market. A volatility measure is computed as the standard deviation of the market model residuals over the regression period [-210,-11] days before the earnings announcement. Alford and Berger (1999) argue that as volatility increases, the amount of price relevant information that analysts must process also goes up and that an analyst's ability to forecast earnings declines. Therefore, firms with higher stock price volatility are expected to have greater forecast error and dispersion.

Another important factor for the information available for valuation is the growth options. Firms with more growth potential relative to firms whose values are mainly due to asset-in-place are more difficult to forecast earnings for. Hence these firms are expected to have larger forecast errors and more analyst disagreement. As a proxy, I include the R&D[79] expense to Sales ratio and Intangible Assets to Total Assets ratio in my analysis.

Due to leverage effect on volatility of earnings, firms with more leverage are expected to have less accurate forecasts and higher dispersion among analysts. Thus, I also include the leverage that is computed as the long-term debt and debt in current liabilities divided by the total assets.

I also include an identifier for the foreign issuers to control the difference in foreign forecast accuracy and forecast dispersion between foreign and U.S. firms. In aggregate regressions over all the periods, I include identifiers for different periods and a FOREIGN dummy variable is interacted with these variables for different periods, to analyze the change in the post-SOX period. Hypothesis 1-Null expects the identifier for the 2003-05 post-SOX period

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[79] For the analysis with R&D/Sales ratio, sample size is limited to the firms with non-missing R&D expense for that fiscal year.

to be negative if the forecast accuracy is higher and dispersion is lower in the post-SOX period relative to the 1995-98 pre-SOX period. If this structural change in accuracy and dispersion is observed differently for the foreign issuers, then the interacted FOREIGN variable will provide evidence for this. On the other hand, Hypothesis 1-a suggests insignificant coefficients for the post-SOX variables if the forecast accuracy and the dispersion have not changed significantly for the 2003-05 period.

3.2.2   Price Impact of Earnings Surprises

As discussed by Dierkens (1991), a strong market reaction to an earnings announcement is consistent with the managers of that firm releasing substantial private information and the existence of a large information asymmetry between insiders and outsiders for that firm. Furthermore, models of time-varying asymmetric information often characterize the periods immediately after earnings announcements as low information asymmetry periods. This is consistent with earnings announcements eliminating much of the asymmetry that existed prior to the release. Korajczyk et al. (1991) provide empirical evidence on this, and document that stock price declines at announcements of seasoned equity offerings increase in the time since the last earnings release. This measure called ERC is the association between earnings surprises and the abnormal return around earnings announcement and it captures the "informativeness of a given surprise". It is also used a proxy for "the quality of earnings" (e.g., see Cohen, Dey and Lys (2007)).

I followed Thomas (2002), to assess the informativeness of earnings announcements for stock prices. For this purpose, I estimate abnormal returns (ARs) for 3-day windows centered on the annual earnings announcement dates using an event study methodology. For the market

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model, I use the firm's daily stock returns and the FTSE Index similar to the analysis in Chapter 2. The estimation period is [-210,-11] days before the earnings announcement where day 0 is the announcement date. To assess the magnitude of the market reaction, I use the absolute value of the 3-day cumulative abnormal return |CAR| as a non-directional measure.

I regress |CAR| on factors that could impact the market's reaction to earnings announcements over the pre-SOX and post-SOX periods. Moreover, I include interaction terms to assess whether the ERC deteriorated or increased in the post-SOX period. As discussed by Thomas (2002), the magnitude of the earnings surprise and the ex-ante dispersion will influence the market's reaction. Therefore, the ERROR and DISPERSION measures are included in regressions. As discussed by Beaver et al. (1979), greater earnings surprises are expected to be associated with bigger market reactions. Similarly, greater dispersion among analysts' forecasts is expected to be associated with larger market reactions. I also include an interaction term of post-SOX with ERROR, to assess the impact of additional SOX disclosure requirements on the ERC. I expect that the coefficient for the ERROR interacted with the post-SOX period, to be significantly positive if the reliability of the earnings-related announcements improved in the post-SOX period, and not significantly different if there is no significant change. Hypothesis 2-Null expects identifier for the 2003-05 post-SOX period to be positive if the informativeness of earnings announcements improved due to more reliable information in the post-SOX period, relative to the 1995-98 pre-SOX period. If this change in accuracy and dispersion is observed to be different for foreign issuers, then the interacted FOREIGN variable will provide evidence for this. Hypothesis 2-a suggests an insignificant coefficient for the ERROR*2003-05 variable if the informativeness of a given surprise is not significantly different when compared to the earlier periods.

Other factors used in the analysis to explain market reactions associated with earning announcements are primarily from the ERC literature. Easton and Zmijewski (1989) argue that constraining the ERC to be the same across all firms can lead to other factors to be significant because they are correlated with cross-sectional variation in ERC. Hence, I include similar interaction terms of the ERC and cross-sectional determinants of the ERC used in Thomas (2002). Among these cross-sectional determinants are growth opportunities, firm size and financial risk. As a proxy for growth opportunities, I use market-to-book ratio (MTB), computed as the ratio of the firm's market value (market value of equity (ME) plus the book value of total assets (BA) minus the book value of equity (BE) divided by the book value of total assets (BA)). As a proxy for firm size, I include the market value of equity at the end of the previous fiscal year (ME). As a measure of financial risk, I include leverage, computed as the ratio of long-term debt plus debt in current liabilities and total assets.

I use the same explanatory variables for individual regressions for each 3-year period, and aggregate regressions over all periods. In order to assess the change in relation over time between the market reaction and cross-sectional determinants, I include interaction terms of these factors with identifiers for each 3-year period.

4.0   RESULTS

4.1   DESCRIPTIVE STATISTICS AND UNIVARIATE ANALYSIS

Table 13 reports the summary statistics, the mean and median values for the information measures, firm characteristics for foreign issuers and the comparable U.S. firms for each period. Observations are winsorized by 1% and 99% percentiles using CAR, ERROR (computed as the absolute difference between actual and forecast earnings, deflated by the stock price before the earnings announcement) and DISPERSION (the standard deviation of analysts' forecasts, deflated by the stock price before the earnings announcement) measures. Test results are provided for the Paired t-test and the Wilcoxon Signed Rank Sum test (the non-parametric version of a paired sample t-test) for the difference in mean and median values between two groups of firms.

In terms of firm characteristics, sample of foreign issuers and their comparable U.S. matches are similar in market value of equity, as expected due to the matching method, and also comparable in asset size, market-to-book ratio, leverage and the R&D expenditure levels. However, foreign issuers have a smaller intangible assets ratio on average relative to their U.S. matches. On average, foreign firms have 5% - 13% intangible assets over the years 1995 - 00 and 2003 – 05 whereas U.S. firms have 9% - 17% on average. The difference in intangible assets as a

ratio of the total assets, is statistically significant for all periods, both in mean and median measures.

Consistent with relatively less public information available and fewer analysts following foreign issuers, forecast accuracy and dispersion among analysts is poor for foreign firms relative to U.S. firms on average. This difference is highly significant in both mean and median values for all periods. Average forecast error for foreign issuers ranges between 1.01% - 1.46%, whereas for U.S. matches it is around 0.32% - 0.61%. Average forecast dispersion among analysts has a similar pattern as well, ranging between 0.69% - 1.26% for foreign issuers and around 0.24% - 0.39% for their U.S. matches. However, the absolute value of market reaction to an earnings announcement has a different trend, ranging between 3.6% - 5.3% for foreign issuers and 4.3% - 5.3% for U.S. firms. The difference in market reaction is not significantly different in general, except for the 1995-97 period. For that period, the absolute market reaction of foreign issuers is less than that of U.S. firms in mean and median values, and it is statistically significant. In line with the amount of price-relevant information for foreign issuers that analysts must process, the volatility of the market model residuals is also higher on average for foreign issuers, and statistically significant except for the recent post-SOX period of 2003-05.

Regarding the trend over time across different periods, forecast error and dispersion among analysts is highest over the 1998-00 period and goes back to the same level in 2003-05 as in the early 1995-97 period. This trend is similar for U.S. matches as well. However, the residual volatility over the estimation period and over the 3-day window period around the earnings announcement is also highest for the 1998-00 period relative to the earlier 1995-97 period and the 2003-05 post-SOX period. The absolute value of market reaction at earning announcements presents the same pattern as well. Taken together, these results indicate a variation over time in

forecast accuracy, dispersion and firm characteristics, but do not suggest a significant improvement or deterioration in information measures in the post-SOX period relative to the early pre-SOX period between 1995-97. However, univariate results do not control for the variation in firm characteristics over different periods. Regression analyses, especially the panel regressions in the next section, address this issue. To account for the change in levels over time, I use time fixed effects. I also interacted these time effects with explanatory factors to capture the overtime variation in association between the explanatory variables and information measures. Section 4.2 is devoted to that purpose and discusses the findings for the regression analysis. In addition, due to a significant difference in the level of information measures and average market reaction, I include the dummy variable for the foreign issuers in multivariate regressions to capture the difference in the amount of information available for the two groups. Moreover, as discussed earlier, I interact this variable with the forecast accuracy measure 'ERROR', to assess the marginal difference in ERC between foreign and U.S. firms.

4.2   REGRESSION ANALYSIS

To ensure that the results for the univariate analysis are not driven by confounding changes in firm characteristics, this section discusses the findings of the regression analysis for the information measures. Table 14 presents the Pearson correlations for the variables used in regression analysis, namely the information measures and firm characteristics. Consistent with the univariate results, correlation values suggest that foreign issuers have lower absolute abnormal returns around earnings announcements, a smaller standard deviation of abnormal return, market-to-book ratio and Intangible Assets ratios. But they are associated with higher

residual volatility, ERROR and DISPERSION measures. These results are in line with foreign firms, everything else equal, being less information transparent in nature. In addition, information measures, the forecast accuracy measure ERROR, and DISPERSION as a measure of disagreement among analysts are highly positively correlated. In addition, various firm characteristics are significantly correlated with each other. As expected, firm size measures, book value of assets 'log(BA)' and the market value of equity 'log(ME)' are significantly positively correlated. In addition, a negative correlation between firm size measures with the residual volatility, magnitude of market reaction at earnings announcement '|CAR|' and the standard deviation of abnormal return 'AR sigma', is consistent with smaller firms having a more volatile price, and more price-relevant private information to be processed by analysts.

4.2.1   Determinants of Forecast Accuracy

Table 15 displays the regression results to analyze analysts' forecast error and dispersion. Panel A corresponds to the results for the regressions to explain forecast accuracy, ERROR. In the first regression, the only explanatory variable is the FOREIGN identifier. The coefficient on FOREIGN is positive and highly significant. Not surprisingly, this is consistent with relatively less information being available for foreign issuers and as a result analysts' forecasts for foreign firms being less accurate on average then U.S. firms. Over different periods, the estimated coefficient is comparable for the early 1995-97 period and the 2003-05 post-SOX period, and it is higher for the 1998-00 period. Regression analysis over all periods shed more light on the significance of these changes over time. Interestingly, this single explanatory variable can explain around 3% - 5% variation in the forecast accuracy measure ERROR.

Other regressions introduce firm characteristics used in prior literature that might influence analysts' forecast accuracy. The ln(BA) size measure is introduced in regression 2. A negative and statistically significant coefficient on firm size is consistent with larger firms attracting more analysts, having more information available and experiencing greater accuracy in the earning forecasts. In regression 3, the R&D/Sales ratio is introduced along with the dummy variable for the missing R&D value. The level of R&D spending does not appear to be related to the accuracy of analysts' forecasts. A positive and significant coefficient for the dummy variable indicates a higher forecast error, on average, for firms with missing R&D expenditure.

Leverage is introduced in regression 4. The coefficient on this variable is positive and statistically significant for all periods, with an increasing coefficient and significance over time. This is consistent with firms with higher leverage getting less accurate forecasts from analysts on average. Moreover, the increasing trend is indicative of an increasing association between the financial risk measure LEVERAGE and forecast accuracy in the most recent period. In regression 5, the natural log of one plus the ratio of intangible assets to total assets is included in the analysis. Intangible assets do not appear to be significantly associated with the forecast accuracy for earlier periods. A negative coefficient is consistent with the prior literature (Thomas (2002)) and indicates that firms with more intangible assets get more accurate forecasts from analysts. However, the estimated coefficient is significant only for the 2003-05 post-SOX period.

In regression 6, residual volatility is introduced as a price relevant information measure. VOLATILITY is an important factor to explain the forecast accuracy especially for the 2003-05 post-SOX period, as evidenced by the apparent improvement in the adjusted R-sq, high statistical significance and the increase in the estimated coefficient. Firms with greater volatility have larger forecast errors as demonstrated by the positive and significant coefficient on volatility,

which is consistent with previous studies (e.g., see Comment and Jarrell (1995)). The coefficient on firm size becomes insignificant when volatility is introduced, except for the 2003-05 post-SOX period, which is also observed in previous studies. This suggests that the volatility captures the variation in the forecast accuracy that is attributable to the cross-sectional variation in firm size. This is expected due to a high correlation between size measures and the VOLATILITY.

In addition to separate regressions for each period, I conduct regression analysis over all periods. Table 16 displays the results for the aggregate regressions for forecast accuracy over all periods with time effects. Explanatory variables are interacted with the time effects for these regressions to assess the change in linear association over time. If the average forecast accuracy improved in the post-SOX period as a result of enhanced disclosure available in this period, H1-Null hypothesis suggests a negative and statistically significant coefficient for the post-SOX coefficient. This coefficient should also be greater than the coefficient for the 1998-00 period in absolute value. As an alternative explanation, H1-a expects an insignificant change in forecast accuracy for the post-SOX period relative to earlier periods. Moreover, the coefficient for the interaction term FOREIGN*2003-05 captures the difference in improvement between foreign issuers vs. U.S. firms if there is an improvement in forecast accuracy in the post-SOX period.

In the first regression to explain forecast accuracy measure ERROR, I introduce dummy variables for each period in addition to FOREIGN, the foreign firm identifier. Similar to the results in Table 14 Panel-A, the coefficient on FOREIGN is positive and highly significant, which is consistent with analysts' forecasts for foreign firms being less accurate, by 60bps on average, than their U.S. counterparts over all periods. The positive coefficient on the dummy variable for the 1998-00 period suggests an average deterioration of approximately 40bps for all firms over this period. Forecast accuracy for the 2003-05 post-SOX period is not statistically

significant compared to the earlier 1995-97 pre-SOX period. This is not consistent with H1-Null but is in line with H1-a.

Regression 2 introduces additional variables; FOREIGN identifier interacted with the time effects. The FOREIGN*1998-00 variable is positive and significant, and the estimated coefficient is 40bps. Hence, the deterioration in accuracy for the 1998-00 period is attributable mostly to foreign issuers rather than U.S. firms, as evidenced by the insignificant coefficient on the 1998-00 variable when FOREIGN*1998-00 is introduced. Hence, the discrepancy in forecast accuracy between foreign vs. U.S. firms deteriorates an additional 40 bps in the 1998-00 period.

The ln(BA) size measure is incorporated in regression 3. Consistent with the results from Table 15, a negative and statistically significant coefficient on the firm size is consistent with larger firms experiencing greater forecast accuracy. Regression 4 introduces ln (BA) interacted with the dummy variable for each period. The coefficient for the interacted ln(BA) is negative and significant for the 1998-00 period, suggesting that the discrepancy in forecast accuracy for small versus large firms is wider in this period relative to the 1995-97 period.

R&D/Sales ratio and the dummy variable for the missing observations are introduced in regression 5, and R&D/Sales ratio interacted with the time effects in regression 6. The level of R&D spending does not appear to be related to the accuracy of analysts' forecasts for any of the periods. In line with the results in Table 14 Panel A, a positive and significant coefficient for the dummy variable indicates a higher forecast error, 20-30 bps on average, for firms with missing R&D expenditure.

I include LEVERAGE as the financial risk measure in regression 7. The coefficient is positive and significant for the LEVERAGE. This is consistent with firms with higher leverage having less accurate forecasts from analysts. In regression 8, I introduce the interacted variables.

The coefficient for the LEVERAGE*2003-05 variable is positive and highly significant. Consistent with previous results, leverage becomes more important as a factor to explain forecast accuracy in the post-SOX 2003-05 period.

Regression 9 introduces the intangible assets ratio (i.e., natural log of one plus the ratio of intangible assets over total assets). A negative and significant coefficient is consistent with the prior studies (e.g., see, Barth et al. (1998), Thomas (2002)) and suggests that the quality of forecasts by analysts vary with the degree to which a firm's value is comprised of tangible assets. However, when the interaction variables are included in regression 10, the coefficient for the intangible assets ratio is still negative but insignificant.

Regression 11 introduces the residual volatility. The coefficient for the VOLATILITY is positive and highly significant. This is consistent with firms with greater price-relevant information experiencing larger forecast errors. Similar to findings in Table 14, due to high correlation, the coefficient on firm size becomes insignificant when volatility is introduced. In regression 12, I introduce a volatility measure interacted with the dummy variable for the 1998-00 and 2003-05 periods. Volatility is a more important factor to explain forecast accuracy for the post-SOX period as demonstrated by a positive and significant coefficient for VOLATILITY*2003-05. In addition, there is a considerable increase in adjusted R-sq once the volatility measure is introduced in the analysis.

Overall, the results in Table 15 suggest some improvement in forecast accuracy in the post-SOX period relative to the previous 1998-2000 period. However, this improvement cannot be attributable to SOX requirements, because this level of forecast accuracy is not significantly different from the early pre-SOX period of 1995-97, as evidenced by the insignificant coefficient for the '2003-05' variable. Hence, the results are inconsistent with H1-Null and suggest no

significant improvement or deterioration in forecast accuracy relative to the early pre-SOX period of 1995-97 which is in line with H1-a. Hence, the findings consistently suggest that the SOX mandated disclosure rules are not significantly more effective in providing additional information to investors than the 1995-97 period without any regulatory inference. However, there is a significant deterioration in forecast accuracy for 2003-05, especially for foreign issuers.

4.2.2   Determinants of Forecast Dispersion

Table 15 Panel B reports the results for the regressions to analyze dispersion among analysts' forecasts as the information asymmetry measure. Overall, the results are similar to the forecast accuracy analysis. In the first regression, the only explanatory variable is the foreign issuer identifier. The coefficient on the FOREIGN identifier is positive and highly significant. This is consistent with relatively less information transparency for the foreign issuers and suggests higher disagreement among analysts' forecasts as a result. The estimated discrepancy is comparable for the early 1995-97 and 2003-05 post-SOX periods, and it is relatively higher for the 1998-00 period. Parallel to the results in Panel A, this single explanatory variable can explain considerable variation in DISPERSION, as it captures around 4.5 – 9.0% variation in forecast dispersion.

In regressions 2-6, other firm characteristics are introduced to account for the variation in dispersion that is associated with these factors. These measures affect the forecast dispersion among analysts as much as they affect the forecast accuracy. However the negative coefficient for the size measure is not significant for the 2003-05 period and the positive coefficient on leverage and intangible assets ratio is significant only for the 2003-05 period. In addition, the R&D expense is positively related to the forecast dispersion but statistically significant only for

the early 1995-97 period. In regression 6, the stock return volatility is introduced. Similar to forecast accuracy results in Panel A, VOLATILITY is also a critical determinant for the forecast dispersion as demonstrated by the highly significant coefficient and the apparent increase in the adjusted R-sq. Firms with more price-relevant information experience greater disagreement in earning forecasts among analysts. Also, similar to the forecast accuracy analysis, the coefficient for the firm size measure changes sign once VOLATILITY is introduced due to the possible multicollinearity as discussed earlier.

Table 17 reports the findings for the forecast dispersion analysis with panel data over all periods using time effects. In the first regression, I introduce a dummy variable for different periods in addition to the FOREIGN identifier. Similar to forecast accuracy results in Table 15, the coefficient on FOREIGN is positive and highly significant, which suggests that on average, analysts' dispersion for foreign firms is 60 bps greater than U.S. firms. Results for the time effects are similar to the forecast accuracy analysis. The positive coefficient on the 1998-00 variable suggests greater forecast dispersion on average for this period. On average, forecast dispersion for the 2003-05 post-SOX period is lower relative to prior 1998-00, but it is not statistically significant when compared to the earlier 1995-97 period. This observation does not hold with the H1-Null hypothesis, but it is consistent with the alternative H1-a, which suggests no significant change in forecast dispersion among analysts in the post-SOX period.

Regression 2 introduces additional variables to analyze the discrepancy between foreign and comparable U.S. firms over time. These variables include FOREIGN interacted with the time effects. The FOREIGN*1998-00 variable is positive and statistically significant, which indicates that the difference in forecast dispersion between foreign and U.S. firms is 30 bps higher on average in the 1998-00 period. However, the gap is considerably narrowed in the post-

SOX period '2003-05' as demonstrated by the significant and negative coefficient for FOREIGN*2003-05. The discrepancy between the foreign and U.S. firms in this period is 20bps less on average relative to the 1995-97 period, and 50bps less relative to the 1998-00 period.

The ln(BA) size measure is introduced in regression 3. Consistent with Atiase (1985) and similar to Table 15 Panel B and Table 16 results, the negative and statistically negative coefficient on firm size is consistent with larger firms, with more information availability and higher information transparency, experiencing lower forecast dispersion as a result. Regression 4 introduces ln (BA) interacted with the time effects. However, the coefficient for the size measure is not statistically different across different periods.

The R&D/Sales ratio and the dummy variable for the missing R&D/Sales ratios are introduced in regression 5. The R&D/Sales ratio is interacted with the time effects in regression 6. The level of R&D spending is positively related to the accuracy of forecasts by analysts but it is only marginally significant. Similar to results from Table 15, a positive and significant coefficient for the dummy variable suggests a 30 bps higher forecast dispersion for firms with a missing R&D value.

I included LEVERAGE as the financial risk measure in regression 7. The coefficient is positive and significant for leverage, which is consistent with highly levered firms having greater dispersion in analysts' forecasts. In regression 8, I introduced the interacted leverage factors. Coefficients for these interacted variables are not statistically significant. This suggests that association between forecast dispersion and the leverage is not statistically different across different periods.

Regression 9 introduces the intangible assets ratio into the analysis. Overall, the level of intangible assets is negatively related to the forecast accuracy and suggests that analysts have

better consensus in their earnings forecasts for firms with more intangible assets. Results in regression 10 for the interacted intangible ratios are not statistically significant.

Regression 11 introduces the residual volatility as the price relevant information measure. The coefficient for VOLATILITY is positive and highly significant. This indicates that firms with greater volatility experience greater forecast dispersion as demonstrated by the positive and significant coefficient on the volatility. Volatility explains an additional approximately 2% cross sectional variation in forecast dispersion as documented by the increase in adjusted R-sq. This positive association between volatility and the forecast dispersion is consistent over different periods.

Overall, the results in Table 17 demonstrate that forecast dispersion as the information measure is consistent with the previous analysis for the forecast accuracy. However, the results suggest some improvement in forecast dispersion for foreign issuers in the post-SOX period relative to both the earlier 1995-97 and 1998-2000 periods. Yet, this does not hold for the comparable U.S. firms. Hence, the results provide some evidence to support H1-Null and suggest significant improvement in forecast dispersion in the post-SOX period relative to the pre-SOX periods. In addition, there is deterioration in forecast dispersion for the 2003-05 period which is significant for the foreign issuers.

Begley, Cheng and Gao (2007) also study the forecast accuracy and dispersion around SOX. However, they use these measures as the proxy for the "information quality". In that regard, these findings are partially aligned with Begley et al. (2007) in that there is no significant improvement in the information quality over the post-SOX period. However, they further document a decline in information quality measures relative to year 2001, the year before the

enactment of the SOX. However, my findings suggest no significant deterioration relative to the earlier 1995-97 period and significant improvement relative to prior 1998-00 period.

4.2.3   Determinants of Earnings Informativeness

If the mandated governance rules and internal control mechanisms help to discipline the fraudulent corporate practices and to improve reliability and the integrity of the public disclosure, then one would expect informativeness of earnings to be improved in the post-SOX period where these rules are in place. This section analyzes the implication of this argument as discussed in Hypothesis 2. H2-Null expects a higher coefficient for ERROR (ERC) in the post-SOX period relative to earlier periods. Additionally in panel data regression, ERROR*2003-05 would be significantly positive if there is a significant improvement in earnings informativeness in the post-SOX period. Alternatively, H2-a expects an insignificant difference in the ERROR coefficient across different periods.

Tables 18 and 19 present results for the earnings informativeness and findings that analyze absolute abnormal returns around earnings announcements and their association with earnings surprise, respectively. Table 18 reports the results for separate regressions over each period, while Table 19 presents the results for the panel regressions over all periods. In the first regression, the only explanatory variable is the FOREIGN identifier. The coefficient on FOREIGN is negative and statistically significant for the 1995-97 period and the 2003-2005 post-SOX period. Although it is consistent with the univariate analysis; interestingly, this result suggests that the average absolute abnormal returns around earnings announcements are significantly lower for foreign issuers.

Regressions 2 and 3 consider other control variables that are associated with the strength of the price reaction associated with an earnings announcement. In regression 2, ERROR and DISPERSION are included in the analysis. The coefficient on ERROR (i.e., the ERC) is not statistically significant. The coefficient on the DISPERSION is positive but statistically significant only for the 1995-97 period.

In regression 3, interaction terms that are intended to account for the determinants of ERC are introduced. The coefficient on ERROR*FOREIGN is negative, indicating that foreign firms are associated with lower informativeness of a given surprise, i.e., 'ERC', but this difference is statistically significant only for the 1995-97 period. As documented in the ERC literature, firms with better growth prospects have higher ERC over the 1995-97 and the 2003-05 periods, but not for the 1998-00 period. Additionally, firms that are larger in market capitalization have higher ERC as demonstrated by the significantly negative coefficient on ERROR*ln (ME). This difference in ERCs between small and large firms is more pronounced over the 2003-05 period and it is highly significant. LEVERAGE is not significantly related to the informativeness of a given surprise for any sample period. Moreover, ERC is not significantly different for firms with greater forecast dispersion versus firms with lower dispersion as suggested by the ERROR*Dispersion coefficient.

Table 19 reports the results for the panel regressions to analyze absolute abnormal returns around earnings announcements over all periods with time effects. Explanatory variables used in the previous analysis are interacted with the time effects to assess the change in explanatory power of each factor over different periods and to test Hypothesis 2.

In the first regression, the only variables I include are the time effects for each period and the FOREIGN identifier. Similar to prior analysis, the coefficient on FOREIGN is negative and

statistically significant, suggesting that the absolute abnormal returns around earnings announcements are on average 30bps-70bps lower for foreign issuers relative to U.S. firms. The positive and highly significant coefficient for the 1998-00 period suggests that abnormal returns around earnings announcements are greater by approximately 1.5% on average for this period. The average increase in absolute abnormal return for the 2003-05 post-SOX period is around 40bps and less than the prior period, but it is still statistically higher than the earlier 1995-97 period. However, this significance does not hold for most of the other regressions.

Regression 2 introduces the interaction of FOREIGN with the time effects. The FOREIGN*1998-00 variable is positive and marginally significant. A higher abnormal return in the 1998-00 period is partially attributable to foreign issuers but it is mainly U.S. firms with approximately 1.2% higher absolute abnormal returns, as demonstrated by the highly significant coefficient on the 1998-00 variable even after introducing FOREIGN*1998-00. Moreover, a positive coefficient for FOREIGN*1998-00 along with the negative coefficient on FOREIGN indicates that the difference in abnormal returns between foreign and U.S. firms is smaller in the 1998-00 period, which is observed in the univariate analysis as well.

The measure for forecast accuracy ERROR is introduced in regression 3. Interestingly, the coefficient is not statistically significant. It becomes significant only when the ERROR*FOREIGN variable is introduced in regressions 7-11. Regression 4 includes ERROR interacted with the time variables, intended to analyze the difference in the informativeness of a given surprise over different periods. However, the coefficient for ERROR is not statistically significant for any of the periods.

DISPERSION is introduced in regression 5, and interacted with the time effects in regression 6. Dispersion is positively associated with the absolute market reaction at an earnings

announcement, but the association is significant only at the 0.10 level and the significance is wiped out once other interacted variables are included in the analysis.

In regression 7, the ERROR*FOREIGN term is included to capture the difference in the informativeness of a given surprise between the foreign and the U.S. firms. Consistent with the integrity and reliability of foreign issuers' disclosure being inferior relative to comparable U.S. firms, the ERC for them is lower as evident by the negative and significant coefficient for the ERROR*FOREIGN variable. Once this term is introduced, the ERROR term is positive and significant, which is the ERC estimate for the U.S. firms. This term is further interacted with the time effects and introduced in regression 8, but the coefficients are not statistically significant, which suggests no significant change in foreign firm's informativeness of a given surprise over different periods.

In regression 9, I introduce all the other determinants of the informativeness of a given surprise considered previously in Table 18. Consistent with the literature (Collins and Kothari (1989), Teoh and Wong (2002)) and the previous analysis, smaller firms with better growth prospects have higher ERCs. Furthermore, firms with higher leverage have higher ERCs on average. ERC does not seem to be associated with forecast dispersion as suggested by the ERROR*DISPERSION coefficient.

Regression 10 introduces the interacted determinants of the ERC, which are intended to account for the change in association over different periods. The only significant term is the negative coefficient for ERROR*ln (MTB)*1998-00, which captures the impact of growth opportunities on ERC over the 1998-00 period. A statistically significant coefficient suggests that, different than the 1995-97 and 2003-05 periods, the informativeness of a given surprise is not significantly different between high growth and low growth firms over the 1998-00 period.

Overall, the results in Table 18 and 19 do not suggest any improvement or any deterioration in the informativeness of a given surprise in the post-SOX period relative to early periods. Hence, the results do not support the implications of H2-Null but are in line with the alternative H1-a. Hence, as far as information integrity or reliability are concerned, the findings suggest that the SOX mandated uniform governance rules and the new internal control mechanisms do not perform superior or inferior than the periods without them. In addition, there is a significant difference in earnings informativeness between foreign issuers and the comparable U.S. firms. However, the change in the informativeness of a given surprise in the post-SOX period is insignificant between foreign and U.S. firms as well.

4.3 ROBUSTNESS

In this section, I assess the robustness of the reported results. Specifically I use an alternative estimation period and announcement windows for the abnormal return estimates at earning announcements. In addition, I also use an alternative measure for the informativeness of earnings disclosures, which is suggested by Beaver (1968) and used by Cohen et al. (2007). And finally, I provided previous findings after controlling for the overtime trend in analyst coverage, which is documented by Mohanram and Sunder (2006) as the Reg. FD effect on the functioning of financial analysts.

Although I do not report the results, the abnormal return values do not change remarkably if one considers [-1, +2], [-2, +1] or [-2, +2] as alternative abnormal return windows. In addition, the market model parameters are robust to alternative estimation periods, and results hold when the parameters are estimated over [-300,-10] and [-150,-11].

As an additional robustness check, I also consider the abnormal return variance in the 3-day earnings announcement window as the informativeness of a given surprise which is suggested by Beaver (1968). As used by Cohen et al. (2007) and similar to the absolute abnormal return measure, this metric is an alternative non-directional measure of absolute information content in the sense that announcements with large information flow are likely to have large announcement return variances.

Table 20 displays the results for the informativeness of a given surprise with separate analysis for each period, using the abnormal return variance as the measure. In general, the results are comparable with few differences to the results in Table 18 that are using the absolute abnormal return as the measure. Although the difference between the foreign and the U.S. firms is negative, it is not statistically significant. The coefficient on ERROR (i.e., the ERC) is positive and significant only for the 2003-05 post-SOX period. However, in regression 3, the ERC estimate is positive and significant for all periods once a difference in ERC between the foreign and the U.S. firms is controlled by introducing the ERROR*FOREIGN term. This relation between the earning surprise (ERROR) and the abnormal return variance is strongest in the early 1995-97 period, and similar over the 1998-00 and post-SOX 2003-05 periods. Similar to findings in Table 17, ERC for the foreign firms is lower but it is statistically significant only for the 1998-00 period, using abnormal return variance as the information content measure. Other determinants of the ERC are consistent with the literature and with the previous analysis. Additionally, larger firms with more growth opportunities and greater dispersion among analysts' forecasts have higher ERC on average.

Table 21 displays the results for the panel regressions using abnormal return variance as the alternative measure over all periods. In the first regression, the only variables I include are

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the time effects for each period and the FOREIGN identifier. Similar to prior analysis, the coefficient on FOREIGN is negative but marginally significant. The positive and highly significant coefficient for the 1998-00 period suggests that the variance of abnormal returns around earnings announcements is approximately 1.1% greater on average for this period. The increase in abnormal return variance for the 2003-05 post-SOX period is approximately 30 bps and less than the prior period, but it is still statistically higher relative to the earlier 1995-97 period.

Regression 2 introduces the variable FOREIGN which is interacted with the time effects. These interacted variables are not statistically significant suggesting that the difference in abnormal return variance between foreign and U.S. firms is stable across different periods.

The measure for the forecast accuracy, ERROR, is introduced in regression 3. Interestingly, the coefficient is not statistically significant. Just as in the previous analysis, it becomes significant only when the ERROR*FOREIGN variable is included in regressions 7-11 to control the difference in ERC between the foreign and the U.S. firms. Regression 4 introduces ERROR interacted with the time variables, intended to analyze the difference in earning informativeness over different periods. However, the coefficient for ERROR is not statistically significant for any of the periods.

DISPERSION is introduced in regression 5, and interacted with the time effects in regression 6. Average association between the DISPERSION and the abnormal return variance is not significant over any of the periods. But the relation is significant once we control the difference in association for different periods. For the early 1995-97 period, higher dispersion among analysts' forecast suggests higher abnormal return variance and hence a higher

information content of the earnings disclosure. However, this relation is negative for later periods and statistically significant for the 2003-05 period.

In regression 7, the ERROR*FOREIGN term is included to capture the difference in the informativeness of a given surprise between the foreign and the U.S. firms. Consistent with the integrity and reliability of foreign issuers disclosure being inferior relative to comparable U.S. firms, the ERC for them is lower as demonstrated by the negative and significant coefficient for ERROR*FOREIGN. Once this term is introduced, the ERROR term is positive and significant, which is the ERC estimate for the U.S. firms. This term is further interacted with time effects and introduced in regression 8, but the coefficients are not statistically significant, suggesting no significant change in the informativeness of a given surprise for foreign firms either.

In regression 9, I introduce all the other determinants of the informativeness of a given surprise. Consistent with the literature and the absolute abnormal return analysis, smaller firms with better growth prospects and higher leverage have higher ERCs on average.

Regression 10 introduces the interacted determinants of the ERC, which are intended to control for the change in association over different periods. The only significant term is the negative coefficient for ERROR*DISPERSION*2003-05, which captures the dispersion effect on ERC in the 2003-05 period. This result is driven by the inconsistent relation between DISPERSION and the abnormal return variance.

4.3.1   Regulation Fair Disclosure (Reg. FD) and its Effect on Information Measures:

On October 23, 2000, the SEC implemented Regulation FD (Reg. FD hereafter), which prohibits firms from privately disclosing value-relevant information to certain preferred analysts and institutional shareholders, without simultaneously disclosing the same information to public. As

a result, Reg. FD requires that all material information be communicated to all investors at the same time. When a firm's management unintentionally discloses material information to select market participants, it must make that information public as soon as practical, but no later than 24 hours after the initial disclosure[80].

As a result, two distinct and disparate viewpoints about the potential impact of the Reg. FD emerged. Securities Industry Association (SIA) argues that prohibiting non-public communications on the functioning of financial analysts will reduced the quality of the information communicated[81]. On the contrary, the SEC argues that prohibiting non-public communications will lead greater independence from financial analysts[82].

Following these perspectives, Heflin, Subramanyam and Zhang (2003) examined whether Reg. FD impairs the flow of financial information to capital markets prior to earnings announcements. Using a three quarters of pre and post-FD period, they empirically investigate whether the implementation of FD is associated with changes in earnings-related information environment, specifically the forecast error and the dispersion. In general, they find no reliable evidence of significant deterioration in the information environment after implementation of FD.

Using a longer post-FD period[83], Mohanram and Sunder (2006) confirm Heflin et al. (2003)'s findings with respect to the forecast accuracy and dispersion. In addition, they

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[80] Regulation FD, Rule 101(d)

[81] Security Industry Association (SIA). 2000. Comment letter to the SEC. Online at
http://www.sifma.org/regulatory/comment_letters/comment_letter_archives/30966602.pdf

[82] U.S. Securities Exchange Commission, Regulation Fair Disclosure Revisited December 2001,
http://www.sec.gov/news/studies/regfdstudy.htm

[83] October 1999 - September 2000 pre-FD and January 2001-December 2001 post-FD period.

document that firms with most analyst following in the pre-FD period suffer significant decline, whereas firms with least analyst following experience an increase in the analyst coverage. Their findings on the analysts' coverage pre and post-FD periods suggests that analysts are shifting coverage to firms where the greater level of effort is likely to yield competitive advantage over other analysts, which would compensate for the limited information channels in post-FD period

The overtime comparison of 2003-05 post-SOX period with 1995-97 and 1998-00 pre-SOX periods overlaps with the confounding Reg. FD effects. To asses the robustness of my analysis on forecast ERROR and DISPERSION by controlling for the documented Reg. FD effect, I introduced "Number of Analyst following" in multivariate analysis. Table 22 displays the analysis for the ERROR and DISPERSION measures. Results for Regression 13 are same as Table 16 and 17. In regression 14, I introduced 'Num Analyst' to control for the change in analysts coverage overtime as documented by Mohanram and Sunder (2006). Overall, all findings are similar to the previous analysis and are not driven by overtime trend in analyst coverage.

For the forecast accuracy measure ERROR, the results are inconsistent with H1-Null and suggest no significant improvement or deterioration in the post-SOX period relative to pre-SOX periods. As expected, analyst coverage is negatively related with the ERROR and it is higly significant. Forecast ERROR is marginally higher for the 1998-00 period, but it is statistically significant only for foreign issuers. The estimated coefficient for this interacted term 'Foreign*1998-00' and for the foreign firm identifier 'Foreign', are slightly lower in regression 14. This observation suggests that the difference in forecast error between foreign issuers and U.S. firms are partially attributable to the difference in the level analysts' coverage. Regression 15 introduced the 'Num Analyst' interacted with the '1998-00' and 2003-05' periods.

Interestingly, the negative association between the analyst coverage and the forecast ERROR does not hold for the early 1995-97 period. All other results are same as the previous analysis on Table 16.

The results for the DISPERSION are also same as the previous analysis on Table 17 and suggest no significant improvement or deterioration in the post-SOX period relative to pre-SOX periods for the U.S. firms. However the improvement in forecast dispersion for foreign issuers in the post-SOX period holds even after controlling for the analyst coverage trend overtime. As expected, analyst coverage is negatively related with the DISPERSION and it is highly significant. The estimated coefficient for the foreign firm identifier 'Foreign' is slightly lower in regression 14. This suggests that the difference in forecast dispersion between foreign and U.S. firms are partially attributable to the difference in analysts coverage. Regression 15 introduced the 'Num Analyst' interacted with the '1998-00' and 2003-05' periods. Once again, the negative association between the analyst coverage and the forecast DISPERSION does not hold for the early 1995-97 period.

Overall, my findings are not driven by the change in level of analysts' coverage overtime. While I attempted to control for the documented Reg. FD related factor that could affect my inferences about the post-SOX period, I can never completely rule out the possibility that our results are attributable to some other unknown structural change related to Reg. FD.

5.0   CONCLUSION

The passage of the SOX Act represents a landmark change in the extent and the integrity of information disclosed by the public firms. My findings on forecast accuracy and dispersion are partially aligned with Begley et al. (2007) by documenting no significant improvement in the post-SOX period. However, these measures have not significantly improved or deteriorated either, in the post-SOX period relative to the earlier periods of 1995-97 and 1998-00 for U.S. firms. Also for the foreign issuers, there is no significant improvement or deterioration in earning forecast accuracy over different periods. This observation does not support H1-Null but holds with H1-a. Moreover the results are consistent with the enhanced disclosure requirements not contributing any additional information on average for U.S. firms.

However, the findings suggest some improvement in forecast dispersion for the foreign issuers in the post-SOX period relative to both the earlier 1995-97 and the 1998-2000 periods. Yet, this does not hold for the comparable U.S. firms. Hence, the results are partially aligned with the H1-Null Hypothesis for forecast dispersion and suggest significant improvement in forecast dispersion in the post-SOX period relative to pre-SOX periods for the foreign issuers. In addition, there is deterioration in forecast accuracy and dispersion for the 1998-00 period and it is statistically significant for the foreign issuers.

Moreover, my analysis on the informativeness of a given surprise suggests no significant change in this measure for the post-SOX period, which is consistent with Cohen et al. (2007).

This holds for both foreign issuers and comparable U.S. firms. This does not support H2-Null but it is consistent with the alternative H2-a and suggests that mandated governance rules and the internal control system have not improved the integrity of the public information and do not contribute to the information content of an earnings announcement. The results are robust and hold for alternative estimation periods and alternative information content measures similar to Cohen et al. (2007).

In addition the results do not change when the analyst coverage is included in the analysis, so the findings are not driven by the difference analysts coverage between foreign and U.S. firms and the overtime trend on number of analysts following.

THE SARBANES-OXLEY ACT COMPLIANCE DATES FOR U.S AND FOREIGN ISSUERS[84]

	U.S issuers	Foreign issuers filing 20-F or 40-F
Large Accelerated Filer	November 15, 2004 (was June 15, 2004)	July 15, 2006 for both
Small-Accelerated Filer	November 15, 2004 (was June 15, 2004)	July 15, 2006 for mgt report (**July 15, 2007** for auditor attestation)
NON-Accelerated Filer	**Dec 15, 2007** for mgt report (**Dec 15, 2008** for auditor attestation) (was April 15, 2005, July 15, 2005, July 15, 2006, July 15, 2007)	**Dec 15, 2007** for mgt report (**Dec 15, 2008** for auditor attestation)

Schedule Changes on   March 2, 2005 and September 21, 2005 and recent on Aug 9, 2006

Under revised Rule 12b-2, a large accelerated filer is defined as a company that meets all of the following:
The company had an aggregate worldwide common equity public float of $700 million or more.
The company has been subject to the annual and periodic reporting requirements of the Exchange Act for at least 12 months.
The company has filed at least one annual report.
The company is not a "small business issuer" eligible to report on Forms 10-KSB and 10-QSB.
An "accelerated filer" is now defined as a company whose worldwide common equity public float, as calculated above, is at least $75 million but less than $700 million and meets the other three requirements for large accelerated filers described above.
Accelerated filer or large accelerated filer status takes effect as of the end of the issuer's fiscal year and is determined by computing the public float as of the last business day of the issuer's most recently completed second fiscal quarter. "Public float" is defined as the voting and non-voting common equity held by the company's non-affiliates. Once a company has achieved accelerated or large accelerated filer status at the end of a fiscal year, that status remains in effect until the company determines that it can exit accelerated or large accelerated filer status, as described below.

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[84] SEC announcement on Aug. 9, 2006 SEC Release No. 2006-136 http://www.sec.gov/news/press/2006/2006-136.htm

APPENDIX B – Legislative and Administrative Announcements Related to the SOX Act

B.1   SOX RELATED ANNOUNCEMENTS AND TIME

No	Date	Announcement
1	*January 17th, 2002 Thursday EST 13:30*	*Pitt Harvey proposed changes for accounting oversight*
2	*April 16th, 2002 Tuesday EDT 18:44*	*H.R. FS committee approved HR.3763 (by 49-12)*
	April 23rd, 2002 Tuesday EDT 17:22	~~*House passed Oxley Bill (by 334-90)*~~ Counfounding event
3	*June 18th, 2002 Tuesday EDT 14:52*	*Senate committee approved S.2673 (Sarbanes Bill) (by 17-4)*
4	*June 25th, 2002 Tuesday EDT 18:26*	*Worldcom Inc. announced the fraud*
5	*June 26th, 2002 Wednesday EDT 19:01*	*SEC ordered onetime Certification Rule due mid-August*
	~~*July 15th, 2002 Monday EDT 18:43*~~	~~*Senate passed Sarbanes Bill (by 97-0)*~~ Expected outcome
6	*July 16th, 2002 Tuesday EDT 13:42*	*House passed the toughen version of Oxley Bill (by 391-28)*
7	*July 25th, 2002 Thursday EDT 8:00*	*Conference report agreed in the House and the Senate.*
	~~*July 30th, 2002*~~	~~*Signed by President and became Law No: 107-204*~~ Expected outcome
8	*August 27th, 2002 Tuesday EDT 12:23*	*SEC approved certification as permanent rule including foreign firms*
9	*October 8th, 2002 Tuesday EDT 16:08*	*Harvey Pitt addressed foreign issuers concern.*
10	*October 16th, 2002 Wednesday EDT 10:51*	*SEC proposed rules for 404, 406, 407*
	November 5th, 2002 Tuesday EST 18:03	~~*Harvey Pitt resigned) (confounding event)*~~ Confounding event
11	*January 8th, 2003 Tuesday EST 11:25*	*SEC issued accommodations for foreign governance practices.*

B.2 SOX RELATED ANNOUCENEMT DETAILS

January 17th, 2002 Thursday EST 13:30 (GMT 18:30)

Announcement: US Securities and Exchange Commission <u>Chairman Harvey Pitt</u> proposed changes to accounting profession oversight. "We initially envision a public body that will be dominated by public members with two primary components - discipline and quality control," Pitt said at a news conference. "We are at the early stages of this proposal and many details remain to be worked out."

      Corresponding Date: *Day*: January 17th, 2002

                                 Intraday: January 17th, EST 13:30 – 14:30

April 16th, 2002 Tuesday EDT^{85} 18:44 (GMT 22:44)

Announcement: The House <u>Financial Services Committee</u> ordered to report the bill to toughen oversight of corporate accounting and financial reports by 49-12 vote. The bill approved by the House panel would create a five-member board to oversee accounting firms, with a majority of members independent of the accounting profession. Auditors would be barred from offering certain consulting and internal audit services to audit clients under the bill

      Corresponding Date: *Day*: April 17th, 2002

                                 Intraday: April 17th, EDT 9:30 – 12:30

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[85] Daylight saving for US is observed for the following dates:

For 2002: April 7th – October 27th; **For 2003:** April 6th – October 26th.

April 23rd, 2002 Tuesday EDT 17:22 (GMT 21:22)

Announcement: The House Financial Services Committee issued the proposed Corporate, Auditing Accountability, Responsibility and Transparency Act HR.3763. State Attorney General Eliot Spitzer supports the amendment to protect investors from conflicts of interest by Wall Street analysts. The amendment would require brokerages to disclose when their stock analysts rate companies that pay the brokerages investment banking fees for arranging mergers or underwriting new stock offerings.

> *Corresponding Date:*   *Day*: *Confounding announcement*
>
>   *Intraday*: *Confounding announcement*

June 18th, 2002 Tuesday EDT 14:52 (GMT 18:52)

Announcement: The Senate Banking Committee on Tuesday approved a bill that would establish a new independent oversight board authorized to discipline accountants. In a 17-4 vote, the committee backed the proposal that also seeks to boost auditor independence by restricting the consulting services accountants can offer to audit clients.

The revised bill would create a new oversight board to set ethical and quality standards for accountants, with full authority to investigate any CPA or accounting firms. The SEC's own budget would get a big boost as the Senate bill authorizes $776 million for the agency in fiscal 2003, allowing it to hire more staff, raise pay and upgrade its computers. Corporate executives would be required to certify their company's quarterly and annual reports. Bill would make it illegal for executives to mislead or coerce an auditor, and require executives to forfeit any profits or bonuses made one year before an inaccurate financial report that must be restated

> *Corresponding Date:*   *Day*: *June 18th, 2002*
>
>   *Intraday*: *June 18th, EDT 14:52 – 15:52*

June 25th, 2002 Tuesday EDT 18:26 (GMT 22:26)

Announcement: WorldCom Inc.'s (WCOM) board of directors has discovered that the company engaged in "massive fraud," overstating its EBITDA by $3.6 billion over the last five quarters. The discovery was found during an internal investigation. WorldCom has fired its longtime chief financial officer, Scott Sullivan.

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Corresponding Date: *Day*: June 26th, 2002

                             Intraday: June 26th, EST 9:30 – 12:30

June 26th, 2002 Wednesday EDT 19:01 (GMT 23:01)

Announcement: <u>SEC</u> approved an order directed at about 1,000 of the nation's largest companies saying that chief executive and chief financial officers must certify the accuracy and veracity of disclosures and financial statements. The executives will have to certify the results from their last annual report and every interim report since. The Securities and Exchange Commission issued a list of the top 945 U.S. publicly-traded companies with revenues greater than $1.2 Billion, whose financial statements must be certified as accurate by their chief executive and financial officers starting in mid-August.

Corresponding Date: *Day*: June 27th, 2002

                             Intraday: June 27th, EDT 9:30 – 12:30

July 15th, 2002 Monday EDT 18:43 (GMT 22:43)

Announcement: The U.S. <u>Senate</u> on Monday passed a sweeping reform bill in response to recent corporate scandals, by a 97-0 vote.

Senate Bill Creates five-member, private-sector oversight board, creates new penalties for corporate fraud and document shredding, bans personal loans from companies to their top officials and directors. Restricts a wide range of consulting and other non-auditing services, Company directors would be held directly responsible for the accountants preparing financial reports, Calls for an additional $300 million or so for the SEC

Corresponding Date: *Day*: Anticipated annoucement

                             Intraday: Anticipated announcement

July 16th, 2002 Tuesday EDT 13:42 (GMT 17:42)

Announcement: The US <u>House of Representatives</u> voted on Tuesday to toughen their version of an accounting industry reform bill to match the standards of a Senate bill

passed a day earlier, as lawmakers competed to produce the toughest possible response to the string of major accounting scandals that have seriously shaken investor confidence. The bill, which passed with overwhelming bipartisan support 391-28, would add criminal penalties to earlier corporate reform legislation passed by the House in April.

House Bill creates five-member accounting oversight board with disciplinary powers and contains new stiffer criminal penalties for corporate fraud. Restricts more narrow range of consulting and other non-auditing services that accounting firms can provide to their audit clients.

> *Corresponding Date:*   *Day*: July 16th, 2002
>
> *Intraday*: June 16th, EDT 13:42 – 14:42

July 24th, 2002 Thursday EDT 18:11 (GMT 22:11)

Announcement:

The U.S. House of Representatives on Thursday approved the final version of a sweeping corporate reform bill by 423-3 that beefs up oversight of accounting and dramatically increases penalties for corporate fraud.

The US Senate on Thursday afternoon voted 99-0 to overwhelmingly confirm a corporate reform bill approved hours earlier by the House of Representatives.

> *Corresponding Date:*   *Day*: July 25th, 2002
>
> *Intraday*: July 25th, EDT 9:30 – 12:30

July 30th, 2002 Tuesday EDT 08:02 (GMT 12:02)

Announcement: President Bush signed into law the most far-reaching government crackdown on business fraud since the post-Depression era. A wave of corporate accounting scandals in an election year helped propel the reforms to approval in Congress with extraordinary speed.

> *Corresponding Date:*   *Day*: Anticipated announcement
>
> *Intraday*: Anticipated announcement

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August 27th, 2002 Tuesday EDT 12:23 (GMT 16:23)

Announcement: US <u>Securities and Exchange Commission</u> on Tuesday voted unanimously to approve rules that will require chief executives and financial officers, including the executives of foreign companies listed on US stock exchanges to vouch personally for the accuracy of their financial statements.

The regulation will oblige CEOs and CFOs of foreign firms listed on U.S. stock markets, or selling securities to larger than a given number of investors in the U.S., to swear to the validity of their annual financial statements, called 20-F. The move, which will come into effect on Wednesday, came as a blow to the foreign companies which had raised objections with the SEC. They had hoped for an exemption, or at least a compromise measure.

Corresponding Date: *Day: August 27th, 2002*

                                        Intraday: August 27th, EDT 12:23 – 13:23

October 8th, 2002 Tuesday EDT 16:08 (GMT 20:08)

Announcement: Foreign firms' hope for exemption vanishes. Speaking by video link Tuesday to a financial group in London, SEC Chairman <u>Harvey Pitt</u> said the SEC will be "fully faithful" in enforcing the new law, but will also be mindful of the impact of regulation on U.S. and global markets. EU commissioner for financial services, discussed possible exemptions for non-US accounting firms. <u>Mr Pitt said he had limited room for maneuver in granting exemptions to non-US companies, and must respect the will of Congress.</u>

"We cannot promise that our final rules will always accord with your concerns, but we do promise to listen and carefully evaluate them," Beller said. As the SEC writes rules to implement the law, "<u>foreign companies can expect that many of the new rules will apply to them</u>," said SEC corporation finance division director Alan Beller, speaking to the same group in London.

Governance rules could be troublesome for foreign firms. By next April, the SEC is required to bar U.S. markets from listing companies that don't have an independent audit committee, a feature rarely required outside the U.S. SEC lawyer Beller indicated that could be a problem for Germany, which requires employees to sit on corporate boards and take part in audit oversight, even though they wouldn't be considered to be independent.

Corresponding Date: *Day: October 9th, 2002*

Intraday: October 9th, EDT 9:30 – 11:00

October 16th, 2002 Wednesday EDT 10:51 (GMT 14:51)

Announcement: The <u>Securities and Exchange Commission</u> sent proposed rules out for public comment, having companies report annually on their internal controls, requiring companies to adopt and monitor codes of ethics along with a third rule to require companies to disclose if their boards' audit committee has any "financial experts" on it. No exemption for non-US firms.

Corresponding Date: *Day: October 16th, 2002*

Intraday: October 16th, EDT 10:51 – 11:51

November 5th, 2002 Tuesday EST 18:03 (GMT 23:03)

Announcement: Securities and Exchange Commission Chairman <u>Harvey Pitt</u> resigned under pressure Tuesday night

Corresponding Date: *Day: Confounding Announcement*

Intraday: Confounding Announcement

January 8th, 2003 Tuesday EST 11:25 (GMT 16:25)

Announcement: The <u>SEC</u> said it had voted in favor of a proposed rule requiring companies listed on U.S. stock exchanges to have independent auditing committees, as mandated under Sarbanes-Oxley. The SEC, however, also proposed certain exemptions for foreign-based firms that operate under different types of corporate governance systems.

<u>John Coffee</u>, law professor at Columbia University, said the SEC's move helped answer foreign concerns over "US imperialism". "Some companies wanted requirements dropped altogether. The SEC's move is rational and shows it is trying to meet them halfway," he said.

These provisions address concerns by Japanese and German firms and include:

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-- allowing non-management employees to serve as audit committee members, consistent with "co-determination" and similar requirements in some countries;

-- allowing shareholders to select or ratify the selection of auditors, also consistent with requirements in many foreign countries;

-- allowing alternative structures such as boards of auditors to perform auditor oversight functions where such structures are provided for under local law; and

-- addressing the issue of foreign government shareholder representation on audit committees.

> ***Corresponding Date:***   ***Day****: January 8th, 2002*

>   ***Intraday****: January 8th, EST 11:25 – 12:25*

C.1 BOEHMER, MUSUMECI AND POULSEN (1991) 'STANDARDIZED CROSS-SECTIONAL' APPROACH:

The ordinary cross-sectional test assumes no cross sectional dependence in abnormal returns. Ordinary cross sectional test statistics are calculated by dividing the mean abnormal returns during event period by its contemporaneous cross-sectional standard error as in equation (1).

$$t = \frac{\frac{1}{N}\sum_{i=1}^{N}\varepsilon_i}{\sqrt{\frac{1}{N(N-1)}\sum_{i=1}^{N}\left[\varepsilon_i - \frac{1}{N}\sum_{i=1}^{N}\varepsilon_i\right]^2}} \qquad (1)$$

Boehmer, Musumeci and Poulsen (1991) 'Standardized cross-sectional' approach incorporates the information from both the estimation and the event period. Event-period abnormal returns are first standardized by the estimation period standard deviation, similar to Patell's (1976) test statistics. Cross-sectional technique is then applied to the standardized abnormal returns, and the test statistics is calculated as equation (2)

$$S\varepsilon_i = \frac{\varepsilon_i}{\sigma_i\sqrt{t_{days}}} \quad \text{where } t_{days} \text{ is the number of days in event window and } \sigma_i \text{ is}$$

residual mean square error from market model regression for i over estimation period.

$$t_{BMP} = \frac{\frac{1}{N}\sum_{i=1}^{N}S\varepsilon_i}{\sqrt{\frac{1}{N(N-1)}\sum_{i=1}^{N}\left[S\varepsilon_i - \frac{1}{N}\sum_{i=1}^{N}S\varepsilon_i\right]^2}} \qquad (2)$$

.

C.2   T-STATISTICS ADJUSTMENTS FOR CROSS CORRELATION

C.2.1 Patell Adjustment for Cross-correlation:

$$\overline{A} = \frac{1}{N}\sum_{i=1}^{N} S\varepsilon_i \quad \text{and} \quad \mathrm{Var}\left(\overline{A}\right) = \frac{1}{N^2}\sum_{i=1}^{N}\sigma^2_{A_i} + \frac{1}{N^2}\sum_{i=1}^{N}\sum_{j\neq i}^{N}\sigma_{A_i}\sigma_{A_j}\rho_{ij}$$

$$\sigma^2_{\overline{A}} = \frac{1}{N}\sigma^2_A + \frac{1}{N^2}\sigma^2_A\sum_{i=1}^{N}\sum_{j\neq i}^{N}\rho_{ij}$$

$$\sigma^2_{\overline{A}} = \frac{1}{N}\sigma^2_A\left(1 + \frac{1}{N}\sum_{i=1}^{N}\sum_{j\neq i}^{N}\rho_{ij}\right) = \frac{1}{N}\sigma^2_A\left(1 + (N-1)\overline{\rho}\right)$$

where average cross correlation is defined as $\overline{\rho} = \dfrac{1}{N(N-1)}\sum_{i=1}^{N}\sum_{j\neq i}^{N}\rho_{ij}$

Using this adjusted standard deviation for mean standardized abnormal return, we have correlation adjusted t-statistics.

$$t_{Patell-Adj} = \frac{\overline{A}}{\sqrt{\frac{(m-2)}{(m-4)}\left(1 + (N-1)\overline{\rho}\right)}\Big/\sqrt{N}} = \frac{t_{Patell}}{\left(1 + (N-1)\overline{\rho}\right)}$$

C.2.2 BMP Adjustment for Cross-correlation:

BMP approach uses sample variance as the estimate for standard deviation for mean standardized abnormal return.

$$S^2 = \frac{1}{(N-1)}\sum_{i=1}^{N}\left[S\varepsilon_i - \frac{1}{N}\sum_{i=1}^{N}S\varepsilon_i\right]^2$$

However Sefcik and Thompson (1986) discuss that if there is cross-correlation, cross-sectional variance understates (negatively biased estimator for) variance of mean standardized abnormal return, because; $E(S^2) = (1-\overline{\rho})\sigma_A^2$ and $\hat{\sigma}_{\overline{A}}^2 = \sigma_A^2(1-\overline{\rho})$

Using the unbiased estimator for variance of mean standardized abnormal return;

$$S_{\overline{A}}^2 = \frac{s^2}{N}\left[\frac{1+(N-1)\overline{\rho}}{(1-\overline{\rho})}\right]$$

$$t_{BMP-Adj} = \frac{\overline{A}}{s\sqrt{\dfrac{1+(N-1)\overline{\rho}}{(1-\overline{\rho})}}\Bigg/\sqrt{N}} = t_{BMP}\sqrt{\frac{(1-\overline{\rho})}{1+(N-1)\overline{\rho}}}$$

C.3 SEFCIK AND THOMPSON (1986) WEIGHTED PORTFOLIO METHOD

If the abnormal return of the N firms around the events of interest are hypothesized to be related with K (firm and country) characteristics, modeled by the following cross sectional regression.

$$AR = FB + e$$

$$
\begin{bmatrix} AR_1 \\ AR_i \\ ... \\ AR_N \end{bmatrix}
=
\begin{bmatrix}
1 & F_{21} & ... & F_{K1} \\
1 & ... & ... & ... \\
1 & ... & ... & ... \\
1 & F_{2N} & ... & F_{KN}
\end{bmatrix}
*
\begin{bmatrix} \alpha \\ \beta_1 \\ ... \\ \beta_K \end{bmatrix}
+
\begin{bmatrix} e_1 \\ e_2 \\ ... \\ e_K \end{bmatrix}
$$

Given; $\hat{\beta}_{OLS} = (F'F)^{-1} F'(AR)$ weight matrix is chosen as $W = (F'F)^{-1} F'$

$$
W =
\begin{bmatrix}
... & ... & ... & ... \\
w_{k1} & w_{k2} & ... & w_{kN} \\
... & ... & ... & ... \\
... & ... & ... & ...
\end{bmatrix}_{K*N}
$$

1.   For each factor k, estimate the corresponding portfolio weights, k-th row of W.

2.   Calculate time series return for the portfolio k as

3.   For each portfolio run Multivariate regression with dummy variables for event windows to get estimate for portfolio abnormal return.

4.   Repeat for each factor portfolio

This procedure generates K estimates of AR, which is same as K elements of B for OLS

i. $WF = I$ implies that w_k has zero net value (off - diagonal elemets of W) of each firm characteristics in F expect one.

ii.　　Unlike cross-sectional regression, standard errors of these estimates account fully for the cross correlation and heteroskedasticity in firm disturbances.

iii.　　Residuals incorporate the cross-correlation and heteroskedasticity is the motivation for Mandelker (1974)

iv.　　Event effect for each portfolio corresponds to one coefficient in a cross sectional model.

BIBLIOGRAPHY

Aggarwal, Reena and Williamson, Rohan G., "Did New Regulations Target the Relevant Corporate Governance Attributes?" (February 12, 2006). Available at SSRN: http://ssrn.com/abstract=859264

Akhigbe A., Martin A., "Valuation Impact of Sarbanes-Oxley: Evidence from Disclosure and Governance within the Financial Services Industry," Journal of Banking and Finance, 2006, Vol. 30, 989-1006.

Alford, Andrew W., and Philip G. Berger, 1999, "A simultaneous equations analysis of forecast accuracy, analyst following, and trading volume." Journal of Accounting, Auditing, and Finance (New Series) 14(3) (Summer), 219-240.

Ammer, John Matthew, Holland, Sara B., Smith, David C. and Warnock, Francis E., "Look at Me Now: What Attracts U.S. Shareholders?" (August 2006). NBER Working Paper No. W12500 Available at SSRN: http://ssrn.com/abstract=927384

Asthana, Sharad, Balsam, Steven and Kim, Sungsoo, "The Effect of Enron, Andersen, and Sarbanes-Oxley on the Market for Audit Services" (June 2004). Available at SSRN: http://ssrn.com/abstract=560963

Atiase, R., 1985. Predisclosure information, firm capitalization, and security price behavior around earnings announcements. Journal of Accounting Research 23, 21–36.

Bargeron, Leonce, Lehn, Kenneth and Zutter, Chad J., "Sarbanes-Oxley and Corporate Risk-Taking" (March 7, 2008). Available at SSRN: http://ssrn.com/abstract=1104063

Barron O., O. Kim, S. Lim & D. Stevens, 1998. "Using analysts' forecasts to measure properties of analysts' information environment." The Accounting Review, 73, 421-433.

Barron, O. E., D. Byard, and O. Kim. 2002. "Changes in analysts' information around earnings announcements." The Accounting Review 77 (4): 821-846.

Barth, M., Kasznik, R., McNichols, M., 1998. "Analyst coverage and intangible assets". Unpublished Working Paper, Stanford University, Stanford, CA."

Beaver, W., Clarke, R., Wright, W., 1979. "The association between unsystematic security returns and the magnitude of forecast errors." Journal of Accounting Research 17, 316–340."

Begley, Joy, Gao, Yanmin and Cheng, Qiang, "The Impact of the Sarbanes-Oxley Act on Information Quality in Capital Markets" (August 22, 2007). AAA 2008 Financial Accounting and Reporting Section (FARS) Paper Available at SSRN: http://ssrn.com/abstract=1008986

Benos, Evangelos and Weisbach, Michael S., "Private Benefits and Cross-Listings in the United States" (October 27, 2003). Available at SSRN: http://ssrn.com/abstract=462027

Berger PG, Feng L and Wong MHF. "The impact of Sarbanes-Oxley on cross-listed companies." Working Paper, University of Chicago Graduate School of Business 2005.

Bhattacharya, Utpal, Groznik, Peter and Haslem, Bruce, "Is CEO Certification of Earnings Numbers Value-Relevant?" . Journal of Empirical Finance, Forthcoming Available at SSRN: http://ssrn.com/abstract=982467

Bin, F., and D. Chen., 1998. "Casino Legislation Debates and Gaming Stock Returns: A United States Empirical Study." International Journal of Management 15, 397-406.

Binder, J.J., 1985a, "Measuring the effects of regulation with stock price data", Rand Journal of Economics, Vol.16, pp 167-83

Binder, J.J., 1985b, "On the use of multivariate regression models in event studies", Journal of Accounting Research, Vol.23, pp 370-83

Binder, J.J., 1998, The event study methodology since 1969, Review of Quantitative Finance and Accounting, 11, 111-137.

Bris, Arturo, Cantale, Salvatore and Nishiotis, George P., "A Breakdown of the Valuation Effects of International Cross-Listing" . European Financial Management, Vol. 13, No. 3, pp. 498-530, June 2007 Available at SSRN: http://ssrn.com/abstract=988212

Brown, S. J., and J. B. Warner, 1985, "Using daily stock returns: The case of event studies," Journal of Financial Economics 14, 3–31.

Clark, J. A., and S. B. Perfect., 1996. "The Economic Effects of Client Losses on OTC Bank Derivative Dealers: Evidence from the Capital Market. "Journal of Money, Credit, and Banking 28, 527-545.

Coffee, J., 1999. "The future as history: The prospects for global convergence in corporate governance and its implications." Northwest University Law Review 93: 641-708.

Coffee, J., 2002. "Racing towards the top? The impact of cross-listing and stock market competition on international corporate governance." Columbia Law Review 102: 1757-1831.

Cohen, Daniel A., Dey, Aiyesha and Lys, Thomas Z., "Real and Accrual-Based Earnings Management in the Pre- and Post-Sarbanes Oxley Periods" (June 2007). AAA 2006 Financial Accounting and Reporting Section (FARS) Meeting Paper Available at SSRN: http://ssrn.com/abstract=813088

Collins, D., Kothari, S., 1989. "An analysis of intertemporal and cross-sectional determinants of earnings response coefficients." Journal of Accounting and Economics 11, 143–181.

Comment, R., Jarrell, G., 1995. Corporate focus and stock returns. Journal of Financial Economics 37, 67–87.

Cornett, M. M., W. N. Davidson, and N. Rangan., 1996. "Deregulation in Investment Banking: Industry Concentration Following Rule 415." Journal of Banking and Finance 20, 85-113.

Cornett, M. M., and H. Tehranian., 1989. "Stock Market Reaction to the Depository Institutions Deregulation and Monetary Control Act of 1980." Journal of Banking and Finance 13, 81-100.

Cornett, M. M., and H. Tehranian., 1990. "An Examination of the Impact of the Garn-St. German Depository Institutions Act of 1982 on Commercial Banks and Savings and Loans." Journal of Finance 45, 95-111.

Cosamino, T.F., and B. McDonald., 1998. "What's Different Among Banks?" Journal of Monetary Economics 41, 57-70.

De Jong, P., and R. Thompson., 1990. "Testing Linear Hypothesis in the SUR Framework With Identical Explanatory Variables." Research in Finance 8, 59-76.

Demirguc-Kunt, A., and H. Huizinga., 1993. "Official Credits to Developing Countries: Implicit Transfers to the Banks." Journal of Money, Credit, and Banking 25, 76-89.

Diamond, D., Verrecchia, R., 1991. "Disclosure, liquidity, and the cost of capital." Journal of Financial Economics 19, 69–90.

Dierkens, N., 1991. "Information Asymmetry and Equity issues." Journal of Financial and Quantitative Analysis 26, 181–200.

Doidge, Craig Andrew, "What is the Effect of Cross-Listing on Corporate Ownership and Control?" (August 3, 2005). Available at SSRN: http://ssrn.com/abstract=775985

Doidge, C., G. A. Karolyi and R. Stulz, 2004. "Why are foreign firms listed in the U.S. worth more?" Journal of Financial Economics 71(2): 205-238.

Doidge, C., G. A. Karolyi and R. Stulz, 2007. "Why do countries matter so much for corporate governance?" Journal of Financial Economics, Forthcoming.

Easterwood, J. & S. Nutt., 1999. Inefficiency in analysts' earnings forecasts: systematic misreaction or systematic optimism? Journal of Finance, 54, 1777-1797.

Easton, P., Zmijewski, M., 1989. "Cross-sectional variation in the stock market response to accounting earnings announcements." Journal of Accounting and Economics 11, 117–141.

Eldridge, Susan W and Kealey, Burch T., "SOX Costs: Auditor Attestation under Section 404" (June 13, 2005). Available at SSRN: http://ssrn.com/abstract=743285

Engel, Ellen , Hayes, Rachel M. and Wang, Xue, "The Sarbanes-Oxley Act and firms' going-private decisions" Journal of Accounting and Economics, Volume 44, Issues 1-2, September 2007, Pages 116-145

Entwistle, G. M., G. D. Feltham, and C. Mbagwu. 2006. "Financial reporting regulation and the reporting of pro forma earnings." Accounting Horizons 20 (1): 39-56.

Errunza, V., and E. Losq, 1985, "International asset pricing under mild segmentation: theory and test," Journal of Finance 40, 105-124.

Foerster, S. and A. Karolyi, 1999. "The effects of market segmentation and investor recognition on asset prices: Evidence from foreign stocks listing in the United States." Journal of Finance 54(3): 981-1013.

Gifford, R.H., Howe, H., 2004, "Regulation and unintended consequences: thoughts on Sarbanes-Oxley", The CPA Journal, Vol. 74 No.6, pp.6-10.

Griffin, Paul A. and Lont, David H., "The Effects of Auditor Dismissals and Resignations on Audit Fees: Evidence Based on SEC Disclosures Under Sarbanes-Oxley" (February 16, 2005). Available at SSRN: http://ssrn.com/abstract=669682

Gu, Z., 2004. "Measuring the precision of analysts' private and common information: Generalization and an application." Working paper, Carnegie Mellon University.

Hail, Luzi and Leuz, Christian, "International Differences in the Cost of Equity Capital: Do Legal Institutions and Securities Regulation Matter?" (December 2005). ECGI - Law Working Paper No. 15/2003 Available at SSRN: http://ssrn.com/abstract=641981

Heflin, F., and C. Hsu. 2004. "The impact of the Sarbanes-Oxley Act of 2002 on the use of non-GAAP earnings measures." Working paper, Purdue University.

Heflin, F., K. Subramanyam & Y. Zhang., 2003. "Regulation FD and the financial information environment: Early evidence." The Accounting Review, 78, 1-37.

Holmström, Bengt R. and Kaplan, Steven N., "The State of U.S. Corporate Governance: What's Right and What's Wrong?" (September 2003). ECGI - Finance Working Paper No. 23/2003. Available at SSRN: http://ssrn.com/abstract=441100

Hughes, John S. and Ricks, William E. "Accounting for Retail Land Sales: Analysis of a Mandated Change." Journal of Accounting and Economics 6, 101–132, (August 1984a).

Izan, Haji Y. "An Empirical Analysis of the Economic Effects of Mandatory Government Audit Requirements." Ph. D. dissertation, University of Chicago, 1978.

Jaffe, J. F., 1974, "The effect of regulation changes on insider trading," The Bell Journal of Economics and Management Science 5, 93–121.

Jain, P. K., J. C. Kim, and Z. Rezaee. 2006. "Trends and determinants of market liquidity in the pre-and post Sarbanes-Oxley Act periods." Working paper, the University of Memphis."

Johnson, S. A., and S. K. Sarkar., 1996. "The Valuation Effects of the 1977 Community Reinvestment Act and Its Enforecement." Journal of Banking and Finance 20, 783-803.

Kamar, Ehud, Karaca-Mandic, Pinar and Talley, Eric L., "Sarbanes-Oxley's Effects on Small Firms: What is the Evidence?" (June 2007). USC CLEO Research Paper No. C07-9 Available at SSRN: http://ssrn.com/abstract=993198

Karafiath, I., 1988, "Using Dummy Variables in the event Methodology", The Financial Review 23.

Karafiath, I. and J. Glascock., 1989. "Intra-Industry Effects of a Regulatory Shift: Capital Market Evidence from Penn Square." Financial Review 24, 123-134

Karolyi, A., 1998. "Why do companies list shares abroad?: A survey of the evidence and its managerial implications." Financial Markets, Institutions & Instruments 7(1): 1-60.

Karolyi, G. A., 2006. "The world of cross-listings and cross-listings of the world: Challenging conventional wisdom." Review of Finance 10: 1-54.

Kolari, James and Seppo Pynnonen, 2005. "Event-study methodology: Correction for cross-sectional correlation in standardized abnormal return tests." Working Papers of the University of Vaasa, Department of Mathematics and Statistics, 9.

Korajczyk, R., Lucas, D., McDonald, R., 1991. "The effect of information releases on the pricing and timing of equity issues." The Review of Financial Studies 4, 685–708.

Lang, M. & R. Lundholm., 1996. "Corporate disclosure policy and analyst behavior." The Accounting Review, 71, 467-492.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R. Vishny, 1998. "Law and finance." Journal of Political Economy 106: 1113-1155.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R. Vishny, 2002. "Investor Protection and Corporate Valuation" Journal of Finance, June 2002.

La Porta, Rafael, Lopez de Silanes, Florencio and Shleifer, Andrei, "What Works in Securities Laws?" (July 16, 2003). Tuck School of Business Working Paper No. 03-22; AFA 2005 Philadelphia Meetings. Available at SSRN: http://ssrn.com/abstract=425880

Leuz, Christian, Triantis, Alexander J. and Wang, Tracy Yue, "Why Do Firms Go Dark? Causes and Economic Consequences of Voluntary SEC Deregistrations" (March 2008). ECGI - Finance Working Paper No. 155/2007 Available at SSRN: http://ssrn.com/abstract=592421

Li, M. Pincus, S. Rego, "Market Reaction to Events Surrounding the Sarbanes-Oxley Act of 2002 and Earnings Management," (September 2006), Journal of Law & Economics (forthcoming).

Linck, James S., Netter, Jeffry M. and Yang, Tina, "The Effects and Unintended Consequences of the Sarbanes-Oxley Act on the Supply and Demand for Directors" (February 4, 2008). AFA 2006 Boston Meetings Paper Available at SSRN: http://ssrn.com/abstract=902665

Lins, K., D. Strickland, and M. Zenner. 2005. "Do non-U.S. firms issue equity on U.S. stock exchanges to relax capital constraints?" Journal of Financial and Quantitative Analysis 40 (1): 109-133.

Litvak, Kate, "The Effect of the Sarbanes-Oxley Act on Non-US Companies Cross-Listed in the US" . Journal of Corporate Finance, Vol. 13, pp. 195-228, 2007a Available at SSRN: http://ssrn.com/abstract=876624

Litvak, Kate, "Sarbanes-Oxley and the Cross-Listing Premium". Michigan Law Review, Vol. 105, pp. 1857-1898, 2007b Available at SSRN: http://ssrn.com/abstract=959022

Lobo, G. J., and J. Zhou. 2006. "Did conservatism in financial reporting increase after the Sarbanes-Oxley Act?" Initial evidence. Accounting Horizons 20 (1): 57-73.

Madura, J., A. L. Tucker, and E. Zarruk., 1992. "Reaction of Bank Share Prices to the Third-World Debt Reduction Plan. "Journal of Banking of Finance 16 , 853-868.

Madura, J., A. L. Tucker, and E. Zarruk., 1993. "Market Reaction to the Thrift Bailout." "Journal of Banking of Finance 17 , 591-608.

Mandelker, G., 1974. "Risk and return: the case of merging firms." Journal of Financial Economics 1,303.

Marosi, Andras and Massoud, Nadia, "Why Do Firms Go Dark?" (November 2004). Available at SSRN: http://ssrn.com/abstract=570421

Mitchell, Mark, and Jeffry M. Netter. 1989. "Triggering the 1987 Stock Market Crash," Journal of Financial Economics, 24: 37-68.

Mohanram, P. & S. Sunder., 2006. How has regulation FD affected the operations of financial analysts? Contemporary Accounting Research, 23, 491-526.

O'Brien, P., 1988. "Analysts' forecasts as earnings expectations." Journal of Accounting and Economics, 10, 159-193.

Patell, J., 1976, "Corporate forecasts of earnings per share and stock price behavior: Empirical tests, Journal of Accounting Research 14, 246–276.

Patro, Sukesh, Lehn, Kenneth and Zhao, Mengxin, "Determinants of the Size and Structure of Corporate Boards: 1935-2000" (November 2003). Available at SSRN: http://ssrn.com/abstract=470675

Piotroski, J. D. 1999. "The impact of newly reported segment information on market expectations and stock prices." Working paper. University of Chicago."

Piotroski, Joseph D. and Srinivasan, Suraj, "The Sarbanes-Oxley Act and the Flow of International Listings" (April 2007). Available at SSRN: http://ssrn.com/abstract=956987

Pistor, Katharina, Raiser, Martin and Gelfer, Stanislaw, "Law and Finance in Transition Economies". Economics of Transition, Vol. 8, pp. 325-368, 2000 Available at SSRN: http://ssrn.com/abstract=214648

Rezaee, Z. 2002. "Financial Statement Fraud: Prevention and Detection." John Wiley & Sons, New York, N.Y.

Rezaee, Zabihollah and Jain, Pankaj K., "The Sarbanes-Oxley Act of 2002 and Security Market Behavior: Early Evidence" (May 2005). Available at SSRN: http://ssrn.com/abstract=498083

Schipper, K. and R. Thompson, 1985, "The impact of merger-related regulations using exact distributions of test statistics", Journal of Accounting Research 23, 408-415.

Sefcik, Stephan E. and Thompson, Rex. "An Approach to Statistical Inference in Cross-Sectional Models with Security Abnormal Returns as Dependent Variables." Journal of Accounting Research 24, 316–334, (August 1986).

Sinkey, J. F., and D. A. Carter., 1999 "The Reaction of Bank Stock Prices to News of Derivatives Losses by Corporate Clients." Journal of Banking and Finance 23, 1725-1743.

Smirlock, M., and H. Kaufold., 1987. "Bank Foreign Lending, Mandatory Disclosure Rules, and the Reaction of Bank Stock Prices to the Mexican Debt Crisis." Journal of Business 60, 347-364.

Smith GP., 2007. "A Look at the Impact of Sarbanes-Oxley on Cross-Listed Firms." Working paper, Arizona State University West 2007.

Stewart, J.D., and S. E. Hein., 2002 "An Investigation of the Impact of the 1990 Reserve Requirement Change on Financial Asset Prices." Journal of Financial Research 25, 367-382.

Stulz, R., 1999. "Globalization, corporate finance, and the cost of capital." Journal of Applied Corporate Finance 12: 8-25.

Swaminathan, S., 1991. "The impact of SEC mandated segment data on price variability and divergence of beliefs." The Accounting Review 66, 23–41.

Teoh, S. & T. Wong, 2002. Why new issues and high-accrual firms underperform: The role of analysts' credulity. The Review of Financial Studies, 15, 869-900.

Theil, Henri. Principles of Econometrics. New York: John Wiley and Sons, Inc., 1971.

Thomas S., "Firm Diversification and Asymmetric Information: Evidence from Analysts' Forecasts and Earnings Announcements," Journal of Financial Economics, 2002, Vol. 64, pp. 373–396.

Thompson, R., 1985, "Conditioning the Return Generating Process on Firm Specific Events: A Discussion of Event Study Methods," Journal of Financial and Quantitative Analysis, 20, 151-164

Unal, H., A. Demirguc-Kunt and K. Leung, "The Brady Plan, 1989 Mexican Debt-Reduction Agreement, and Bank Stock Returns in United States and Japan", Journal of Money, Credit, and Banking, 25, 410-429.

Wintoki MB. Corporate boards and regulation: "The effect of the Sarbanes-Oxley Act and the exchange listing requirements on firm value." Journal of Corporate Finance 2007 (forthcoming).

Zhang, Ivy, "Economic Consequences of the Sarbanes-Oxley Act of 2002" Journal of Accounting and Economics, 2007, vol. 44, issue 1-2, pages 74-115

Zingales, Luigi, "Is the U.S. Capital Market Losing its Competitive Edge?" (November 2007). ECGI - Finance Working Paper No. 192/2007 Available at SSRN: http://ssrn.com/abstract=1028701

Figure 1: Overtime Trend for Foreign Issuers

ADR programs are represented by the solid bars, foreign issues other than ADRs (Non-ADRs) are shown by bars with diagonal lines. New issues are shown in green color. Voluntarily terminated issues and involuntarily cancelled issues (due to Bankruptcy-Liquidation, Merger & Acquisitions, or dropped from exchanges) are shown in red color. Issues that are established in previous years and are not cancelled are shown by blue bars (survived issues).

New and Terminated Foreign Issues
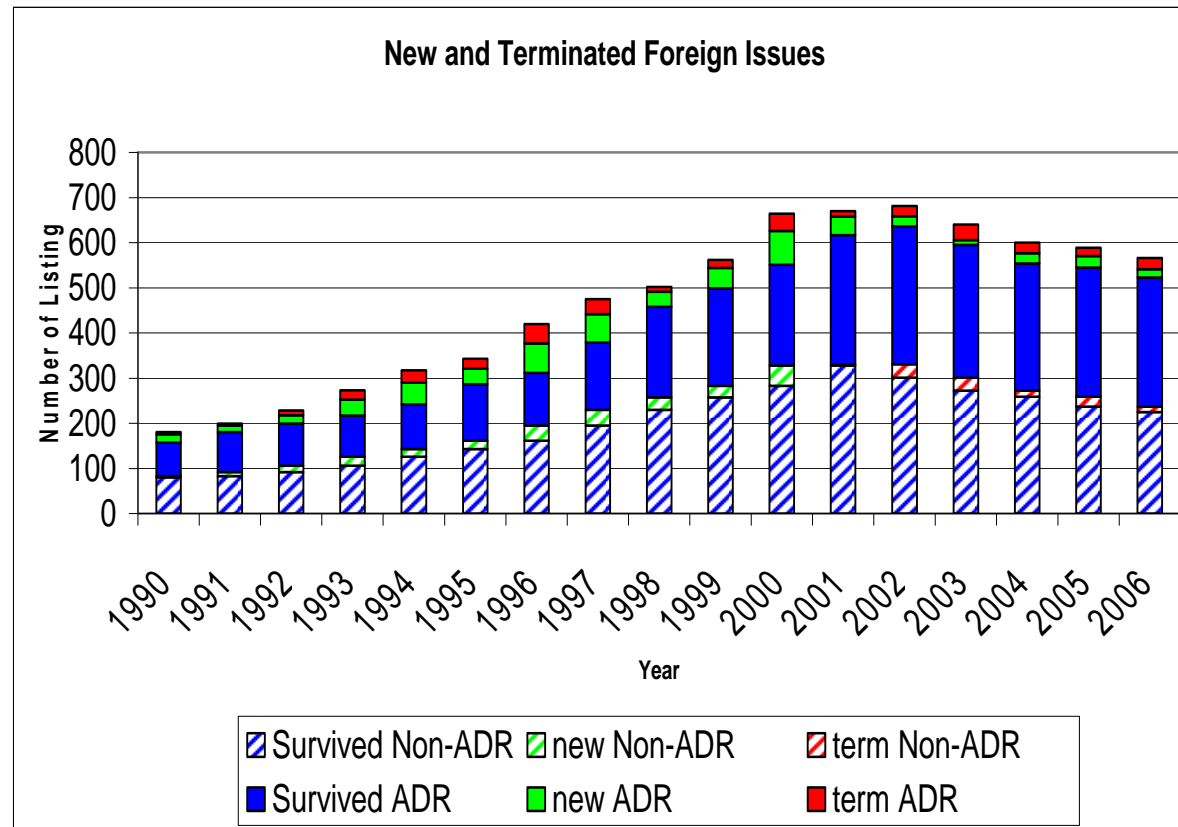
Figure 2: BHAR performance, S&P 500, FTSE excl. U.S. and value-weighted Foreign issuers portfolio.

Overall BHAR performance of the markets, over June/01 – Aug/03. Figure 2 presents the Buy-and-Hold performance of a value-weighted foreign issuers' portfolio along with the S&P 500 and FTSE Developed Countries index excluding U.S. (FTSE index). U.S. market is represented by the S&P 500 [red], Global Markets other than. U.S. is represented by the FTSE World Index excluding U.S. [green], foreign issuers listed in U.S. represented by the VW Cross-Listed Index [black]. Average BHAR performance is approximately -5% for the first six months

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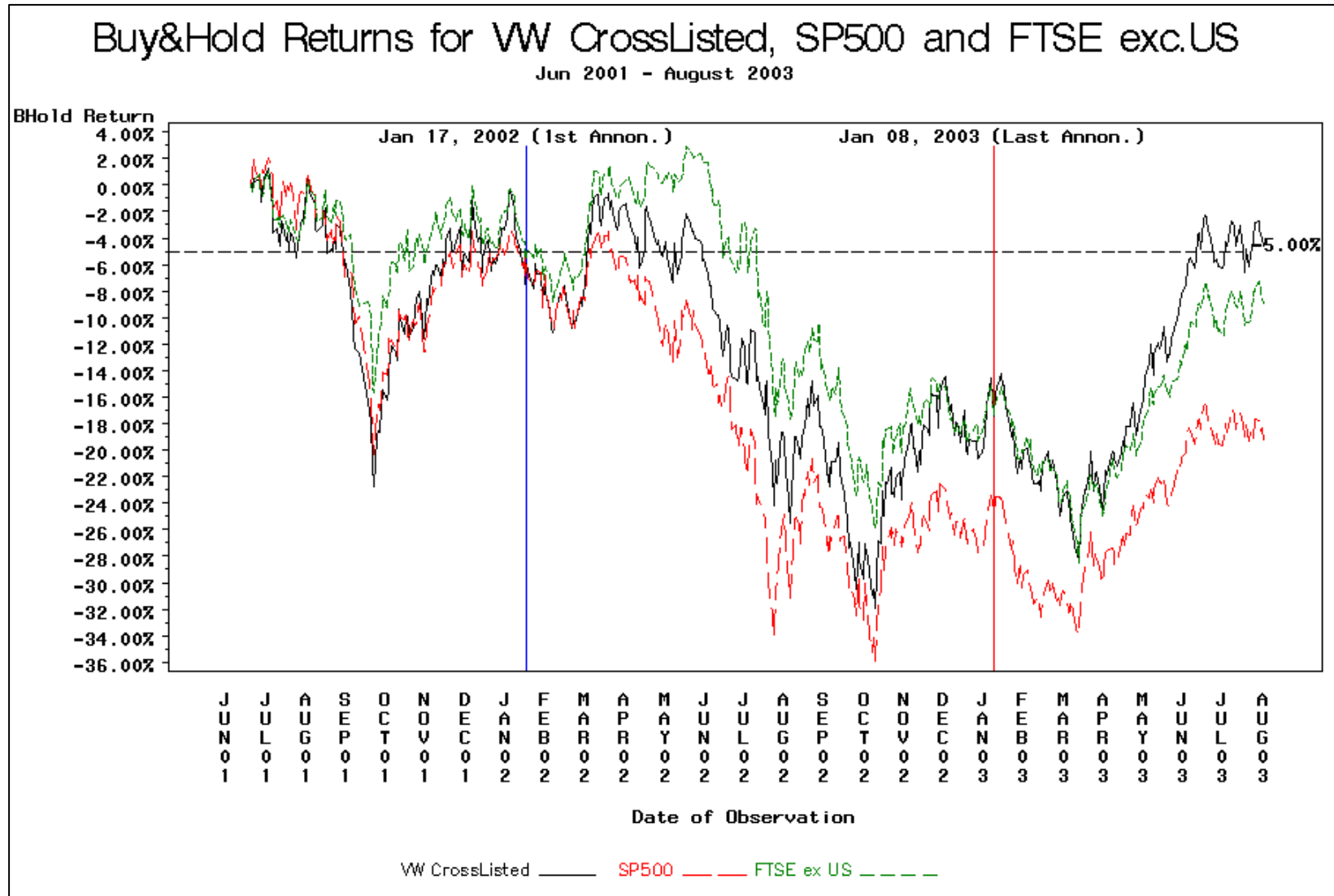
Figure 3: Difference in BHAR performance, S&P 500, FTSE excl. U.S. and value-weighted Foreign issuers portfolio.
Overall difference in BHAR performance of the markets, over June/01 – Aug/03. Figure 2 presents the difference in Buy-and-Hold performance of a value-weighted foreign issuers' portfolio along with the S&P 500 and FTSE Developed Countries index excluding U.S. (FTSE index). U.S. market is represented by the S&P 500 [red], Global Markets other than. U.S. is represented by the FTSE World Index excluding U.S. [green], foreign issuers listed in U.S. represented by the VW Cross-Listed Index [black].
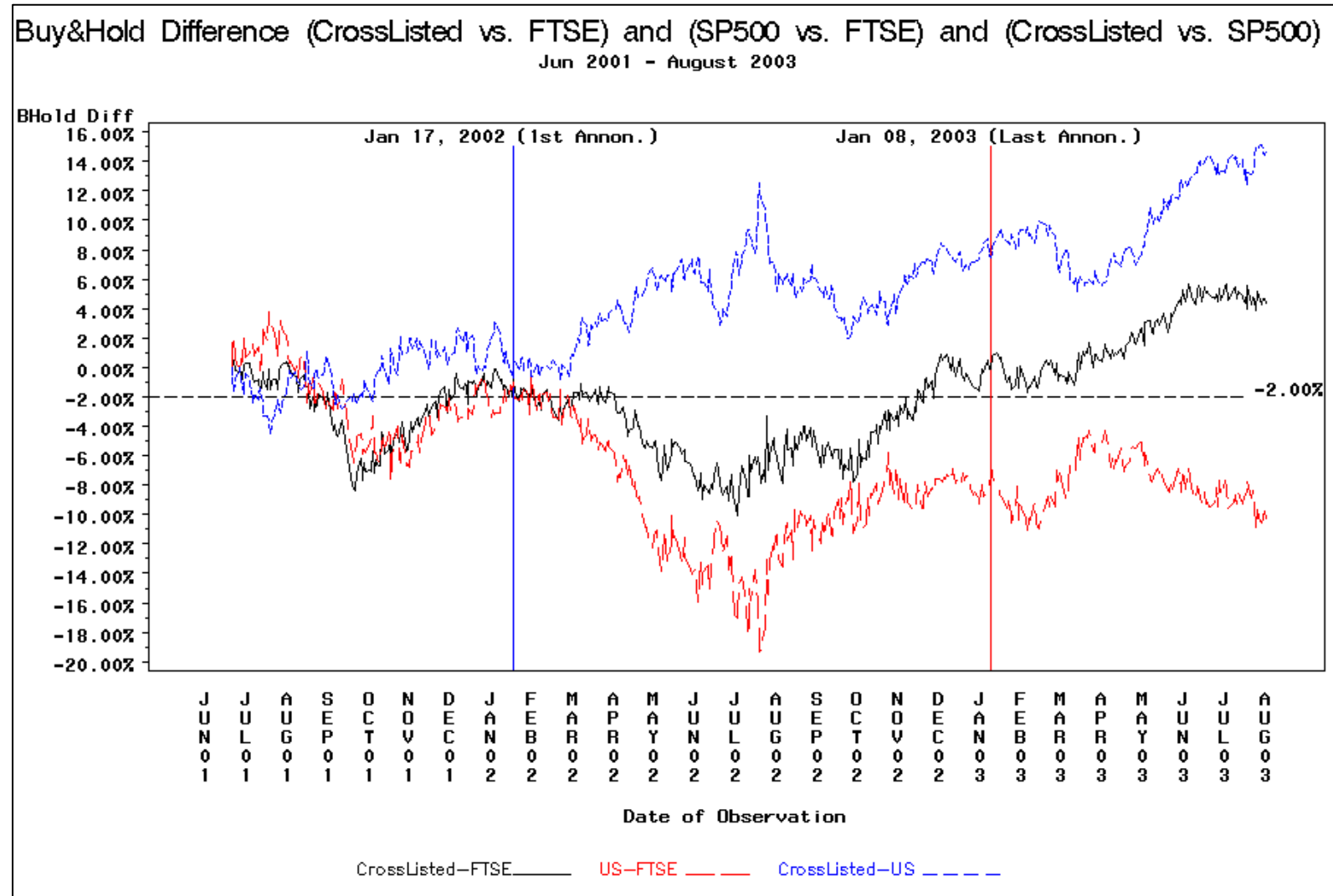
Table 1 – Foreign Issuers Sample

Table 1 summarizes the foreign issuers sample and the survival information for foreign issuers that are active around the SOX legislative events. I exclude issuers from countries known as tax havens, such as Bermuda, Barbados, Marshall Islands, Cayman Islands, Bahamas, British Virgin Islands and Belize. For issues with different classes, I only include the issues with the one-share-one-vote scheme. Final sample includes 889 listings, starting as early as 1930. There are 135 issues that are terminated before the enactment of the SOX Act, and 79 foreign firms accessed U.S. equity markets after the enactment of SOX. There are 675 foreign issuers that are active around the SOX legislative events. The final sample for my analysis consists of 675 foreign issuers.

Category		N	OTC listed	Exchange Listed
All Sample		888	60	828
Listings terminated before SOX Act		(135)	(43)	(92)
Listings new after SOX Act		(79)	(2)	(77)
New Listings cancelled before Dec 2006			2	6
1	(Voluntarily) terminated		-	3
2	(Voluntarily) deregistered		-	1
3	M & A		2	2
4	(Involuntarily) dropped		-	-
ADRs active around SOX events		**674**	**15**	**659**
Listings cancelled after SOX			6	199
1	(Voluntarily) terminated		4	61
2	(Voluntarily) deregistered		-	76
3	M & A		2	26
4	(Involuntarily) dropped		-	36

Table 2 – Industry Distribution

Industry classification is based on the 2-digit NAICS, from Compustat for the fiscal year 2001. Panel A presents the industry classification for listing type sub-groups, Panel B for the legal origin sub-groups.

Panel A:

Industry Description	ADR	Non-ADR
Accommodation and Food Services	0.3%	0.8%
Administrative and Support, Waste Management and Remediation Services	1.3%	0.4%
Agriculture, Forestry, Fishing and Hunting	0.8%	0.0%
Arts, Entertainment and Recreation	0.0%	0.8%
Construction	1.3%	2.0%
Finance and Insurance	9.7%	3.6%
Health Care and Social Assistance	0.3%	0.8%
Information and Cultural Industries	22.3%	20.2%
Manufacturing	43.7%	43.3%
Mining and Oil and Gas Extraction	4.6%	11.7%
Non-classifiable establishments	1.3%	0.0%
Other Services (except Public Administration)	0.0%	0.4%
Professional, Scientific and Technical Services	2.8%	6.1%
Real Estate and Rental and Leasing	0.5%	2.0%
Retail Trade	3.1%	0.4%
Transportation and Warehousing	2.8%	2.4%
Utilities	3.6%	0.4%
Wholesale Trade	1.8%	4.5%

Panel B:

Industry Description	Common	Civil
Accommodation and Food Services	0.8%	0.0%
Administrative and Support, Waste Management and Remediation Services	1.4%	0.4%
Agriculture, Forestry, Fishing and Hunting	0.3%	0.7%
Arts, Entertainment and Recreation	0.5%	0.0%
Construction	0.5%	3.0%
Finance and Insurance	6.2%	8.9%
Health Care and Social Assistance	0.5%	0.4%
Information and Cultural Industries	21.7%	21.2%
Manufacturing	41.7%	46.1%
Mining and Oil and Gas Extraction	11.4%	1.9%
Non-classifiable establishments	0.0%	1.9%
Other Services (except Public Administration)	0.0%	0.4%
Professional, Scientific and Technical Services	5.1%	2.6%
Real Estate and Rental and Leasing	1.1%	1.1%
Retail Trade	1.6%	2.6%
Transportation and Warehousing	2.4%	3.0%
Utilities	1.4%	3.7%
Wholesale Trade	3.3%	2.2%

Table 3 – Country Distribution

Table 3 provides the foreign issuers' country distribution. Columns 2-3 provides the number of listings in year 2001. Columns 4-5 provide percentage of ADR and Non-ADR listings from each country. Columns 6-7 provide the listing weights (ADR vs. Non-ADR) within the country.

Country	ADR	Non-ADR	Country%	Country%	Within Country %	Within Country %
argentina	11		2.7%	0.0%	100.0%	0.0%
australia	18	1	4.4%	0.4%	94.7%	5.3%
austria	1		0.2%	0.0%	100.0%	0.0%
belgium	1	1	0.2%	0.4%	50.0%	50.0%
brazil	5		1.2%	0.0%	100.0%	0.0%
canada		153	0.0%	61.4%	0.0%	100.0%
chile	18		4.4%	0.0%	100.0%	0.0%
china	15		3.7%	0.0%	100.0%	0.0%
denmark	3		0.7%	0.0%	100.0%	0.0%
england	79	2	19.3%	0.8%	97.5%	2.5%
finland	5		1.2%	0.0%	100.0%	0.0%
france	29		7.1%	0.0%	100.0%	0.0%
germany	20	2	4.9%	0.8%	90.9%	9.1%
greece	4		1.0%	0.0%	100.0%	0.0%
hong kong	8	2	2.0%	0.8%	80.0%	20.0%
hungary	1		0.2%	0.0%	100.0%	0.0%
india	10		2.4%	0.0%	100.0%	0.0%
indonesia	2		0.5%	0.0%	100.0%	0.0%
ireland	13		3.2%	0.0%	100.0%	0.0%
israel	9	68	2.2%	27.3%	11.7%	88.3%
italy	13		3.2%	0.0%	100.0%	0.0%
japan	27		6.6%	0.0%	100.0%	0.0%
jordan	0	1	0.0%	0.4%	0.0%	100.0%
luxembourg	2	2	0.5%	0.8%	50.0%	50.0%
mexico	23	1	5.6%	0.4%	95.8%	4.2%
netherlands	23	11	5.6%	4.4%	67.6%	32.4%
new zealand	3		0.7%	0.0%	100.0%	0.0%
norway	6		1.5%	0.0%	100.0%	0.0%
peru	2		0.5%	0.0%	100.0%	0.0%
philippines	2		0.5%	0.0%	100.0%	0.0%
poland	1		0.2%	0.0%	100.0%	0.0%
portugal	3		0.7%	0.0%	100.0%	0.0%
russia	4		1.0%	0.0%	100.0%	0.0%
singapore	2	4	0.5%	1.6%	33.3%	66.7%
south africa	8		2.0%	0.0%	100.0%	0.0%
south korea	6		1.5%	0.0%	100.0%	0.0%
spain	7		1.7%	0.0%	100.0%	0.0%
sweden	6	1	1.5%	0.4%	85.7%	14.3%
switzerland	12		2.9%	0.0%	100.0%	0.0%
taiwan	5		1.2%	0.0%	100.0%	0.0%
turkey	1		0.2%	0.0%	100.0%	0.0%
venezuela	2		0.5%	0.0%	100.0%	0.0%

Table 4 – Firm Characteristics

Legal Origin classification and Shareholder Right Score are from La Porta et al., 1998 and 2003. Legal origin is equal to 1 for Civil origin legislations, Shareholder Rights Score dummy is 1 for legislations with below median score. Financial values are for fiscal year 2001. Assets and Market capitalization are used as the firm size measure. Leverage is computed as book value of debt over book value of assets. ROA is calculated as EBIT over Book value of Assets. I use Market-to-Book ratio of Assets which is frequently used as a proxy for Investment opportunities. I also use sales growth as a measure of a firm's growth opportunities (Doidge, Karolyi and Stulz (2006)). It is calculated as the 3-year geometric average of annual growth in sales prior to 2001. I use the following country level factors: GDP growth, Total Market capitalization over GDP. Since GDP is not a forward looking market measure, GDP growth is measured as the 3 year geometric average of annual GDP growth post 2002. As equity based measures which captures the market's assessment of firms' equity risk, I use betas of foreign issuers' vis-à-vis FTSE index (excluding US), volatility of stock returns, and the root mean square error from the market model. As financial based risk measures that account for the level and the types of investments I use capital expenditure over asset, R&D expenditure over asset and Cash over asset.

Panel A: Firm Characteristics for the full sample

Variable	N	Mean	Median	Std Dev	Min	Max	25th Pctl	75th Pctl	Skewness	Kurtosis
Legal Origin	659	42.4%	0.0%	49.5%	0.0%	100.0%	0.0%	100.0%	0.307	-1.911
Shareholder Rights Score	659	42.9%	0.0%	49.5%	0.0%	100.0%	0.0%	100.0%	0.288	-1.923
Total Assets	623	$18,316	$1,122	$72,075	$3	$839,298	$148	$6,633	7.447	63.737
Market Equity	613	$7,716	$786	$19,753	$2	$176,509	$137	$5,237	4.832	28.927
Debt/TotAssets	573	40.2%	41.0%	20.8%	1.3%	94.9%	22.8%	54.9%	0.162	-0.643
Return on Assets	614	4.6%	8.6%	23.2%	-261.9%	103.9%	1.4%	14.0%	-4.226	36.677
Mkt2Book Assets	612	1.86	1.30	2.01	0.31	23.94	1.03	1.92	6.306	54.258
Sales annual geo %growth	576	37.1%	11.3%	140.4%	-78.5%	233.7%	0.3%	28.8%	9.905	126.265
GDP annual geo % growth	658	3.99%	3.94%	1.748	-2.472	9.965	3.27	4.981	0.268	2.635
Market Cap / GDP	658	104.82	97.11	61.06	7.62	316.06	51.64	132.65	1.071	1.339
FTSE Beta	646	0.92	0.74	0.68	-0.44	3.93	0.41	1.33	0.86	0.494
Sigma Return	646	4.5%	3.8%	2.5%	1.1%	21.2%	2.6%	5.9%	1.652	4.675
Sigma Residual	646	4.4%	3.7%	2.5%	1.1%	20.9%	2.5%	5.6%	1.705	4.865
R&D/TotAssets	357	8.3%	4.0%	11.2%	0.0%	78.6%	0.8%	12.2%	2.589	9.256
CapExp/TotAssets	581	6.5%	4.5%	6.5%	0.0%	62.5%	2.4%	8.4%	2.893	14.364
Cash /TotAssets	635	18.7%	10.6%	20.7%	0.0%	95.9%	4.0%	27.9%	1.594	2.129

Panel B: Firm Characteristics for Legal origin sub- samples:

Legal Origin	N	Variable	Mean	Median	Std Dev	Min	Max	25th Pctl	75th Pctl	Skewness	Kurtosis
Common	380	Shareholder Rights Score	20.3%	0.0%	40.2%	0.0%	100.0%	0.0%	0.0%	1.485	0.208
		Total Assets	$9,769	$324	$51,299	$3	$695,877	$72	$2,516	10.036	116.475
		Market Equity	$4,759	$342	$18,066	$4	$176,509	$59	$2,629	7.372	60.49
		Debt/TotAssets	37.5%	37.0%	22.1%	1.3%	94.9%	18.0%	53.3%	0.358	-0.747
		Return on Assets	0.6%	6.7%	28.1%	-261.9%	103.9%	-4.4%	13.2%	-3.585	26.132
		Mkt2Book Assets	2.08	1.43	2.44	0.44	23.94	1.06	2.18	5.643	40.146
		Mkt2Book Equity	3.80	1.92	11.82	-9.66	206.71	1.10	3.31	14.579	246.206
		Sales annual geo %growth	50.3%	13.4%	177.4%	-78.5%	2233.7%	-0.1%	40.4%	8.159	82.703
		GDP annual geo % growth	4.53	4.57	1.31	2.343	9.965	3.27	4.981	2.116	7.781
		Market Cap / GDP	116.83	110.10	56.89	32.78	316.06	78.31	175.40	1.069	1.927
		FTSE Beta	0.90	0.72	0.72	-0.39	3.93	0.34	1.39	0.84	0.475
		Sigma Return	5.1%	4.6%	2.7%	1.3%	21.2%	2.9%	6.6%	1.477	4.233
		Sigma Residual	5.0%	4.6%	2.7%	1.3%	20.9%	2.8%	6.4%	1.526	4.373
		R&D/TotAssets	10.5%	6.4%	12.7%	0.0%	78.6%	0.9%	15.5%	2.158	6.413
		CapExp/TotAssets	6.4%	4.0%	7.2%	0.0%	62.5%	2.1%	7.9%	3.172	15.18
		Cash /TotAssets	22.5%	13.3%	23.1%	0.0%	95.9%	4.5%	35.8%	1.205	0.686
Civil	279	Shareholder Rights Score	73.6%	100.0%	44.2%	0.0%	100.0%	0.0%	100.0%	-1.075	-0.851
		Total Assets	$30,190	$3,785	$92,391	$3	$839,298	$882	$18,299	5.839	38.79
		Market Equity	$11,852	$2,122	$21,250	$2	$130,357	$489	$11,719	2.85	9.301
		Debt/TotAssets	44.2%	45.4%	18.1%	1.5%	94.7%	32.9%	55.9%	-0.02	-0.108
		Return on Assets	10.0%	10.7%	11.6%	-94.2%	40.6%	5.9%	14.7%	-3.063	25.588
		Mkt2Book Assets	1.55	1.20	1.10	0.31	7.86	0.99	1.68	3.221	12.25
		Mkt2Book Equity	2.45	1.70	2.45	-3.48	15.85	0.96	3.05	2.447	8.024
		Sales annual geo %growth	19.1%	9.3%	56.5%	-40.0%	671.3%	0.6%	21.2%	7.92	79.509
		GDP annual geo % growth	3.25	3.66	1.985	-2.472	7.933	2.32	3.937	0.266	0.63
		Market Cap / GDP	88.46	77.37	62.82	7.62	279.93	36.85	99.03	1.403	1.681
		FTSE Beta	0.94	0.80	0.63	-0.44	3.27	0.45	1.28	0.91	0.465
		Sigma Return	3.7%	3.1%	2.0%	1.1%	14.1%	2.5%	4.4%	1.83	4.247
		Sigma Residual	3.6%	3.0%	1.9%	1.1%	14.1%	2.4%	4.2%	1.929	4.774
		R&D/TotAssets	5.0%	2.3%	7.2%	0.0%	58.8%	0.5%	6.9%	3.811	22.821
		CapExp/TotAssets	6.6%	5.2%	5.2%	0.0%	28.6%	3.1%	9.2%	1.445	2.446
		Cash /TotAssets	13.5%	8.1%	15.3%	0.2%	93.7%	3.4%	17.5%	2.37	7.179

Table 5 – Pearson Correlation

This table provides the Pearson correlation coefficient and the p-values for the correlation among firm and country characteristics used in cross-sectional analysis.

	Pearson Correlation Coefficients Prob > |r| under H0: Rho=0 Number of Observations																
	Legal Origin	Shareholder Rights Score	Total Assets	Market Cap.	Leverage	ROA	MTB Asset	MTB Equity	Sales Growth	GDP Growth	Market Cap / GDP	Sigma Return	Sigma Residual	Beta	R&D / Tot Assets	CapExp/ Tot Assets	Cash/ Tot Assets
Legal Origin	100%																
Shareholder Rights Score	53.2% <.0001	100.0%															
Total Assets	14.0% 0.0004	4.9% 0.2177	100.0%														
Market Cap.	17.7% <.0001	2.7% 0.5003	50.6% <.0001	100.0%													
Leverage	16.0% 0.0001	7.5% 0.0714	13.0% 0.0018	6.3% 0.1361	100.0%												
ROA	20.0% <.0001	-3.2% 0.4282	2.4% 0.5491	14.6% 0.0003	14.5% 0.0005	100.0%											
MTB_asset	-13.2% 0.0011	-11.3% 0.0049	-7.9% 0.0498	6.1% 0.1311	-18.5% <.0001	0.0% 0.9928	100.0%										
MTB_equity	-7.3% 0.072	-7.0% 0.0856	-2.2% 0.5787	3.0% 0.4522	-3.7% 0.3816	-7.5% 0.067	33.4% <.0001	100.0%									
Sales Growth	-11.0% 0.0083	-9.1% 0.0281	-4.6% 0.2694	-4.2% 0.3172	-18.1% <.0001	-16.6% <.0001	8.8% 0.0345	2.3% 0.5865	100.0%								
GDP Growth	-36.3% <.0001	0.0% 0.9935	-10.3% 0.0101	-16.2% <.0001	-12.2% 0.0035	-8.0% 0.0469	6.5% 0.1084	4.3% 0.2892	10.2% 0.0144	100.0%							
Market Cap/GDP	-23.0% <.0001	-31.6% <.0001	9.2% 0.0213	13.7% 0.0007	6.3% 0.1338	4.7% 0.2495	6.7% 0.0966	5.0% 0.2191	3.1% 0.4584	-8.4% 0.0307	100.0%						
Sigma Return	-26.5% <.0001	0.5% 0.9083	-20.6% <.0001	-27.1% <.0001	-20.6% <.0001	-48.5% <.0001	9.1% 0.0237	-0.1% 0.9721	19.7% <.0001	12.7% 0.0012	4.5% 0.2508	100.0%					
Sigma Residual	-27.6% <.0001	-0.7% 0.8536	-21.8% <.0001	-28.3% <.0001	-19.9% <.0001	-48.3% <.0001	8.2% 0.0416	-0.2% 0.9509	19.5% <.0001	13.0% 0.001	4.3% 0.2795	99.9% <.0001	100.0%				
Beta	-3.7% 0.3538	12.5% 0.0015	-8.3% 0.038	-4.2% 0.3038	-18.9% <.0001	-24.3% <.0001	19.9% <.0001	2.0% 0.6146	13.8% 0.0009	7.0% 0.0735	1.5% 0.699	47.3% <.0001	43.5% <.0001	100.0%			
R&D/TotAssets	-23.9% <.0001	0.5% 0.925	-18.6% 0.0004	-13.7% 0.0105	-21.0% <.0001	-71.4% <.0001	22.0% <.0001	21.6% <.0001	12.8% 0.02	10.8% 0.0415	-6.0% 0.26	47.3% <.0001	46.8% <.0001	27.7% <.0001	100.0%		
CapExp/TotAssets	2.0% 0.6283	-2.1% 0.6217	-6.6% 0.1162	2.2% 0.5993	5.0% 0.2427	7.0% 0.0965	8.5% 0.0445	0.3% 0.9423	0.9% 0.8403	7.2% 0.0848	-7.2% 0.0812	-6.8% 0.1031	-7.1% 0.0854	4.5% 0.2758	0.8% 0.8849	100.0%	
Cash/TotAssets	-21.5% <.0001	2.3% 0.5657	-13.8% 0.0005	-15.7% <.0001	-49.7% <.0001	-40.6% <.0001	23.9% <.0001	5.3% 0.1891	22.8% <.0001	8.8% 0.026	2.4% 0.5514	51.0% <.0001	50.0% <.0001	37.1% <.0001	43.8% <.0001	-14.2% 0.0006	100.0%

Table 6 – Index Returns

This list of SOX events includes 4 events (highlighted in grey color) that are excluded for later analysis. 2 of them are excluded because of other confounding events that reveal significant information for U.S. market. In addition, 2 more are dropped due to highly expected outcome. For statistical tests on announcement date, I follow the study by Mitchell and Netter (1989). Time series return data form pre- and post-event periods provide variance estimates to test statistical significance. The source of the pre-event time series data is the 150 trading days preceding the first announcement January 17, 2002, and the source of the post-event time-series data is the 150 trading days following the last announcement January 8, 2002. All three t-statistics with different variance estimates are reported in table 6, t-values based on the prevent-period variance are in parenthesis, t-values based on the post-event period variance are in brackets, and t-values on doubling the prevent-period are in braces. Index returns reported in columns 6-9 are average market reactions, Columns 10 & 11, "MVRM US" and "MVRM Frgn.", provides the excess returns of U.S. firms and foreign issuers vis-à-vis global markets. Columns 12 & 13 in Table-6 report the S&P 500 return and EW foreign issuers' portfolio from the close on the day of the announcement through 12:30 on the event day, for the announcements after trading hours. I calculate the 1 hour return after the announcement. For announcements after trading hours, I calculate the 3 hours return from 9:30 to 12:30 next trading day. For the announcements before the trading hours, I use the 3 hours intraday return for the same trading day. Time series intraday return from pre and post-event periods provide variance estimate to test statistical significance.

Panel A: Results for the legislative announcements leading to SOX Act.

					Daily Returns						Intraday Returns	
					Index Returns				MVMR Regression		Index Returns	
Annc. No	Expec.	Annc. Date	Ret. Date	Announcement	EW US	SP500	EW Frgn.	FTSE	MVMR US	MVMR Frgn.	SP500	EW Frgn
1	none	17-Jan-02 13:30	17-Jan-02	Harvey Pitt proposed changes to accounting oversight.	0.70% (0.72) [0.92] {0.41}	1.00% (0.83) [0.82] {0.59}	0.81% (0.69) [0.91] {0.49}	0.52% (0.48) [0.53] {0.34}	0.07% (0.19) 0.852	0.23% (0.38) 0.707	-0.28% (-0.64) [-0.69] {-0.45}	0.26% (1.09) [1.29] {0.77}
2	-	16-Apr-02 18:44	17-Apr-02	HR - FS cmt approved the proposal for HR 3763 by 49-12	0.10% (0.1) [0.13] {0.06}	-0.20% (-0.17) [-0.17] {-0.12}	0.76% (0.65) [0.86] {0.46}	0.88% (0.81) [0.90] {0.58}	0.00% (0.01) 0.993	0.87% (1.4) 0.164	0.32% (0.37) [0.37] {0.26}	0.80% (0.35) [0.51] {0.25}
3	Conf.	24-Apr-02 15:25	24-Apr-02	House passed HR 3763 Oxley Bill	-0.24% (-0.24) [-0.31] {-0.14}	-0.71% (-0.59) [-0.58] {-0.41}	-0.22% (-0.19) [-0.25] {-0.14}	-0.13% (-0.12) [-0.13] {-0.08}	0.05% (0.14) 0.889	0.12% (0.19) 0.852	-1.06% (-1.55) [-1.80] {-1.09}	0.04% (0.07) [0.18] {0.05}
4	-	18-Jun-02 14:52	18-Jun-02	SEN - B cmt approved the proposal for Sarbane's Bill by 17-4	-0.04% (-0.04) [-0.05] {-0.02}	0.09% (0.08) [0.08] {0.05}	-0.18% (-0.15) [-0.2] {-0.11}	0.28% (0.26) [0.29] {0.19}	-0.14% (-0.37) 0.709	-0.20% (-0.32) 0.752	0.12% (0.19) [0.21] {0.13}	0.08% (0.13) [0.27] {0.09}
5	-	25-Jun-02 18:26	26-Jun-02	Worldcom announced the fraud	-0.84% (-0.86) [-1.11] {-0.50}	-0.27% (-0.22) [-0.22] {-0.16}	-1.19% (-1.11) [-1.46] {-0.79}	-0.77% (-0.71) [-0.79] {-.50}	-0.41% (-1.08) 0.283	-1.11% (-1.78)* 0.076	-1.91% (-2.26)** [-2.22]** {-1.60}	-0.47% (-0.21) [-0.30] {-0.15}
6	none	26-Jun-02 19:01	27-Jun-02	SEC approved onetime CEO/CFO certification due mid-August	1.15% (1.18) [1.51] {0.68}	1.76% (1.45) [1.43] {1.03}	0.97% (0.84) [1.11] {0.59}	0.72% (0.67) [0.74] {0.47}	0.24% (0.65) 0.517	0.06% (0.1) 0.928	0.26% (0.30) [0.30] {0.21}	-0.10% (-0.04) [-0.06] {-0.03}
7	Exp.	15-Jul-02 18:43	16-Jul-02	SEN passed the Sarbanes Bill S.2673 by 97-0	-0.04% (-0.04) [-0.05] {-0.02}	-1.84% (-1.52) [-1.50] {-1.07}	-0.38% (-0.32) [-0.43] {-0.23}	-0.19% (-0.18) [-0.2] {-0.13}	0.73% (1.92) 0.055	0.42% (0.67) 0.504	-0.98% (-1.16) [-1.14] {-0.82}	-0.04% (-0.02) [-0.02] {-0.01}
8	-	16-Jul-02 13:42	16-Jul-02	HR passed the Oxley Bill HR 5118 by 391-28 amended with stiffer punishment	-0.04% (-0.04) [-0.05] {-0.02}	-1.84% (-1.52) [-1.50] {-1.07}	-0.38% (-0.32) [-0.43] {-0.23}	-0.19% (-0.18) [-0.2] {-0.13}	0.73% (1.92)* 0.055	0.42% (0.67) 0.504	0.28% (0.59) [0.63] {0.42}	-0.10% (-0.40) [-0.52] {-0.28}
9	-	25-Jul-02 8:00	25-Jul-02	Conference report agreed in Senate and House.	-0.32% (-0.32) [-0.41] {-0.19}	-0.56% (-0.46) [-0.46] {-0.33}	-1.29% (-1.11) [-1.47] {-0.79}	2.42% (2.24)** [2.48]** {1.58}*	0.14% (0.37) 0.713	-0.98% (-1.57) 0.119	0.36% -0.42 [0.41] {0.30}	2.28% (1.01) [1.46] {0.71}
10	Exp.	30-Jul-02 8:02	30-Jul-02	President signed the Act	0.55% (0.56) [0.72] {0.32}	0.42% (0.35) [0.35] {0.25}	1.04% (0.90) [1.18] {0.63}	0.97% (0.9) [1.00] {0.64}	0.02% (0.05) 0.963	0.78% (1.24) 0.215	-1.35% (-1.59) [-1.56] {-1.12}	-1.95% (-0.86) [-1.25] {-0.61}

Panel B: Results for the administrative events after SOX being signed by the President.

Annc. No	Expec.	Annc. Date	Ret. Date	Announcement	Daily Returns						Intraday Returns	
					Index Returns				MVMR Regression		Index Returns	
					EW US	SP500	EW Frgn.	FTSE	MVMR US	MVMR Frgn.	SP500	EW Frgn
11	-	27-Aug-02 12:23	27-Aug-02	**SEC approved annual CEO/CFO certification including foreign firms - 1st blow**	**-1.08%** (-1.10) [-1.41] {-0.64}	**-1.39%** (-1.14) [-1.13] {-0.81}	**0.15%** (0.13) [0.17] {0.09}	**1.45%** (1.34) [1.49] {0.95}	**-0.52%** (-1.38) 0.169	**0.95%** (1.52) 0.130	**-0.39%** (-0.71) [-0.85] {-0.50}	**-0.08%** (-0.33) [-0.38] {-0.23}
12	-	8-Oct-02 16:08	9-Oct-02	**Harvey Pitt addressed foreign issuers, limited room for maneuver - 2nd blow**	**-2.43%** (-2.49)** [-3.19]*** {-1.44}	**-2.73%** (-2.25)** [-2.23]** {-1.59}	**-1.93%** (-1.66)* [-2.18]** {-1.17}	**-0.57%** (-0.53) [-0.58] {-0.37}	**-0.96%** (-2.53)** 0.012	**-0.39%** (-0.62) 0.536	**-1.78%** (-2.11)** [-2.07]** {-1.49}	**-2.23%** (-0.99) [-1.43] {-0.70}
13	-	16-Oct-02 10:51	16-Oct-02	**SEC issued proposals for 404(int ctrl), 406 (code eth), 407(fin exp)**	**-1.16%** (-1.19) [-1.51] {-0.69}	**-2.41%** (-1.99)** [-1.97]** {-1.41}	**-0.99%** (-0.86) [-1.13] {-0.61}	**-0.73%** (-0.68) [-0.75] {-0.48}	**0.08%** (0.21) 0.832	**0.29%** (0.47) 0.639	**-0.83%** (-1.16) [-1.28] {-0.82}	**0.05%** (0.13) [0.003] {0.09}
14	Conf.	5-Nov-02 18:03	6-Nov-02	**Harvey Pitt resigned**	**1.57%** (1.61)* [2.07]** {0.93}	**0.91%** (0.76) [0.75] {0.53}	**1.30%** (1.12) [1.48] {0.79}	**-0.68%** (-0.63) [-0.70] {-0.44}	**0.75%** (1.98)** 0.048	**0.75%** (1.2) 0.232	**0.19%** (0.22) [0.22] {0.16}	**-0.30%** (-0.13) [-0.19] {-0.09}
15	+	8-Jan-03 11:25	8-Jan-03	**SEC proposed provisions to accommodate different legislations.**	**-0.66%** (-0.68) [-0.87] {-0.39}	**-1.41%** (-1.16) [-1.15] {-0.82}	**-0.73%** (-0.62) [-0.82] {-0.44}	**-1.48%** (-1.37) [-1.52] {-0.97}	**0.13%** (0.35) 0.728	**0.02%** (0.03) 0.979	**-0.14%** (-0.26) [-0.20] {-0.18}	**0.17%** (0.52) [0.04] {0.37}
				11 events SUM	**-4.62%**	**-7.96%**	**-4.00%**	**2.53%**	**-0.64%**	**0.16%**	**-3.99%**	**0.66%**
				MVMR					**0.23%**	**1.95%**		

Table 7 Panel A – Univariate Results for Foreign issuers and U.S. firms

Table 7 provides the cumulative market reaction for foreign issuers' portfolio and the U.S. firms' portfolio. Panel A provides the results for the subgroups of SOX compliance, non-complaint OTC listings versus SOX mandated listings on organized exchanges. Since, OTC traded listings are not registered under Securities Act, SOX compliance is not mandatory for these firms. Within the group of exchange listed issues, Panel B displays the findings by the exchange listed, Amex, NASDAQ and NYSE. Along with the t-statistics for EW portfolios (t-car), I report t-statistics adjusted by BMP approach (appendix C.1) for event induced variance (t-scar), and further adjusted by KP approach (appendix C.2) for possible cross-correlation (t-scar adj) and the test statistics for non-parametric Wilcoxon sign test. Percentage of observations with positive reaction from non-parametric test helps to document whether the impact is widespread or not.

Panel A: CAR results for foreign issuers and U.S. firms, by the subgroups of SOX compliance

Foreign Issuers							
N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	Listing
659	-5.19%	32.02%	-6.46	-10.61	-2.14	-9.23	Exch Listed
15	5.02%	33.33%	0.49	-0.35	-0.34	-1.29	OTC Listed
U.S. Firms							
N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	Listing
5142	-6.61%	27.67%	-27.46	-37.32	-4.73	-32.02	Exch Listed
767	-4.46%	40.16%	-2.23	-3.72	-1.15	-5.45	OTC Listed

Panel B: CAR results for foreign issuers and U.S. firms, by the subgroups of exchange listing.

Foreign Issuers							
N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	Listing
20	10.38%	50.00%	0.92	0.60	0.40	0.00	AMEX
291	-5.10%	36.43%	-3.51	-4.58	-1.54	-4.63	NASDAQ
348	-6.17%	27.30%	-9.69	-11.35	-2.51	-8.47	NYSE
15	5.02%	33.33%	0.49	-0.35	-0.34	-1.29	OTC Listed
U.S. Firms							
N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	Listing
501	-3.05%	38.52%	-3.60	-6.14	-1.69	-5.14	AMEX
2735	-5.76%	33.64%	-15.11	-17.89	-2.08	-17.11	NASDAQ
1906	-8.77%	16.26%	-33.46	-39.84	-5.64	-29.46	NYSE
767	-4.46%	40.16%	-2.23	-3.72	-1.15	-5.45	OTC Listed

Table 8 Panel A – Univariate Results for Foreign issuers by Legal Origin

Table 8 provides the mean CARs for exchange listed foreign issuers by the country legislation measures. I use LLSV (1998) classification to group jurisdiction as common vs. civil legal origin. I also use Shareholder Rights Score from LLSV (1998) as country level investor protection proxy. Panel A presents the result for sub-groups of home country legislation characteristics 'Legal Origin', and the Institutional environment measure, median 'Shareholder Right Score'. In Panel B, results are provided for each country, for the countries with at least 3 foreign issuers listed in U.S. exchanges. Along with the t-statistics for EW portfolios (t-car), I report t-statistics adjusted by BMP approach (appendix C.1) for event induced variance (t-scar), and further adjusted by KP approach (appendix C.2) for possible cross-correlation (t-scar adj) and the test statistics for non-parametric Wilcoxon sign test. Percentage of observations with positive reaction from non-parametric test helps to document whether the impact is widespread or not.

Panel A: CAR Result for sub-groups of Legal Origin and the Institutional environment measure, median 'Shareholder Right Score'

N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	Legal Origin
Legal Origin							
380	-4.95%	32.37%	-4.35	-7.47	-2.11	-6.87	Common
279	-5.52%	31.54%	-5.02	-7.60	-1.89	-6.17	Civil
Shareholder Rights Score							Shr. Rights Score
377	-5.81%	30.24%	-5.21	-9.00	-2.55	-7.67	Above Median
282	-4.37%	34.40%	-3.81	-5.76	-1.45	-5.24	Below Median
Legal Origin - Country Groups							Legal Org. Country Groups
380	-4.95%	32.37%	-4.35	-7.47	-2.11	-6.87	English
185	-5.29%	35.14%	-4.42	-5.32	-1.59	-4.04	French
73	-7.73%	19.18%	-2.92	-6.04	-2.14	-5.27	German
21	0.11%	42.86%	0.03	-0.69	-0.46	-0.65	Scandinavian

Panel B: Results are provided for each country, for the countries with at least 3 foreign issuers

				By Country			
N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	country
11	-4.84%	54.55%	-0.51	-0.33	-0.22	0.3	argentina
19	-5.68%	26.32%	-1.98	-2.57	-1.92	-2.06	australia
5	-5.19%	20.00%	-0.88	-1.19	-0.75	-1.34	brazil
153	-5.36%	33.33%	-3.95	-5.07	-1.78	-4.12	canada
18	-8.49%	16.67%	-3.42	-3.65	-2.02	-2.83	chile
15	-6.89%	26.67%	-3.29	-3.64	-1.83	-1.81	china
81	-2.42%	32.10%	-0.65	-2.43	-1.08	-3.22	england
5	4.54%	60.00%	0.77	0.68	0.59	0.45	finland
29	-4.91%	41.38%	-1.7	-1.63	-0.81	-0.93	france
22	-0.78%	31.82%	-0.1	-1	-0.64	-1.71	germany
10	-7.06%	30.00%	-0.84	-1.61	-1.47	-1.26	hong kong
10	-14.82%	10.00%	-4.15	-4.04	-2.87	-2.53	india
13	-4.55%	30.77%	-1.2	-1.89	-1.54	-1.39	ireland
77	-3.74%	36.36%	-1.63	-2.03	-0.9	-2.39	israel
13	-4.08%	30.77%	-1.23	-1.29	-0.94	-1.39	italy
27	-9.85%	11.11%	-4.91	-6.3	-2.15	-4.04	japan
24	-4.72%	33.33%	-2.01	-1.91	-0.99	-1.63	mexico
34	-3.82%	32.35%	-1.08	-1.85	-1.02	-2.06	netherlands
6	-0.44%	33.33%	-0.14	-0.77	-0.64	-0.82	norway
6	-25.56%	33.33%	-2.18	-2.41	-1.51	-0.82	singapore
8	-1.36%	25.00%	-0.44	-0.55	-0.28	-1.41	south africa
6	-14.45%	0.00%	-4.23	-3.37	-2.25	-2.45	south korea
7	1.46%	57.14%	0.5	0.39	0.19	0.38	spain
7	-10.10%	28.57%	-1.72	-1.63	-1.41	-1.13	sweden
12	-3.94%	33.33%	-1.2	-1.07	-0.61	-1.15	switzerland
5	-29.08%	0.00%	-5.9	-5.4	-2.29	-2.24	taiwan

Table 9 – Cross-Sectional Analysis: Size & Growth factors

Cross-sectional analysis using Sefcik and Thompson (1986) approach (Appendix C.3) in MVRM setting to address the possible cross correlation. Table 9 presents the results for size and growth measures after controlling for firm, industry and country factors. All regressions control for leverage, ROA, and also country level measures such as institutional environment, growth and capital market development measures. All regressions include industry fixed effects to control for otherwise uncaptured industry effect. Regressions 1-4 study the size effect and the association with the market reaction. Regressions 5-10 analyze the firm level growth measures.

Panel A: Regression results using Shareholder Rights Score as a measure for institutional environment

	Regression No									
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
Size										
log(Asset)	**-0.00735**</br>(0.0461)**	-0.00648</br>(0.1591)			**-0.00737**</br>(0.0451)**	**-0.00774**</br>(0.0356)**	**-0.00783**</br>(0.0372)**	**-0.00781**</br>(0.0378)**	**-0.00793**</br>(0.0330)**	-0.00899</br>(0.5401)
*Gov*log(Asset)*		-0.00211</br>(0.7383)								-0.00393</br>(0.8692)
log(MktCap)			**-0.00897**</br>(0.0105)**	**-0.00842***</br>(0.0618)**						-0.01559</br>(0.2690)
*Gov*log(MktCap)*				-0.00121</br>(0.8470)						0.000104</br>(0.9965)
Growth										
Sales Growth					-0.00246</br>(0.6296)	-0.00420</br>(0.4257)			-0.00213</br>(0.6782)	-0.00331</br>0.5367
Gov*SalesGrowth						0.02802</br>(0.1460)				0.02998</br>(0.1267)
Mkt2Book							-0.00319</br>(0.3703)	-0.00204</br>(0.5977)	-0.00345</br>(0.3272)	0.001789</br>(0.7324)
Gov*Mkt2Book								-0.00733</br>(0.4786)		-0.00414</br>(0.7961)
Governance										
Share Rights Sc.		0.02068</br>(0.6618)		0.01425</br>(0.7557)		0.00173</br>(0.9186)		0.01867</br>(0.4446)	0.00743</br>(0.6547)	0.03428</br>(0.5483)
Leg Origin										
Controls:										
Industry Fixed	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*
Firm Level										
Leverage	-0.01737</br>(0.6474)	-0.01887</br>(0.6210)	-0.03273</br>(0.3781)	-0.03391</br>(0.3634)	-0.03126</br>(0.4172)	-0.03130</br>(0.4169)	-0.02322</br>(0.5512)	-0.02464</br>(0.5283)	-0.03832</br>(0.3287)	-0.06110</br>(0.1562)
ROA	0.03818</br>(0.2698)	0.03851</br>(0.2669)	0.04639</br>(0.1822)	0.04628</br>(0.1852)	0.01008</br>(0.7775)	0.01544</br>(0.6668)	0.04085</br>(0.2447)	0.04329</br>(0.2214)	0.01325</br>(0.7126)	0.02482</br>(0.4969)
Country:										
GDP Growth	**-0.01059**</br>(0.0139)**	**-0.00993**</br>(0.0282)**	**-0.01070**</br>(0.0141)**	**-0.01022**</br>(0.0241)**	**-0.00964**</br>(0.0262)**	**-0.00941**</br>(0.0338)**	**-0.01034**</br>(0.0180)**	**-0.01039**</br>(0.0210)**	**-0.0090**</br>(0.0431)**	**-0.00944**</br>(0.0404)**
MktCap / GDP	-0.00018</br>(0.1343)	-0.00016</br>(0.2425)	-0.00015</br>(0.2315)	-0.00012</br>(0.3639)	-0.00013</br>(0.3027)	-0.00009</br>(0.4856)	-0.00016</br>(0.2002)	-0.00013</br>(0.3302)	-0.00008</br>(0.5530)	-0.00003</br>(0.8199)

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Panel B: Regression results using Legal Origin as the institutional environment measure.
Regressions 1-4 study the size effect and the association with the market reaction. Regressions 5-10 analyze the firm level growth measures.

	Regression No									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Size										
log(Asset)	**-0.00735**** **(0.0461)**	-0.00626 (0.2084)			**-0.00737**** **(0.0451)**	**-0.00759*** **(0.0567)**	**-0.00783**** **(0.0372)**	**-0.00816**** **(0.0446)**	**-0.00796**** **(0.0473)**	0.01509 (0.3034)
Gov*log(Asset)		-0.00359 (0.6151)								-0.02869 (0.2551)
log(MktCap)			**-0.00897**** **(0.0105)**	**-0.00851*** **(0.0649)**						-0.0213 (0.1201)
Gov*log(MktCap)				-0.00179 (0.7915)						0.02480 (0.3125)
Growth										
Sales Growth					-0.00246 (0.6296)	-0.00375 (0.4767)			-0.00228 (0.6557)	-0.00251 0.6383
Gov*SalesGrowth						0.01933 (0.3216)				0.01737 (0.3787)
Mkt2Book							-0.00319 (0.3703)	-0.00220 (0.5612)	-0.00360 (0.3052)	0.003061 (0.5521)
Gov*Mkt2Book								-0.00811 (0.4586)		-0.01645 (0.3399)
Governance										
Share Rights Sc.										
Leg Origin		0.02991 (0.5749)		0.01608 (0.7449)		-0.00254 (0.8881)		0.01620 (0.5272)	0.00044 (0.9802)	0.05689 (0.3745)
Controls:										
Industry Fixed	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*
Firm Level										
Leverage	-0.01737 (0.6474)	-0.01722 (0.6508)	-0.03273 (0.3781)	-0.03298 (0.3786)	-0.03126 (0.4172)	-0.03027 (0.4328)	-0.02322 (0.5512)	-0.02355 (0.5463)	-0.03784 (0.3347)	-0.05620 (0.1916)
ROA	0.03818 (0.2698)	0.03447 (0.3285)	0.04639 (0.1822)	0.04435 (0.2093)	0.01008 (0.7775)	0.009914 (0.7816)	0.04085 (0.2447)	0.04279 (0.2264)	0.01352 (0.7075)	0.01309 (0.7210)
Country:										
GDP Growth	**-0.01059**** **(0.0139)**	**-0.01052**** **(0.0151)**	**-0.01070**** **(0.0141)**	**-0.01070**** **(0.0147)**	**-0.00964**** **(0.0262)**	**-0.00971**** **(0.0257)**	**-0.01034**** **(0.0180)**	**-0.01070**** **(0.0156)**	**-0.00939**** **(0.0316)**	**-0.01012**** **(0.0221)**
MktCap / GDP	-0.00018 (0.1343)	-0.00018 (0.1542)	-0.00015 (0.2315)	-0.00014 (0.2699)	-0.00013 (0.3027)	-0.00012 (0.3525)	-0.00016 (0.2002)	-0.00014 (0.2741)	-0.00010 (0.4335)	-0.00010 (0.4673)

Table 10 – Risk Taking Measures

Table 10 presents the results for the market based and accounting based risk taking measures after controlling for firm, industry and country factors. All regressions control for leverage, ROA, and also country level measures such as institutional environment, growth and capital market development measures. All regressions include industry fixed effects to control for otherwise uncaptured industry effect. Regressions 1-6 study the market based risk taking measures, along with the interaction variable with institutional environment dummy. Regressions 7-12 consider the risk taking measures based on the accounting measures.

	Regression No											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
log(Asset)	-0.00888* (0.0517)	-0.00898** (0.0500)	-0.00853* (0.0660)	-0.00864* (0.0640)	-0.00742** (0.0462)	-0.00741** (0.0465)	-0.00574 (0.2461)	-0.00577 (0.2446)	-0.00515 (0.1846)	-0.00540 (0.1681)	-0.00899** (0.0197)	-0.00904** (0.0191)
Mkt2Book	-0.00264 (0.4564)	-0.00269 (0.4482)	-0.00265 (0.4538)	-0.00271 (0.4460)	-0.00232 (0.5192)	-0.00228 (0.5276)	-0.00279 (0.4985)	-0.00303 (0.4660)	-0.00204 (0.5702)	-0.00199 (0.5794)	-0.00180 (0.6153)	-0.00200 (0.5789)
Market Measures												
Sigma Ret	-0.2448 (0.5933)	-0.1846 (0.7135)										
*Gov*SigmaRet*		-0.1846 (0.7696)										
Unsystematic			-0.1793 (0.7006)	-0.1248 (0.8065)								
*Gov*Unsystematic*				-0.1701 (0.7895)								
Systematic					-0.00429 (0.6707)	-0.00711 (0.6168)						
*Gov*Systematic*						0.0051 (0.7779)						
B/S Measures												
R&D / Asset							-0.3781 (0.7796)	-0.00135 (0.9929)				
Gov*R&D ratio								-0.08786 (0.6085)				
Capex / Asset									-0.01182 (0.9237)	-0.06972 (0.6824)		
Gov*Capex ratio										0.1203 (0.6216)		
Cash / Asset											-0.06755 (0.1419)	-0.05355 (0.3300)
Gov*Cash ratio												-0.03200 (0.6418)
Governance												
Share Rights Sc.	0.00711 (0.6646)	0.01524 (0.6366)	0.00689 (0.6739)	0.01415 (0.6559)	0.00755 (0.6475)	0.0055 (0.7600)	0.0048 (0.8211)	0.1161 (0.6442)	0.0033 (0.8442)	-0.00427 (0.8516)	0.00788 (0.6302)	0.01384 (0.5057)
Leg Origin												
	Controls:											
Industry Fixed	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*
Firm Level												
Leverage	-0.0180 (0.6407)	-0.01753 (0.6503)	-0.01778 (0.6452)	-0.01732 (0.6544)	-0.02057 (0.5983)	-0.02146 (0.5842)	-0.06759 (0.2030)	-0.06820 (0.1996)	-0.04008 (0.3131)	-0.04076 (0.3056)	-0.04573 (0.2864)	-0.04563 (0.2878)
ROA	0.03416 (0.3470)	0.03360 (0.3561)	0.03582 (0.3235)	0.03529 (0.3318)	0.03702 (0.2953)	0.03714 (0.2941)	0.006700 (0.8973)	0.005165 (0.9210)	0.02644 (0.4542)	0.02923 (0.4143)	0.0276 (0.4389)	0.02790 (0.4344)
Country:												
GDP Growth	-0.00960** (0.0303)	-0.00973** (0.0291)	-0.00964** (0.0297)	-0.00975** (0.0287)	-0.00984** (0.0259)	-0.00972** (0.0285)	-0.01031* (0.0974)	-0.01081* (0.0865)	-0.00995** (0.0277)	-0.01034** (0.0243)	-0.01006** (0.0226)	-0.01016** (0.0216)
MktCap / GDP	-0.00013 (0.3327)	-0.00014 (0.3160)	-0.00013 (0.3203)	-0.00014 (0.3060)	-0.00014 (0.3016)	-0.00014 (0.3059)	-0.00011 (0.5508)	-0.00012 (0.5206)	-0.00019 (0.1650)	-0.00019 (0.1699)	-0.00012 (0.3683)	-0.00013 (0.3432)

Table 11 – Univariate Results for Foreign issuers and U.S. firms

Table 11 provides the cumulative market reaction for foreign issuers' portfolio and the U.S. firms' portfolio. Panel A provides the results for the subgroups of SOX compliance, non-complaint OTC listings versus SOX mandated listings on organized exchanges. Since, OTC traded listings are not registered under Securities Act, SOX compliance is not mandatory for these firms. Within the group of exchange listed issues, Panel B displays the findings by the exchange listed, Amex, NASDAQ and NYSE. Along with the t-statistics for EW portfolios (t-car), I report t-statistics adjusted by BMP approach (appendix C.1) for event induced variance (t-scar), and further adjusted by KP approach (appendix C.2) for possible cross-correlation (t-scar adj) and the test statistics for non-parametric Wilcoxon sign test. Percentage of observations with positive reaction from non-parametric test helps to document whether the impact is widespread or not.

N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	Listing
			Foreign Issuers				
659	-4.95%	32.17%	-5.28	-9.89	-1.99	-9.15	Exch Listed
15	6.26%	33.33%	0.47	-0.20	-0.19	-1.29	OTC Listed
			U.S. Firms				
N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	Listing
5142	-6.86%	29.72%	-24.06	-33.72	-4.27	-29.09	Exch Listed
767	-2.91%	41.98%	-1.10	-2.83	-0.88	-4.44	OTC Listed

N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	Listing
			Foreign Issuers				
20	16.12%	50.00%	1.23	1.33	0.88	0.00	AMEX
291	-4.08%	37.11%	-2.44	-3.51	-1.18	-4.40	NASDAQ
348	-6.88%	27.01%	-9.14	-11.78	-2.61	-8.58	NYSE
15	6.26%	33.33%	0.47	-0.20	-0.19	-1.29	OTC Listed
			U.S. Firms				
N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	Listing
501	-2.54%	40.92%	-2.51	-4.95	-1.36	-4.07	AMEX
2735	-5.47%	36.60%	-12.12	-15.10	-1.75	-14.02	NASDAQ
1906	-9.99%	16.89%	-32.86	-37.52	-5.30	-28.91	NYSE
767	-2.91%	41.98%	-1.10	-2.83	-0.88	-4.44	OTC Listed

PANEL B: Univariate Results for Foreign issuers by Legal Origin

Table 11 - Panel B provides the mean CAR Result for sub-groups of Legal Origin and the Institutional environment measure, median 'Shareholder Right Score'. I use LLSV (1998) classification to group jurisdiction as common vs. civil legal origin. I also use Shareholder Rights Score from LLSV (1998) as country level investor protection proxy. Panel A presents the result for sub-groups of home country legislation characteristics 'Legal Origin', and the Institutional environment measure, median 'Shareholder Right Score'. In Panel B, results are provided for each country, for the countries with at least 3 foreign issuers listed in U.S. exchanges. Along with the t-statistics for EW portfolios (t-car), I report t-statistics adjusted by BMP approach (appendix C.1) for event induced variance (t-scar), and further adjusted by KP approach (appendix C.2) for possible cross-correlation (t-scar adj) and the test statistics for non-parametric Wilcoxon sign test. Percentage of observations with positive reaction from non-parametric test helps to document whether the impact is widespread or not.

N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	Legal Origin
Legal Origin							
380	-4.05%	33.42%	-3.00	-6.27	-1.77	-6.46	Common
279	-6.17%	30.47%	-5.01	-8.02	-1.99	-6.53	Civil
Shareholder Rights Score							
N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	Shr. Rights Score
377	-4.93%	31.30%	-3.78	-7.89	-2.24	-7.26	Above Median
282	-4.98%	33.33%	-3.76	-5.97	-1.50	-5.60	Below Median
Legal Origin - Country Groups							
N	CAR	% positive	t_car	t_scar	t_scar_adj	t_sign	Legal Org. Country Groups
380	-4.05%	33.42%	-3.00	-6.27	-1.77	-6.46	English
185	-5.70%	33.51%	-4.22	-5.65	-1.69	-4.48	French
73	-8.76%	19.18%	-3.06	-6.30	-2.23	-5.27	German
21	-1.28%	42.86%	-0.25	-1.01	-0.68	-0.65	Scandinavian

Table 12 – Risk Taking Analysis (without LLSV measures)

Table 12 presents the results for the market based and accounting based risk taking measures after controlling for firm, industry and country factors. All regressions control for leverage, ROA, and also country level measures such as institutional environment, growth and capital market development measures. All regressions include industry fixed effects to control for otherwise uncaptured industry effect. Regressions 1-6 study the market based risk taking measures, along with the interaction variable with institutional environment dummy. Regressions 7-12 consider the risk taking measures based on the accounting measures.

	Regression No					
	(1)	**(3)**	**(5)**	**(7)**	**(9)**	**(11)**
log(Asset)	**-0.00878***	**-0.00845***	**-0.00738****	-0.00575	-0.00515	**-0.00892****
	(0.0538)	**(0.0682)**	**(0.0469)**	(0.2447)	(0.1841)	**(0.0205)**
Mkt2Book	-0.00280	-0.00281	-0.00253	-0.00293	-0.00211	-0.00199
	(0.4268)	(0.4252)	(0.4788)	(0.4716)	(0.5534)	(0.5757)
Market Measures						
Sigma Ret	-0.2345					
	(0.6081)					
*Gov*SigmaRet*						
Unsystematic		-0.1719				
		(0.7121)				
*Gov*Unsystematic*						
Systematic			-0.0037			
			(0.7111)			
*Gov*Systematic*						
B/S Measures						
R&D / Asset				-0.03656		
				(0.7862)		
Gov*R&D ratio						
Capex / Asset					-0.01087	
					(0.9297)	
Gov*Capex ratio						
Cash / Asset						-0.06643
						(0.1479)
Gov*Cash ratio						
Governance						
Share Rights Sc.	-	-	-	-	-	-
Leg Origin	-	-	-	-	-	-
Controls:						
Industry Fixed	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*	*(17 factors)*
Firm Level						
Leverage	-0.01741	-0.01721	-0.01960	-0.06655	-0.03995	-0.0446
	(0.6514)	(0.6554)	(0.6149)	(0.2076)	(0.3142)	(0.2973)
ROA	0.03485	0.03642	0.03787	0.00752	0.02673	0.02831
	(0.3365)	(0.3146)	(0.2832)	(0.8844)	(0.4484)	(0.4266)
Country:						
GDP Growth	**-0.00999****	**-0.01003****	**-0.01024****	**-0.01064***	**-0.01012****	**-0.01048****
	(0.0211)	**(0.0208)**	**(0.0180)**	**(0.0779)**	**(0.0224)**	**(0.0153)**
MktCap / GDP	-0.00015	-0.00015	-0.00016	-0.00012	-0.0002	-0.00014
	(0.2216)	(0.2141)	(0.1928)	(0.4680)	(0.1147)	(0.2433)

Table 13 – Descriptive Statistics

All I/B/E/S forecast data are for the month closest to, but preceding by [-3, -1] months, the annual earnings announcement. ERROR is the absolute forecast error, |actual-median forecast|, scaled by the firm's stock price five, six or ten days before the earnings announcement. DISPERSION is the standard deviation of analysts' forecasts scaled by the firm's stock price before the earnings announcement. |CAR| is the absolute value of the abnormal return for a three-day window centered on the earnings announcement date calculated from a market model estimated over the period from 210 to 11 days before the earnings announcement date. VOLATILITY is the standard deviation of market model residuals over the period from 210 to 11 days before the earnings announcement date. BA is the total assets reported at the previous fiscal year-end in millions of dollars. ME is the market value of a firm's equity at the end of the previous fiscal year in millions of dollars. RD/Sales is the ratio of R&D expense to sales at the previous fiscal year-end. MTB is the ratio of the firm's market value (market value of equity plus the book value of total assets minus the book value of equity) to the firm's book value of total assets at the prior fiscal year-end. LEVERAGE is the ratio of long-term debt and debt in current liabilities to total assets. Intang/Asset is the ratio of intangible assets to total assets at the previous fiscal year-end. Differences in means are assessed using paired t-test and medians are assessed using a Wilcoxon rank-sum test.

		Foreign Issuers Sample				U.S. Matching Sample					Mean test			Median test	
	Variable	N	Mean	Median	Std Dev	Variable	N	Mean	Median	Std Dev	Mean Diff	T-test	p-value	Median Diff	Wilcoxon Z
1995-97	CAR|[-1,+1]	195	0.57%	0.26%	4.08%	CAR|[-1,+1]	173	0.55%	0.10%	4.25%	0.02%	0.03	0.973	0.15%	-1.06
	|CAR| [-1,+1]	195	3.59%	2.63%	2.92%	|CAR| [-1,+1]	173	4.11%	3.23%	3.22%	-0.51%	-2.39	0.017	-0.60%	-2.00
	AR_sigma	195	2.42%	1.69%	1.93%	AR_sigma	173	2.54%	2.09%	1.74%	-0.11%	-1.59	0.112	-0.40%	-2.87
	Volatility	195	2.55%	2.11%	1.40%	Volatility	173	2.30%	1.89%	1.18%	0.25%	2.14	0.033	0.22%	2.11
	Error	194	1.03%	0.42%	1.55%	Error	173	0.32%	0.15%	0.45%	0.71%	7.44	<.0001	0.26%	10.21
	Dispersion	195	0.82%	0.42%	1.12%	Dispersion	173	0.24%	0.13%	0.29%	0.58%	9.00	<.0001	0.30%	13.85
	Num.Analyst	195	7.56	5.00	6.47	Num.Analyst	173	11.83	9.00	8.83	-4.27	-6.86	<.0001	-4.00	-6.88
	BA	195	$16,415	$1,730	$60,722	BA	173	$8,939	$1,207	$24,273	$7,476	2.19	0.029	$523	0.84
	ME	195	$7,636	$1,783	$15,735	ME	173	$7,029	$1,556	$14,315	$607	0.26	0.792	$227	1.57
	MTB	195	2.26	1.66	2.00	MTB	173	2.30	1.64	2.08	-0.04	-0.25	0.803	0.02	-0.53
	log (MTB)	195	0.62	0.50	0.54	log (MTB)	173	0.63	0.47	0.54	-0.01	-0.51	0.610	0.03	-0.53
	log (ME)	195	7.40	7.46	1.97	log (ME)	173	7.32	7.25	1.90	0.08	1.04	0.299	0.21	1.57
	Leverage	195	40.65%	39.48%	25.04%	Leverage	173	41.15%	41.57%	28.00%	-0.49%	-0.04	0.969	-2.08%	0.29
	RD/Asset	110	11.03%	4.01%	25.54%	RD/Asset	94	11.56%	2.82%	40.50%	-0.52%	-0.11	0.911	1.18%	0.89
	Intang/Asset	178	4.88%	1.00%	8.90%	Intang/Asset	144	8.91%	2.85%	12.78%	-4.04%	-5.05	<.0001	-1.85%	-5.29
1998-00	CAR|[-1,+1]	285	0.62%	0.20%	6.19%	CAR|[-1,+1]	217	0.09%	0.22%	5.25%	0.53%	1.00	0.319	-0.02%	0.71
	|CAR| [-1,+1]	285	5.43%	4.54%	4.12%	|CAR| [-1,+1]	217	5.23%	4.46%	3.65%	0.20%	0.27	0.784	0.08%	0.66
	AR_sigma	285	3.50%	2.96%	2.42%	AR_sigma	217	3.52%	3.03%	2.21%	-0.02%	-0.83	0.408	-0.07%	-0.44
	Volatility	285	3.50%	3.06%	1.60%	Volatility	217	3.26%	2.83%	1.34%	0.24%	2.08	0.038	0.24%	2.06
	Error	279	1.46%	0.60%	2.12%	Error	216	0.61%	0.14%	1.20%	0.86%	8.19	<.0001	0.47%	12.48
	Dispersion	285	1.26%	0.56%	1.90%	Dispersion	217	0.39%	0.12%	0.73%	0.87%	10.30	<.0001	0.44%	16.45
	Num.Analyst	285	7.61	6.00	6.09	Num.Analyst	217	10.48	8.00	8.00	-2.87	-6.17	<.0001	-2.00	-5.55
	BA	285	$20,870	$1,749	$68,004	BA	217	$15,145	$1,788	$45,329	$5,725	1.40	0.162	-$38	1.37
	ME	285	$12,718	$2,201	$27,603	ME	217	$12,198	$1,748	$28,577	$520	-0.09	0.932	$453	-0.65
	MTB	285	2.67	1.59	3.37	MTB	217	2.66	1.61	2.89	0.01	-0.61	0.541	(0.03)	-1.23
	log (MTB)	285	0.62	0.46	0.70	log (MTB)	217	0.65	0.48	0.65	-0.03	-0.91	0.361	(0.02)	-1.23
	log (ME)	285	7.61	7.68	2.09	log (ME)	217	7.53	7.46	2.05	0.08	-0.31	0.760	0.22	-0.65
	Leverage	285	38.09%	38.58%	22.96%	Leverage	217	40.08%	40.60%	23.90%	-1.99%	0.20	0.841	-2.02%	0.12
	RD/Asset	160	13.87%	5.26%	29.32%	RD/Asset	101	17.17%	3.92%	49.20%	-3.30%	-1.39	0.165	1.33%	1.13
	Intang/Asset	263	8.17%	3.36%	12.29%	Intang/Asset	190	11.70%	4.31%	16.40%	-3.53%	-3.15	0.002	-0.95%	-3.37
2003-05	CAR|[-1,+1]	313	-0.15%	-0.32%	3.99%	CAR|[-1,+1]	216	0.38%	0.00%	4.37%	-0.54%	-1.99	0.046	-0.32%	-2.07
	|CAR| [-1,+1]	313	3.94%	3.29%	2.88%	|CAR| [-1,+1]	216	4.55%	3.81%	3.16%	-0.61%	-2.36	0.018	-0.52%	-1.19
	AR_sigma	313	2.62%	2.05%	1.89%	AR_sigma	216	2.77%	2.23%	1.92%	-0.15%	-1.37	0.171	-0.18%	-0.48
	Volatility	313	2.25%	1.95%	1.02%	Volatility	216	2.17%	1.90%	1.06%	0.09%	0.89	0.374	0.04%	1.88
	Error	311	1.01%	0.46%	1.78%	Error	216	0.39%	0.20%	0.63%	0.61%	7.26	<.0001	0.26%	10.67
	Dispersion	313	0.68%	0.40%	0.85%	Dispersion	216	0.31%	0.12%	0.54%	0.37%	8.33	<.0001	0.28%	14.36
	Num.Analyst	313	6.27	4.00	5.95	Num.Analyst	216	9.62	6.00	7.77	-3.35	-7.45	<.0001	-2.00	-7.95
	BA	313	$39,012	$3,715	$145,250	BA	216	$27,697	$3,573	$104,529	$11,315	1.35	0.179	$142	0.25
	ME	313	$13,395	$3,278	$25,930	ME	216	$13,049	$3,162	$25,621	$346	0.05	0.963	$116	0.33
	MTB	311	1.96	1.61	1.30	MTB	215	2.11	1.57	1.50	-0.15	-2.08	0.038	0.04	-1.48
	log (MTB)	311	0.54	0.47	0.45	log (MTB)	215	0.59	0.45	0.50	-0.04	-1.87	0.062	0.03	-1.48
	log (ME)	313	8.07	8.08	1.84	log (ME)	216	8.10	8.05	1.76	(0.03)	0.04	0.965	0.03	0.33
	Leverage	312	37.52%	37.63%	19.30%	Leverage	216	38.14%	39.02%	21.23%	-0.62%	-0.01	0.990	-1.40%	-0.38
	RD/Asset	180	13.07%	4.82%	27.48%	RD/Asset	123	11.53%	3.10%	28.55%	1.54%	0.44	0.659	1.72%	-1.66
	Intang/Asset	310	13.13%	5.12%	17.30%	Intang/Asset	213	17.43%	10.29%	19.16%	-4.30%	-3.88	0.000	-5.16%	-4.13

Table 14 – Correlations between Information measures and Firm characteristics

This table displays the Pearson correlations for the sample used in the analysis. The sample includes firm-years in the period of July 1995 - June 2000 and July 2003 - June 2005 that have sufficient I/B/E/S, Compustat and CRSP data used in the analysis. P-values are presented with the estimated correlation coefficients. This sample includes foreign issuers and comparable U.S. firms matched with the market value of equity at the beginning of each 3-years period. The sample firms is restricted by the data requirements, and cover the firms with analyst forecast and earnings data available from I/B/E/S for fiscal years ending between C. Firms must be followed by at least three analysts for a reasonable dispersion measure and also have data available from Compustat and CRSP databases. Firms in regulated industries (regulated utilities, financial services) are excluded. Additionally, observations for which absolute forecast error is greater than 100% of the stock price are also excluded. The number of foreign issuers and U.S. firms for each analysis period is reported in the table, along with the total number of unique firm for each sample.

	Foreign	|CAR|[-1,+1]	AR sigma	Volatility	Error	Dispersion	Num. Analyst	log(BA)	log(ME)	log(MTB)	Leverage	RD/Sales
Pearson Correlation Coefficients **Prob > |r| under H0: Rho=0**												
Foreign	100.0%											
|CAR|[-1,+1]	-3.7% 0.034	100.0%										
AR sigma	-3.3% 0.065	47.5% <.0001	100.0%									
Volatility	4.4% 0.013	37.3% <.0001	46.4% <.0001	100.0%								
Error	22.1% <.0001	1.1% 0.527	1.8% 0.307	19.5% <.0001	100.0%							
Dispersion	26.0% <.0001	0.6% 0.736	0.2% 0.914	20.4% <.0001	50.1% <.0001	100.0%						
Num. Analyst	-21.5% <.0001	-0.2% 0.925	-1.5% 0.395	-13.8% <.0001	-18.1% <.0001	-15.6% <.0001	100.0%					
log(BA)	0.6% 0.752	-27.0% <.0001	-32.4% <.0001	-57.3% <.0001	-9.3% <.0001	-7.2% <.0001	27.9% <.0001	100.0%				
log(ME)	1.9% 0.287	-22.2% <.0001	-24.1% <.0001	-48.2% <.0001	-18.5% <.0001	-18.1% <.0001	39.4% <.0001	87.7% <.0001	100.0%			
log(MTB)	-3.6% 0.042	14.3% <.0001	21.0% <.0001	27.8% <.0001	-17.1% <.0001	-21.7% <.0001	16.5% <.0001	-31.5% <.0001	13.4% <.0001	100.0%		
Leverage	-0.4% 0.808	-0.8% 0.641	-2.6% 0.134	-8.8% <.0001	6.3% 0.000	2.3% 0.196	-4.8% 0.007	8.1% <.0001	9.9% <.0001	3.4% 0.051	100.0%	
RD/Sales	-0.7% 0.689	9.2% <.0001	16.2% <.0001	29.9% <.0001	4.3% 0.016	4.5% 0.010	-4.4% 0.012	-23.3% <.0001	-13.3% <.0001	24.6% <.0001	-7.3% <.0001	100.0%
log(1+(Intang/Assets))	-10.6% <.0001	2.0% 0.287	1.8% 0.325	-6.2% 0.001	-6.8% 0.000	-9.2% <.0001	-1.1% 0.563	-3.4% 0.065	0.2% 0.921	-0.7% 0.701	13.5% <.0001	-0.5% 0.792

Table 15 – Regressions for Forecast Error and Dispersion, separate for each analysis period.

Separate panel regressions of analysts' forecast errors and dispersion on firm characteristics for each analysis period. The dependent variable is ERROR, the absolute forecast error, |actual-median forecast|; scaled by the firm's stock price before the earnings announcement. ln(BA) is the natural log of total assets reported at the previous fiscal year-end. RD/Sales is the ratio of R&D expense to sales at the previous fiscal year-end. Leverage is the ratio of long-term debt and debt in current liabilities to total assets. Ln(1+Intang2Asset) is the natural log of one plus the ratio of intangible assets to total assets at the previous fiscal year-end. Volatility is the standard deviation of market model residuals over the period from 210 to 11 days before the earnings announcement date. The regressions also include FOREIGN dummy variables for foreign firms. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

		Error						Dispersion					
	regression	1	2	3	4	5	6	1	2	3	4	5	6
1995-97	Intercept	0.003	0.006	0.005	0.004	0.004	-0.007	0.002	0.004	0.003	0.003	0.003	-0.008
		5.02***	3.57***	3.27***	2.36**	2.45**	-2.36**	5.16***	3.47***	2.83***	2.19**	2.4**	-3.95***
	Foreign	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
		7.08***	7.09***	7.13***	7.14***	6.9***	6.45***	9.63***	9.64***	9.85***	9.85***	9.46***	8.94***
	ln(BA)		0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000
			-1.79*	-2.14**	-2.27**	-2.3**	1.21		-1.63	-2.15**	-2.24**	-2.29**	2.43**
	RD/Sales			0.000	0.000	0.000	0.000			0.000	0.000	0.000	0.000
				0.44	0.42	0.47	0.14			2.5***	2.49**	2.58***	2.16**
	missing R&D/Sales			0.002	0.002	0.002	0.003			0.003	0.003	0.003	0.003
				2.37**	2.53**	2.49**	3.19***			4.17**	4.26***	4.2***	5.24***
	Leverage				0.003	0.004	0.004				0.002	0.002	0.002
					2.01**	2.11**	2.51**				1.32	1.56	2.12**
	ln(1+Intang2Asset)					-0.003	-0.001					-0.004	-0.002
						-0.72	-0.2					-1.35	-0.63
	Volatility						0.224						0.216
							4.63***						6.55***
	Adj R-sq	5.21%	5.45%	5.84%	6.16%	6.11%	8.22%	9.31%	9.48%	11.51%	11.58%	11.66%	15.65%
1998-00	Intercept	0.005	0.012	0.011	0.009	0.010	-0.005	0.003	0.007	0.006	0.005	0.006	-0.006
		5.64***	5.3***	4.91***	3.82***	3.95***	-1.46	5.0***	4.53***	3.65***	3.08***	3.29***	-2.39**
	Foreign	0.010	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.009	0.009	0.008
		8.63***	8.51***	8.7***	8.62***	8.38***	8.11***	10.2***	10.09***	10.55***	10.5***	10.2***	9.94***
	ln(BA)		-0.001	-0.001	-0.001	-0.001	0.000		-0.001	-0.001	-0.001	-0.001	0.000
			-3.39***	-3.87***	-4.1***	-4.15***	-1.06		-2.82***	-3.74***	-3.82***	-3.89***	-0.52
	RD/Sales			0.000	0.000	0.000	-0.001			0.001	0.001	0.001	0.000
				-0.26	0.00	-0.05	-0.93			0.89	1.00	0.94	-0.06
	missing R&D/Sales			0.003	0.003	0.003	0.004			0.005	0.005	0.005	0.006
				2.69***	2.8***	2.78***	3.59***			5.65***	5.69***	5.67***	6.6***
	Leverage				0.006	0.007	0.008				0.002	0.002	0.003
					2.53**	2.67***	3.23***				1.13	1.35	1.97**
	ln(1+Intang2Asset)					-0.005	-0.006					-0.005	-0.006
						-1.03	-1.35					-1.4	-1.76*
	Volatility						0.249						0.202
							5.31***						5.98***
	Adj R-sq	6.42%	7.33%	7.81%	8.28%	8.28%	10.57%	8.78%	9.37%	11.85%	11.87%	11.95%	14.73%
2003-05	Intercept	0.004	0.007	0.007	0.004	0.005	-0.014	0.003	0.003	0.002	0.001	0.002	-0.010
		5.98***	4.28***	4.11***	2.12**	2.98***	-4.91***	7.8***	2.77***	2.57**	1.42	2.37**	-5.81***
	Foreign	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.003
		6.7***	6.72***	6.73***	6.8***	6.35***	6.25***	7.84***	7.84***	7.85***	7.86***	7.39***	7.33***
	ln(BA)		0.000	0.000	-0.001	-0.001	0.001		0.000	0.000	0.000	0.000	0.001
			-2.2**	-2.18**	-2.9***	-3.29***	2.69***		0.15	0.04	-0.36	-0.78	5.11***
	RD/Sales			0.000	0.000	0.000	0.000			0.000	0.000	0.000	0.000
				0.50	0.66	0.51	0.33			0.46	0.55	0.38	0.18
	missing R&D/Sales			0.000	0.001	0.000	0.001			0.001	0.001	0.001	0.001
				0.52	0.66	0.61	1.83*			1.23	1.3	1.26	2.58***
	Leverage				0.011	0.012	0.012				0.004	0.005	0.004
					5.69***	6.3***	6.18***				3.2***	3.9***	3.72***
	ln(1+Intang2Asset)					-0.010	-0.006					-0.007	-0.004
						-3.75***	-2.12**					-4.05***	-2.31**
	Volatility						0.396						0.254
							8.4***						9.07***
	Adj R-sq	3.30%	3.58%	3.47%	5.77%	6.72%	11.52%	4.49%	4.41%	4.39%	5.07%	6.20%	11.79%

Table 16 – Panel Regression for Forecast Error over the all observation period.

Panel regressions of analysts' forecast errors on firm characteristics. Specification is same as the separate regression analysis with ERROR, being the absolute forecast error, ln(BA) is the natural log of total , RD/Sales is the ratio of R&D expense to, Leverage is the ratio of long-term debt and debt in current liabilities to total assets, Ln(1+Intang2Asset) is the natural log of one plus the ratio of intangible assets to total assets at the previous fiscal year-end. Volatility is the standard deviation of market model residuals. The regressions also include time effects 1998-00 and 2003-05 along with the FOREIGN dummy variables for foreign firms. All factors are interacted with the time effects. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Regression	Error 1	2	3	4	5	6	7	8	9	10	11	12	13
Intercept	0.003 4.58***	0.003 4.25***	0.007 6.09***	0.006 3.03***	0.007 5.71***	0.007 5.71***	0.005 3.69***	0.006 4.2***	0.005 4.08***	0.005 3.84***	-0.009 -4.73***	-0.008 -3.66***	-0.007 -2.03**
Foreign	**0.007 12.91*****	**0.006 6.0*****	**0.006 6.02*****	**0.006 6.02*****	**0.006 6.04*****	**0.006 6.04*****	**0.006 6.08*****	**0.006 6.08*****	**0.006 5.83*****	**0.006 5.8*****	**0.006 5.35*****	**0.006 5.48*****	**0.006 5.53*****
1998-00	**0.004 5.0*****	0.002 1.62	**0.002 1.77***	**0.006 2.19****	0.002 1.62	0.002 1.63	**0.002 1.71***	0.001 0.55	**0.002 1.94***	0.002 1.57	-0.001 -1.08	-0.002 -1.33	0.003 0.59
2003-05	0.000 -0.21	0.000 0.47	0.001 0.96	0.001 0.39	0.001 1.07	0.001 1.07	0.001 1.38	-0.002 -1.1	**0.002 1.89***	**0.002 1.95***	0.001 1.42	-0.002 -0.96	-0.008 -1.61
Foreign*1998-00		**0.004 2.6*****	**0.004 2.53****	**0.004 2.48****	**0.004 2.61*****	**0.004 2.61*****	**0.004 2.54****	**0.004 2.54****	**0.004 2.53****	**0.004 2.51****	**0.004 2.69*****	**0.004 2.6*****	**0.004 2.48****
Foreign*2003-5		-0.001 -0.7	-0.001 -0.69	-0.001 -0.7	-0.001 -0.7	-0.001 -0.7	-0.001 -0.72	-0.001 -0.72	-0.001 -0.71	-0.001 -0.78	-0.001 -0.44	-0.001 -0.58	-0.001 -0.72
ln(BA)			**-0.001 -4.39*****	0.000 -1.52	**-0.001 -4.8*****	**-0.001 -4.8*****	**-0.001 -5.36*****	**-0.001 -5.45*****	**-0.001 -5.58*****	**-0.001 -5.59*****	0.000 1.31	0.000 1.45	0.000 1.04
ln(BA)*1998-00				**-0.001 -1.62***									-0.001 -1.54
ln(BA)*2003-05				0.000 -0.09									0.000 0.7
R&D/Sales					0.000 0.48	0.000 0.29	0.000 0.58	0.000 0.65	0.000 0.55	0.000 0.52	0.000 0.11	0.000 0.07	0.000 0.11
missing R&D/Sales					**0.002 3.18*****	**0.002 3.16*****	**0.002 3.43*****	**0.002 3.4*****	**0.002 3.38*****	**0.002 3.38*****	**0.003 4.97*****	**0.003 4.97*****	**0.003 4.94*****
R&D/Sales*1998-00					0.000 -0.22								-0.001 -1.27
R&D/Sales*2003-05					0.000 0								0.000 0.1
Leverage							**0.007 5.58*****	**0.003 1.74***	**0.007 6.08*****	**0.007 6.03*****	**0.008 6.79*****	**0.008 6.72*****	**0.004 2.14****
Leverage*1998-00								0.002 0.8					0.003 1.2
Leverage*2003-05								**0.008 2.69*****					**0.008 2.6****
ln(1+Intang2Asset)									**-0.007 -3.29*****	**-0.006 -1.04**	**-0.006 -2.57****	**-0.005 -2.43****	-0.001 -0.18
ln(1+Intang2Asset)*1998-00										0.001 0.1			-0.005 -0.79
ln(1+Intang2Asset)*2003-05										-0.003 -0.53			-0.005 -0.72
Volatility											**0.278 10.29*****	**0.218 4.77*****	**0.223 3.98*****
Volatility*1998-00											0.053 1.0	0.017 0.25	
Volatility*2003-05												**0.135 2.34****	**0.185 2.41****
Adj R-sq	5.85%	6.19%	6.71%	6.76%	6.95%	6.89%	7.80%	7.96%	8.08%	8.05%	10.96%	11.06%	11.27%

Table 17 - Panel Regression for Forecast Dispersion over the all observation period.

Panel regressions of dispersion among analysts' forecast on firm characteristics. Specification is same as the separate regression analysis with DISPERSION, being the standard deviation of analysts; forecasts, ln(BA) is the natural log of total , RD/Sales is the ratio of R&D expense to, Leverage is the ratio of long-term debt and debt in current liabilities to total assets, Ln(1+Intang2Asset) is the natural log of one plus the ratio of intangible assets to total assets at the previous fiscal year-end. Volatility is the standard deviation of market model residuals. The regressions also include time effects 1998-00 and 2003-05 along with the FOREIGN dummy variables for foreign firms. All factors are interacted with the time effects. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Regression	Dispersion												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Intercept	0.002	0.002	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.003	-0.006	-0.008	-0.008
	5.56***	4.48***	4.93***	3.01***	4.19***	4.04***	3.08***	3.04***	3.54***	3.31***	-4.73***	-5.46***	-3.45***
Foreign	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.006
	15.75***	8.34***	8.35***	8.36***	8.45***	8.5***	8.47***	8.47***	8.19***	8.13***	7.65***	7.7***	7.72***
1998-00	0.002	0.001	0.001	0.003	0.001	0.001	0.001	0.001	0.001	0.001	-0.001	-0.002	0.003
	4.6***	1.21	1.31	1.83*	1.02	1.04	1.06	0.78	1.32	1.17	-1.34	-1.45	1.11
2003-05	-0.001	0.001	0.001	-0.001	0.001	0.001	0.001	0.000	0.001	0.002	0.001	0.001	-0.003
	-1.6	0.79	1.09	-0.74	1.32	1.44	1.48	-0.01	2.07**	2.0**	1.28	0.67	-0.88
Foreign*1998-00		0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
		2.74***	2.69***	2.63***	2.84***	2.77***	2.8***	2.82***	2.8***	2.75***	2.75***	2.96***	2.79***
Foreign*2003-5		-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
		-2.43**	-2.43**	-2.43**	-2.45**	-2.51**	-2.45**	-2.46**	-2.45**	-2.48**	-2.17**	-2.2**	-2.31**
ln(BA)			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			-2.74***	-1.41	-3.63***	-3.55***	-3.91***	-3.95***	-4.16***	-4.17***	3.69***	3.33***	2.1**
ln(BA)*1998-00				0.000									-0.001
				-1.41									-1.86*
ln(BA)*2003-05				0.000									0.000
				1.17									0.88
R&D/Sales					0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
					1.61	2.15**	1.66*	1.69*	1.62*	1.6*	0.8	1.14	1.86*
missing R&D/Sales					0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
					6.48***	6.55***	6.6***	6.59***	6.55***	6.55***	8.4***	8.42***	8.49***
R&D/Sales*1998-00						0.000							0.000
						0.58							-0.87
R&D/Sales*2003-05						0.000							0.000
						-1.6							-1.38
Leverage							0.002	0.002	0.003	0.003	0.003	0.003	0.002
							2.84***	1.15	3.47***	3.44***	3.82***	4.24***	1.83*
Leverage*1998-00								0.000					0.001
								-0.1					0.37
Leverage*2003-05								0.003					0.002
								1.34					0.92
ln(1+Intang2Asset)									-0.006	-0.005	-0.005	-0.004	-0.002
									-3.77***	-1.23	-3.17***	-2.93***	-0.55
ln(1+Intang2Asset)*1998-00										0.000			-0.004
										-0.1			-0.87
ln(1+Intang2Asset)*2003-05										-0.002			-0.001
										-0.39			-0.33
Volatility											0.192	0.209	0.216
											10.57***	6.76***	5.69***
Volatility*1998-00												0.007	-0.029
												0.2	-0.63
Volatility*2003-05												0.014	0.056
												0.36	1.07
Adj R-sq	8.17%	8.98%	9.16%	9.32%	10.31%	10.35%	10.51%	10.52%	10.87%	10.82%	12.70%	14.49%	14.65%

Table 18 - Panel Regression for Earnings Announcement Abnormal returns, for each period.

Panel regressions of earnings announcement abnormal returns on firm characteristics. The dependent variable is |CAR|; the absolute abnormal return for the three-day window centered on the earnings announcement date calculated using a market model over the period 210–11 days before the announcement. FOREIGN is the foreign firms identifier. ERROR is the absolute forecast error, |actual earnings-median forecast|; scaled by the firm's stock price before the earnings announcement. DISPERSION is the standard deviation of analysts' forecasts scaled by the firm's stock price before the earnings announcement. Ln(MTB) is the natural log of the ratio of the firm's market value (market value of equity plus the book value of total assets minus the book value of equity) to the firm's book value of total assets at the prior fiscal year-end. Ln(ME) is natural log of the market value of a firm's equity at the end of the previous fiscal year. Leverage is the ratio of long-term debt and debt in current liabilities to total assets. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

		Abs CAR		
	regression	1	2	3
1995-97	Intercept	0.040	0.040	0.038
		26.7***	25.77***	22.49***
	Foreign	**-0.006**	**-0.007**	-0.004
		-2.53**	**-2.98*****	-1.62
	Error		-0.005	**1.101**
			-0.06	**2.43****
	Dispersion		**0.249**	**0.270**
			1.84*	**1.72***
	Foreign*Error			**-0.669**
				-2.33**
	Dispersion*Error			2.070
				0.41
	Ln(MTB)*Error			**0.463**
				2.41**
	Ln(ME)*Error			**-0.111**
				-2.43**
	Leverage*Error			-0.047
				-0.12
	Adj R-sq	0.50%	0.67%	2.58%
1998-00	Intercept	0.052	0.052	0.052
		27.92***	27.4***	25.11***
	Foreign	0.001	0.001	0.004
		0.34	0.19	1.12
	Error		-0.052	0.493
			-0.62	1.51
	Dispersion		0.103	-0.023
			0.88	-0.15
	Foreign*Error			-0.299
				-1.4
	Dispersion*Error			2.648
				1.05
	Ln(MTB)*Error			-0.020
				-0.13
	Ln(ME)*Error			**-0.091**
				-2.77***
	Leverage*Error			0.441
				1.42
	Adj R-sq	-0.07%	-0.17%	0.59%
2003-05	Intercept	0.043	0.043	0.043
		27.37***	26.51***	24.07***
	Foreign	**-0.004**	**-0.004**	-0.003
		-1.88*	**-2.04****	-1.16
	Error		0.051	**1.211**
			0.64	**3.12****
	Dispersion		0.045	0.038
			0.36	0.24
	Foreign*Error			-0.163
				-0.68
	Dispersion*Error			-0.431
				-0.12
	Ln(MTB)*Error			**0.399**
				2.42**
	Ln(ME)*Error			**-0.200**
				-4.58***
	Leverage*Error			0.344
				1.39
	Adj R-sq	0.19%	0.11%	1.76%

Table 19 - Panel Regression for Earnings Announcement Abnormal returns, over all sample period.

Panel regressions of earnings announcement abnormal returns on firm characteristics. The dependent variable is |CAR|; the absolute abnormal return for the three-day window centered on the earnings announcement date calculated using a market model over the period 210–11 days before the announcement. FOREIGN is the foreign firms identifier. ERROR is the absolute forecast error, |actual earnings-median forecast|; scaled by the firm's stock price before the earnings announcement. DISPERSION is the standard deviation of analysts' forecasts scaled by the firm's stock price before the earnings announcement. Ln(MTB) is the natural log of the ratio of the firm's market value (market value of equity plus the book value of total assets minus the book value of equity) to the firm's book value of total assets at the prior fiscal year-end. Ln(ME) is natural log of the market value of a firm's equity at the end of the previous fiscal year. Leverage is the ratio of long-term debt and debt in current liabilities to total assets. The regressions also include time effects 1998-00 and 2003-05 and all factors are interacted with these time effects. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Regression	Abs (CAR)										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Intercept	0.039	0.040	0.040	0.040	0.040	0.040	0.039	0.039	0.039	0.038	0.038
	28.13***	24.03***	23.91***	23.59***	23.79***	23.27***	22.9***	22.89***	22.95***	21.18***	20.15***
1998-00	**0.015**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.013**	**0.014**
	8.98***	**5.16*****	**5.14*****	**5.18*****	**5.14*****	**5.24*****	**4.94*****	**4.94*****	**5.15*****	**5.16*****	**5.47*****
2003-05	**0.004**	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	**0.005**	**0.006**
	2.24**	1.31	1.31	1.27	1.29	1.43	1.22	1.21	1.54	**2.05****	**2.07****
Foreign	**-0.003**	**-0.006**	**-0.006**	**-0.006**	**-0.006**	**-0.007**	**-0.005**	**-0.005**	-0.004	-0.003	-0.004
	-2.06**	**-2.27****	**-2.33****	**-2.35****	**-2.48****	**-2.69****	**-1.97****	**-1.73***	-1.54	-1.21	-1.45
Foreign*1998-00		**0.007**	**0.006**	**0.007**	**0.006**	**0.007**	**0.007**	**0.007**	**0.006**	**0.007**	**0.008**
		1.93*	**1.91***	**2.01****	**1.85***	**2.08****	**2.03****	**1.9***	**1.84***	**1.85***	**1.94***
Foreign*2003-5		0.002	0.002	0.002	0.002	0.003	0.002	0.001	0.002	0.000	0.001
		0.51	0.51	0.51	0.57	0.81	0.61	0.28	0.54	-0.01	0.36
ERROR			0.025	0.058	-0.010	-0.008	**0.262**	**0.260**	**0.741**	**0.778**	**1.101**
			0.57	0.61	-0.21	-0.15	**2.13****	**2.11****	**3.68*****	**3.66*****	**2.18****
ERROR*1998-00				-0.072							-0.609
				-0.62							-1.05
ERROR*2003-05				0.005							0.109
				0.04							0.17
DISPERSION					0.113	**0.250**	0.110	0.115	0.063	0.064	0.270
					1.58	**1.76***	1.54	1.61	0.7	0.71	1.54
DISPERSION*1998-00						-0.179					-0.293
						-1.09					-1.33
DISPERSION*2003-05						-0.168					-0.232
						-0.9					-0.95
ERROR*Foreign							**-0.313**	**-0.352**	**-0.308**	**-0.621**	**-0.669**
							-2.41**	**-2.22****	**-2.33****	**-2.07****	**-2.09****
ERROR*Foreign*1998-00								0.007		0.218	0.370
								0.06		0.66	1
ERROR*Foreign*2003-05								0.115		0.596	0.507
								0.87		1.61	1.23
ERROR*Dispersion									1.381	5.904	2.070
									0.83	1.18	0.37
ERROR*Dispersion*1998-00										-4.381	0.578
										-0.86	0.1
ERROR*Dispersion*2003-05										-5.387	-2.501
										-0.97	-0.37
ERROR*ln(MTB)									**0.252**	**0.539**	**0.463**
									2.73***	**2.63*****	**2.16****
ERROR*ln(MTB)*1998-00										**-0.576**	-0.484
										-2.33**	-1.89
ERROR*ln(MTB)*2003-05										-0.117	-0.064
										-0.44	-0.23
ERROR*ln(ME)									**-0.123**	**-0.092**	**-0.111**
									-5.82***	**-2.12****	**-2.18****
ERROR*ln(ME)*1998-00										-0.019	0.020
										-0.39	0.34
ERROR*ln(ME)*2003-05										-0.074	-0.089
										-1.39	-1.29
ERROR*Leverage									**0.404**	0.098	-0.047
									2.45**	0.26	-0.1
ERROR*Leverage*1998-00										0.235	0.488
										0.54	0.93
ERROR*Leverage*2003-05										0.305	0.391
										0.67	0.74
Adj R-sq	2.47%	2.52%	2.51%	2.47%	2.55%	2.53%	2.68%	2.65%	3.69%	3.76%	3.78%

Table 20 - Panel Regression for the Variance of the Abnormal returns, for each period.

Panel regressions the variance of the abnormal returns on firm characteristics. The dependent variable is AR_sigma; the variance of the abnormal return for the three-day window centered on the earnings announcement date calculated using a market model over the period 210–11 days before the announcement. FOREIGN is the foreign firms identifier. ERROR is the absolute forecast error, |actual earnings-median forecast|; scaled by the firm's stock price before the earnings announcement. DISPERSION is the standard deviation of analysts' forecasts scaled by the firm's stock price before the earnings announcement. Ln(MTB) is the natural log of the ratio of the firm's market value (market value of equity plus the book value of total assets minus the book value of equity) to the firm's book value of total assets at the prior fiscal year-end. Ln(ME) is natural log of the market value of a firm's equity at the end of the previous fiscal year. Leverage is the ratio of long-term debt and debt in current liabilities to total assets. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

		AR sigma		
	regression	1	2	3
1995-97	Intercept	0.024	0.024	0.023
		25.81***	24.71***	21.78***
	Foreign	-0.002	**-0.003**	-0.002
		-1.46	**-2.13****	-1.32
	Error		-0.024	**1.212**
			-0.36	**4.06****
	Dispersion		**0.233**	**0.239**
			2.56**	**1.79***
	Foreign*Error			-0.164
				-0.82
	Dispersion*Error			-1.235
				-0.22
	Ln(MTB)*Error			**0.245**
				2.14**
	Ln(ME)*Error			**-0.160**
				-5.85**
	Leverage*Error			-0.179
				-0.67
	Adj R-sq	0.14%	0.72%	5.03%
1998-00	Intercept	0.035	0.036	0.035
		28.7***	28.3***	25.96***
	Foreign	-0.001	-0.001	0.002
		-0.8	-0.43	0.83
	Error		-0.046	**0.729**
			-0.76	**3.48****
	Dispersion		-0.028	-0.160
			-0.35	-1.52
	Foreign*Error			**-0.265**
				-1.94*
	Dispersion*Error			2.441
				1.18
	Ln(MTB)*Error			0.168
				1.54
	Ln(ME)*Error			**-0.096**
				-3.81**
	Leverage*Error			-0.032
				-0.13
	Adj R-sq	-0.03%	-0.09%	1.68%
2003-05	Intercept	0.027	0.027	0.027
		28.48***	27.87***	25.24***
	Foreign	-0.002	-0.002	-0.001
		-1.27	-1.23	-0.78
	Error		**0.158**	**0.887**
			3.03**	**3.54****
	Dispersion		**-0.220**	-0.102
			-2.66**	-1.04
	Foreign*Error			-0.066
				-0.46
	Dispersion*Error			**-4.893**
				-2.29**
	Ln(MTB)*Error			**0.346**
				3.37**
	Ln(ME)*Error			**-0.134**
				-4.96**
	Leverage*Error			**0.364**
				2.1**
	Adj R-sq	0.05%	0.78%	3.23%

Table 21 - Panel Regression for the Variance of the Abnormal returns, over all sample period.

Panel regressions the variance of the abnormal returns on firm characteristics. The dependent variable is AR_sigma; the variance of the abnormal return for the three-day window centered on the earnings announcement date calculated using a market model over the period 210–11 days before the announcement. FOREIGN is the foreign firms identifier. ERROR is the absolute forecast error, |actual earnings-median forecast|; scaled by the firm's stock price before the earnings announcement. DISPERSION is the standard deviation of analysts' forecasts scaled by the firm's stock price before the earnings announcement. Ln(MTB) is the natural log of the ratio of the firm's market value (market value of equity plus the book value of total assets minus the book value of equity) to the firm's book value of total assets at the prior fiscal year-end. Ln(ME) is natural log of the market value of a firm's equity at the end of the previous fiscal year. Leverage is the ratio of long-term debt and debt in current liabilities to total assets. The regressions also include time effects 1998-00 and 2003-05 and all factors are interacted with these time effects. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Regression	AR sigma										
	1	2	3	4	5	6	7	8	9	10	11
Intercept	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.023
	26.38***	21.67***	21.57***	21.25	21.59***	20.72***	20.96***	20.96***	21.00***	19.97***	18.10***
1998-00	**0.011**	**0.011**	**0.011**	**0.011**	**0.011**	**0.012**	**0.011**	**0.011**	**0.011**	**0.010**	**0.012**
	10.25***	**7.17*****	**7.15*****	**7.28*****	**7.15*****	**7.47*****	**6.97*****	**6.97*****	**7.19*****	**6.35*****	**6.84*****
2003-05	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**	**0.004**	**0.003**	**0.003**	**0.004**	**0.003**	**0.004**
	3.09***	**2.06*****	**2.05*****	**1.86***	**2.05*****	**2.54*****	**1.99*****	**1.99*****	**2.41*****	**1.82***	**2.35*****
Foreign	**-0.002**	-0.002	-0.002	-0.002	-0.002	**-0.003**	-0.001	-0.001	-0.001	-0.001	-0.002
	-1.94*	-1.23	-1.28	-1.31	-1.19	**-1.93***	-0.83	-0.80	-0.70	-0.73	-1.10
Foreign*1998-00		0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.001	0.003	0.004
		0.30	0.29	0.59	0.32	1.02	0.48	0.89	0.49	1.14	1.46
Foreign*2003-5		0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.001	0.000	0.001
		0.20	0.20	0.06	0.18	0.93	0.22	-0.16	0.25	0.04	0.41
ERROR			0.015	0.034	0.029	0.035	**0.158**	**0.154**	**0.790**	**0.855**	**1.212**
			0.49	0.47	0.87	1.03	**2.02*****	**1.96*****	**5.87*****	**6.25*****	**3.38*****
ERROR*1998-00				-0.090							-0.483
				-1.07							-1.20
ERROR*2003-05				0.064							-0.324
				0.73							-0.73
DISPERSION					-0.044	**0.204**	-0.047	-0.034	-0.031	-0.075	0.239
					-0.93	**1.99*****	-0.97	-0.71	-0.51	-1.19	1.49
DISPERSION*1998-00						**-0.288**					**-0.400**
						-2.46***					**-2.17*****
DISPERSION*2003-05						**-0.339**					**-0.342**
						-2.63***					**-1.78***
ERROR*Foreign							**-0.152**	-0.149	-0.121	-0.086	-1.235
							-1.82*	-1.38	-1.45	-0.41	-0.18
ERROR*Foreign*1998-00								-0.087		-0.209	3.676
								-0.95		-0.93	0.52
ERROR*Foreign*2003-05								0.098		0.035	-3.657
								1.06		0.15	-0.51
ERROR*Dispersion									-1.704	**8.704**	-0.164
									-1.36	**1.72***	-0.68
ERROR*Dispersion*1998-00										-7.639	-0.102
										-1.53	-0.38
ERROR*Dispersion*2003-05										**-13.819**	0.098
										-2.68***	0.34
ERROR*ln(MTB)									**0.243**	**0.293**	**0.245**
									4.04***	**2.18*****	**1.77***
ERROR*ln(MTB)*1998-00										-0.127	-0.077
										-0.78	-0.46
ERROR*ln(MTB)*2003-05										0.056	0.101
										0.33	0.57
ERROR*ln(ME)									**-0.126**	**-0.140**	**-0.161**
									-8.56***	**-5.00*****	**-4.86*****
ERROR*ln(ME)*1998-00										0.034	**0.066**
										1.04	**1.66***
ERROR*ln(ME)*2003-05										0.008	0.027
										0.25	0.63
ERROR*Leverage									**0.294**	-0.117	-0.179
									2.49***	-0.42	-0.55
ERROR*Leverage*1998-00										0.057	0.147
										0.17	0.38
ERROR*Leverage*2003-05										0.489	0.543
										1.50	1.46
Adj R-sq	3.57%	3.51%	3.49%	3.60%	3.48%	3.66%	3.55%	3.69%	5.84%	6.13%	6.24%

Table 22 - Panel Regression for Forecast Error and Dispersion with the Analyst Coverage

Panel regressions of analysts' forecast error and dispersion on firm characteristics and overtime analyst coverage trend. Num. Analyst is the number of analyst following each stock. Specification is same as the separate regression analysis with ERROR, being the absolute forecast error, ln(BA) is the natural log of total , RD/Sales is the ratio of R&D expense to, Leverage is the ratio of long-term debt and debt in current liabilities to total assets, Ln(1+Intang2Asset) is the natural log of one plus the ratio of intangible assets to total assets at the previous fiscal year-end. Volatility is the standard deviation of market model residuals. The regressions also include time effects 1998-00 and 2003-05 along with the FOREIGN dummy variables for foreign firms. All factors are interacted with the time effects. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

	Error			Dispersion		
Regression	13	14	15	13	14	15
Intercept	-0.007	-0.007	-0.007	-0.008	-0.007	-0.006
	-2.03**	-1.78*	-1.68	-3.45***	-2.34**	-2.25**
Foreign	**0.006**	**0.005**	**0.005**	**0.006**	**0.005**	**0.005**
	5.53***	**4.38*****	**4.84*****	**7.72*****	**6.01*****	**6.42*****
1998-00	0.003	0.008	0.007	0.003	0.005	0.005
	0.59	1.55	1.43	1.11	1.42	1.31
2003-05	-0.008	-0.006	-0.006	-0.003	-0.004	-0.004
	-1.61	-1.19	-1.23	-0.88	-1.13	-1.15
Foreign*1998-00	**0.004**	**0.003**	0.002	**0.003**	**0.003**	**0.002**
	2.48**	**1.95***	1.31	**2.79*****	**2.73*****	**2.12****
Foreign*2003-5	-0.001	-0.001	-0.002	**-0.002**	**-0.002**	**-0.002**
	-0.72	-0.7	-1.15	**-2.31****	**-1.78***	**-2.22****
ln(BA)	0.000	**0.001**	0.000	**0.000**	**0.001**	0.000
	1.04	**2.14****	1.01	**2.1****	**2.04****	0.96
ln(BA)*1998-00	-0.001	**-0.001**	0.000	**-0.001**	**-0.001**	0.000
	-1.54	**-2.1****	-0.72	**-1.86***	**-2.03****	-0.75
ln(BA)*2003-05	0.000	0.000	0.000	0.000	0.000	**0.001**
	0.7	0.12	0.96	0.88	0.98	**1.76***
R&D/Sales	0.000	-0.001	-0.001	**0.000**	0.000	-0.001
	0.11	-0.18	-0.31	**1.86***	-0.11	-0.23
missing R&D/Sales	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**
	4.94***	**4.63*****	**4.57*****	**8.49*****	**7.89*****	**7.82*****
R&D/Sales*1998-00	-0.001	-0.004	-0.004	0.000	-0.003	-0.003
	-1.27	-0.87	-0.76	-0.87	-0.99	-0.88
R&D/Sales*2003-05	0.000	0.007	0.008	0.000	0.005	0.006
	0.1	1.45	1.57	-1.38	1.53	1.65
Leverage	**0.004**	0.002	0.003	**0.002**	0.002	0.002
	2.14**	1.2	1.46	**1.83***	1.26	1.51
Leverage*1998-00	0.003	0.002	0.002	0.001	0.000	-0.001
	1.2	0.8	0.63	0.37	-0.16	-0.33
Leverage*2003-05	**0.008**	**0.007**	**0.007**	0.002	0.002	0.002
	2.6**	**2.52****	**2.26****	0.92	1.08	0.81
ln(1+Intang2Asset)	-0.001	0.002	0.002	-0.002	-0.003	-0.003
	-0.18	0.41	0.33	-0.55	-0.62	-0.7
ln(1+Intang2Asset)*1998-00	-0.005	-0.012	-0.012	-0.004	-0.004	-0.004
	-0.79	-1.67	-1.68	-0.87	-0.85	-0.85
ln(1+Intang2Asset)*2003-05	-0.005	-0.006	-0.006	-0.001	-0.001	0.000
	-0.72	-1	-0.91	-0.33	-0.13	-0.03
Volatility	**0.223**	**0.226**	**0.227**	**0.216**	**0.206**	**0.207**
	3.98***	**3.53*****	**3.55*****	**5.69*****	**4.55*****	**4.56*****
Volatility*1998-00	0.017	-0.032	-0.028	-0.029	-0.032	-0.030
	0.25	-0.42	-0.38	-0.63	-0.61	-0.57
Volatility*2003-05	**0.185**	**0.142**	**0.141**	0.056	0.039	0.039
	2.41**	**1.74***	**1.74***	1.07	0.67	0.67
Num Analyst		**-0.024**	-0.006		**-0.013**	0.000
		-6.4***	-0.84		**-4.71*****	-0.07
Num Analyst*1998-00			**-0.030**			**-0.019**
			-2.89***			**-2.61*****
Num Analyst*2003-05			**-0.020**			**-0.014**
			-2.11**			**-2.17****
Adj R-sq	11.35%	12.58%	12.78%	14.65%	15.28%	15.44%