Corporate Scandals:
Capital Structure and Contagion Effects

A thesis presented
by

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to

The PhD School
in partial fulfillment of the requirements
for the degree of

Doctor of Philosophy

in the subject of

Business Administration and Management

Università L. Bocconi

Milan, Italy
Spring, 2010

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Abstract

A wave of corporate scandals has recently hit the market reviving attention on the effects of these events on shareholders' value, corporate governance and stock market reaction. The documented far-reaching effects of corporate scandals on security prices may have a market timing value that managers may be willing to exploit. In this dissertation I analyze whether companies involved in a security class action do exhibit differential capital structure decisions and if the information revealed by a corporate scandal affects security issuances and stock prices of industry peers. My findings show that before a security class action suit is filed, companies engaged in a scandal had a higher number of security offerings and due to equity mispricing they were more likely to use equity as a financing mechanism. Following the SCAS filing they also exhibit decreasing book and market leverage. Finally I observe significant contagion effects on financing behavior and stock prices of industry peers. These results altogether suggest that investors tend to process company-specific news more as industry-wide information rather than as an isolated event.

Acknowledgments

I thank Professors Stefano Bonini, Annalisa Prencipe and Maurizio Dallocchio for their invaluable suggestions and support. I gratefully acknowledge Stanford Securities Class Action Clearinghouse (in cooperation with Cornerstone Research) support for providing security class action data; and Lynn M. LoPucki's support for providing the Bankruptcy Research Database. Finally, and no less important I am particularly indebted with all my family for their unconditional support during the last four years.

Contents

Chapter 1
Introduction

A wave of corporate scandals has recently hit the market reviving attention on the effects of these events on shareholders' value, corporate governance and stock market reaction. Academic research has shown that companies suffer a considerable decline in both stock prices and debt ratings upon Chapter 11 filing announcements, financial reports' restatements or financial distress announcements (Palmrose, Richardson and Scholz, 2004; Lang and Stulz, 1992; Brewer and Jackson, 1997). Scandals early detection, if not prevention, is therefore valuable to stakeholders. Agrawal and Chadha, (2005) document that appropriate corporate governance mechanisms may positively influence the probability of earnings restatements. Agrawal and Cooper (2007) support this evidence highlighting the higher turnover of top management and top financial officers soon before and immediately after an accounting scandal. Dyck, Morse and Zingales (2007) show that non-traditional mechanisms and stakeholders-at-large play a considerable role in triggering fraud-detection. Given the documented far-reaching effects of corporate scandals, it is interesting to ask whether managerial behavior in companies engaged in a corporate scandal affects also financial decisions on capital raising, and in particular whether managers, anticipating the risks of a corporate scandal exhibit different capital structure policies than those of their peers. Surprisingly though this question is still unanswered. In my dissertation I thus address the following research problem: *Which Capital Structure theory*

explains the financing pattern of troubled firms?. To answer the research problem I look at the security issuance pattern of companies engaged in a Security Class Action Suit between 1996 and 2005 and in particular address the following three research questions:

(a) What is the ex-ante and ex-post financing pattern of firms engaged in a corporate scandal?;

(b) Is there a contagion effect in the financing pattern of the industry after a corporate scandal was revealed?; and

(c) Is there a contagion effect in the stock prices of the industry after a corporate scandal was revealed?

Previous literature has addressed corporate scandals by studying cases of bankruptcy announcement, public announcement of fraud in the press and earnings restatements. I instead adopt the engagement in a security class action suit as a proxy of a corporate scandal. I use the data from the Stanford Law School Securities Class Action Clearinghouse database. This measure of corporate scandal allow me to generalize the results to a broader set of cases because it deals with actions that: i) are important enough to have meaningful effects on security-holders value and ii) leave the company as a going concern allowing meaningful ex-ante and ex-post differential analysis. In fact less than 10% of cases included in the SCAS database end up in bankruptcy announcements.

My findings show that before a SCAS is filed, companies engaged in a scandal had a higher number of security offerings compared to their industry average. At the same time, I document that since firms before the scandals experienced overvaluation in stock prices they were more likely to use equity as a financing means. Compared to their peers, and consistent with the Market Timing Hypothesis, firms involved in a security class action consistently issue more equity in the two-year period preceding the filing of the suit. I find that SCAS firms exhibit decreasing book and market leverage before the filing due to abnormal volumes of equity offerings. Soon after the filing though, leverage increases sharply and significantly due to the readjustment in equity market value.

Looking at the contagion effect on the financing pattern of the industry, I find that equity issuances decrease for both peers and SCAS firms over time, and this decrease is more pronounced for the latter. I observe that close to the suit filing date there is a decrease in debt and equity issuances for both samples. The existence of a significant negative equity and debt issuance trends can be interpreted as a contagion effect in the financing pattern, i.e. a SCAS filing generates a decrease in equity and debt offerings in the overall industry.

Finally, I investigate the effect of corporate scandals on the firm's competitors' stock prices. I test the presence of a negative contagion effect on stock prices of the industry of the firm involved in a corporate scandal. For the [-1,0] and [-5,5] event windows I find that peers suffer a cumulative abnormal return of -.20% and

-.65% respectively. These results confirm the fact that corporate scandals do have a negative impact on their industry. Furthermore I study this contagion effect dividing the sample into accounting and non-accounting allegations and find that the negative stock price reaction of peers with accounting allegations is strongly significant for most event windows, while this is not the case for non-accounting allegations. Cases on non-accounting allegations do not show a statistically significant contagion effect in their industry. My findings are aligned with Gande and Lewis (2009) who provided evidence on the price reaction to SCAS filings.

These results altogether allow me to shed light on the financing and security issuance behavior of firms engaged in corporate scandals. The results also allow to conclude that independently from their intensity, corporate scandals do generate effects at the industry level by leading to a contraction in security offerings and a decrease in stock returns for all the industry constituents.

1.1 Outline of the dissertation

The second chapter of this dissertation aims to build a theoretical foundation upon which the research is based. In brief, Chapter 2 identifies and reviews the conceptual and theoretical dimension of the literature to position the research problem within the empirical corporate finance literature and then develops the research questions introduced in section 1.2 of this chapter into testable hypotheses.

The third chapter describes the data that was used to answer the hypotheses. Chapter 3 also describes the main methodologies adopted in the dissertation –two-sample t-test for equal means, cross-sectional regression analysis and event study-, in a detailed way. The financial variables used throughout the research are defined. In addition, Chapter 3 shows how other variables that might influence results were controlled or properly measured in the research design.

The fourth chapter presents patterns of results and analyses them for their relevance to the research questions or hypotheses. This chapter is restricted to the presentation and analysis of the collected data, without drawing general conclusions or comparing results to those of other researchers discussed in chapter 2. The linkage to the previous literature and development of conclusions is left for the last chapter of the dissertation.

The fifth chapter is devoted to the development of the findings and its theoretical and practical implications. Chapter 5 examines the full picture of the research's findings within the body of knowledge (previously developed in chapter 2), as well as the implications of the results obtained. At the end of the chapter, I discuss paths for future research born from the research.

1.2 Motivation of the Research

The research questions I study in my dissertation are important at the theoretical and practical levels. In this section I explain the importance that security class action

suits have as a corporate scandal phenomena and the relative neglect of my specific research problem by previous researchers.

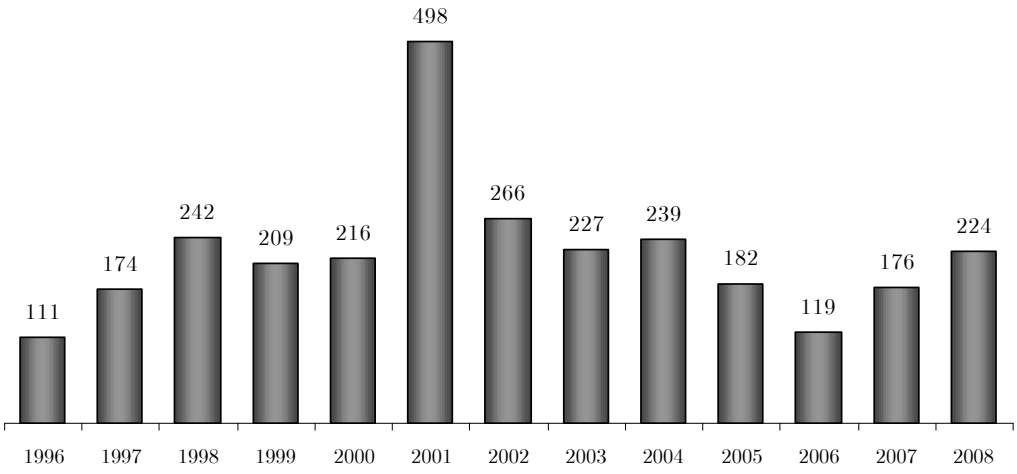
1.2.1 Importance of the Security Class Action Litigation

A security class action suit is a critical event in the life of a corporation. Firms face few liability exposures that can match the magnitude of securities fraud liability. In a security class litigation, the firm and its officers can face liabilities ranging into the hundreds of millions of dollars. For example, Cendant Corporation recently agreed to pay a record $2.38 billion to settle claims of an accounting fraud, the largest settlement ever in a securities class action suit. Financial economists are increasingly interested in the litigation environment surrounding corporations. An area of growing interest is lawsuits filed by shareholders under Securities and Exchange Commission Rule 10b-5, which makes it unlawful to make an untrue statement of material fact or to omit to state a material fact necessary to make the statements made not misleading. For the reasons mentioned above, research in this area has substantial contemporary interest and policy relevance.

The Stanford Law School Securities Class Action Clearinghouse provides detailed information relating to the prosecution, defense, and settlement of security class action litigation. The Clearinghouse maintains an Index of Filings of 2,660 issuers that have been named in federal class action securities fraud lawsuits since passage of the Private Securities Litigation Reform Act of 1995.

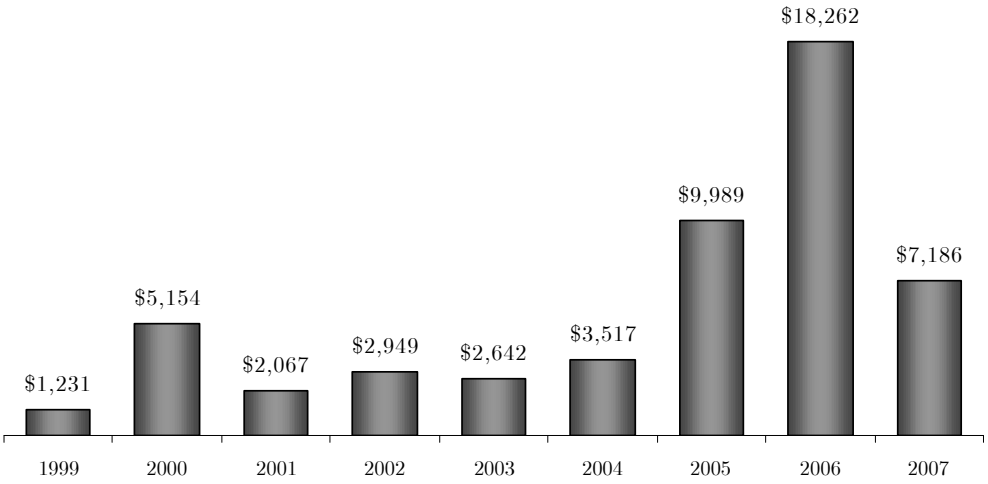
From 1996 through 2007, there were well over 200 federal class action filings each year, on average, there were 221 filings per year during this period (See Figure 1). In 2006, filings dropped sharply, with only 119 cases filed during the year. This pattern has continued, there is a slight decrease in the amount of yearly SCAS but in any case the amount of cases is considerable and worth studying.

Figure 1
Number of Federal Securities Fraud Class Action Litigation
This figure reports the amount of security class action suit filings from 1996 to 2008.



In 2005 and 2006 the amount of settlements increased considerably. Defendants finalized their settlements in the Enron and McKesson litigation, further increasing the total settlement amounts in these giant cases, and Tyco announced a near $3 billion tentative settlement. These giant settlements—along with other big settlements over $100 million— increased average settlement values in 2005 and 2006 to an all-time high (see Figure 2).

Figure 2
Total settlement dollars by year (dollars in millions)
This figure reports the yearly settlement dollars adjusted for inflation.



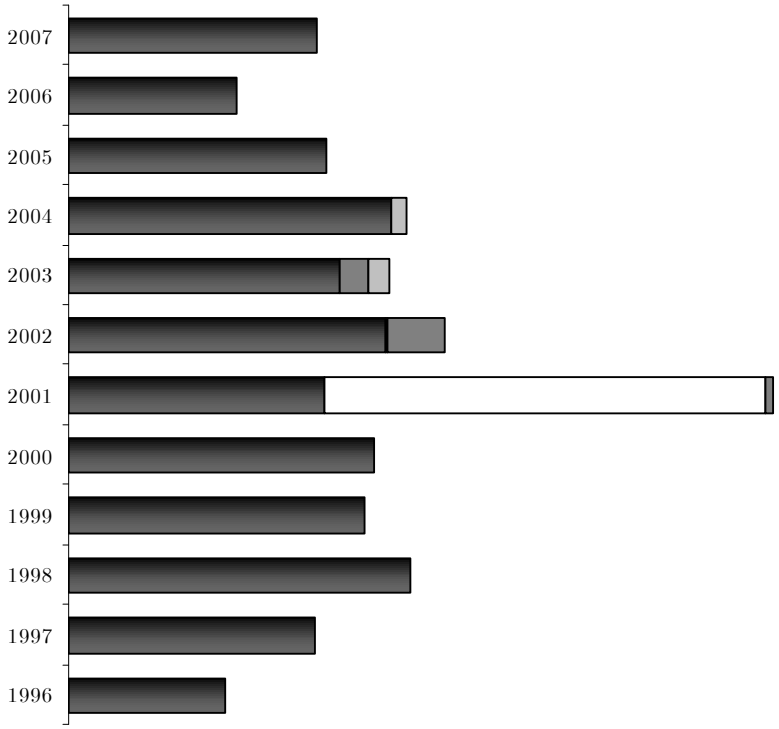
At the same time, average settlement values have been increasing as a result of the passage of the Private Securities Litigation Reform Act (PSLRA) in 1995. For example, excluding the top ten settlements over $1 billion from the calculation, average settlement values more than doubled in the 2002-2007 period compared to the 1996-2001 period. In the early period, an average settlement was $2.8 million, while in the latter period this amount grew to $8.4 million. Including the finalized settlements over $1 billion into this picture increases the recent averages even more. Over the 2002-2007 period this average value is $40.5 million. Clearly, the giant settlements have a sizeable impact on average values. But while companies like Enron and WorldCom are settlement outliers, more other, less notorious companies are also pay-

ing big settlements. In recent years, the percentage of "mega-settlements", defined as settlements over $100 million, has increased.

Over the past decade, the number of shareholder class action filings has varied from year to year. In some years, filings experienced a peak, typically driven by one-time litigation events such as the surge in claims related to IPO laddering cases in 2001. On average, following the passage of the PSLRA in 1995, through 2005, there have been approximately 236 filings per year. These totals include options backdating cases. Options backdating class action cases emerged in 2005 and peaked in 2006, when they made up 16% of filings. Note that a number of cases relating to backdating allegations are filed as derivative suits, rather than class actions, so the trends described here are only part of the picture. Figure 3 shows the distribution of cases from 2001 until the first data available of 2009. It is clear how during these years, the most frequent cases are classified as classic ones.

Figure 3
Security class action litigation by type of lawsuit

This figure reports the yearly distribution of SCAS filings."IPO Allocation" cases are cases filed from 2001 to 2002 alleging that underwriters engaged in undisclosed practices in connection with the distribution of certain IPO shares."Analyst related" cases are cases filed from 2001 to 2004 alleging that the brokerage firm analysts falsely provided favorable coverage for certain issuers.These Analyst cases involve securities directly affected by allegedly false analyst research reports. "Mutual Fund" cases are cases filed from 2003 to 2004 alleging wrongful acts in the management of the funds. "Classic" cases are cases involving 10(b) claims (misstatements or omissions) and/or other common securities law violations.



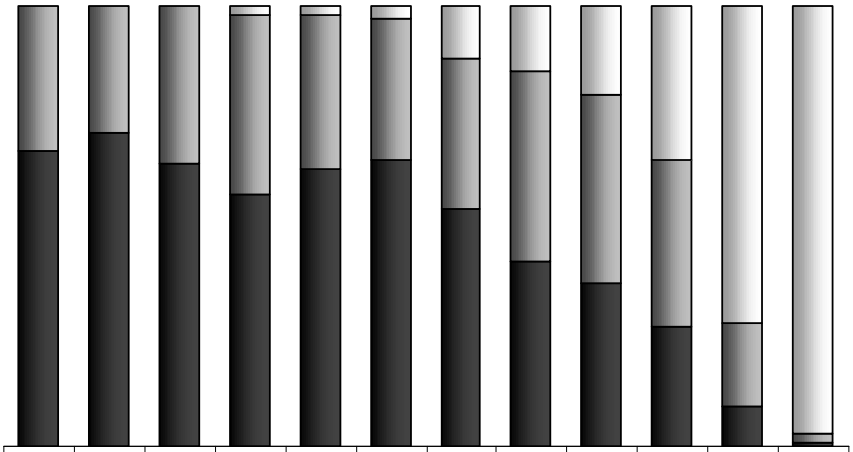
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Mutual Fund								15	10			
Analyst						5	41	20	1			
IPO Allocation						312	1					
Classic	111	174	242	209	216	181	224	192	228	182	119	176

Dismissals accounted for only 19.4% of dispositions for cases filed between 1991 and 1995. For cases filed between 2001 and 2005, dismissals have accounted

for 38.0% of dispositions (See Figure 4). The major drop in dismissal rates occurred following an initial adjustment to the tougher pleading provisions of PSLRA.

Figure 4
Status of securities class action cases by year filed

This figure reports the yearly status of SCAS filings.



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Continuing				2%	2%	3%	12%	15%	20%	35%	72%	97%
Dismissed	33%	29%	36%	41%	35%	32%	34%	43%	43%	38%	19%	2%
Settled	67%	71%	64%	57%	63%	65%	54%	42%	37%	27%	9%	1%

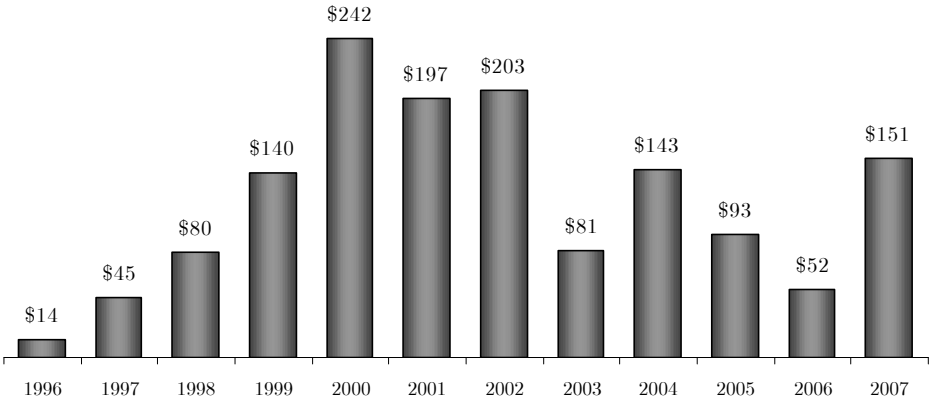
The importance of the security class action suit phenomena can also be analyzed with indices of securities class action filings. These indices are constructed by the Clearinghouse and characterize the intensity of securities litigation activity through time. The indices incorporate market information about declines in stock prices over selected portions of class periods as proxies for the potential loss of defendants and their insurance carriers. The measures can be taken as a rough ap-

proximation of the extent to which plaintiffs have sought to allege that gross market capitalization declines are correlated with (if not caused by) alleged frauds.

The Disclosure Dollar Loss Index (DDL Index™) tracks the running sum of Disclosure Dollar Loss for all class action lawsuits filed year-to-date. The DDL Index shows a peak in disclosure losses in 2000 and 2007. The latter one mostly driven by several large case filings in the fourth quarter of 2007. Total annualized DDL for 2007 was $151 billion, representing an increase of 188 percent relative to 2006 and an 18 percent increase relative to the ten-year average from 1997–2006 (see Figure 5).

Figure 5
Disclosure Dollar Loss Index (dollars in billions)

This figure reports the Disclosure Dollar Loss Index (DDL). The DDL Index, also known as Dollar Class End Market Cap Decline, is the running sum of disclosure dollar losses (so the Decline of market capitalization from the trading day immediately preceding the end of class period to the trading day immediately following the end of the class period) for all class action lawsuits filed year-to-date.

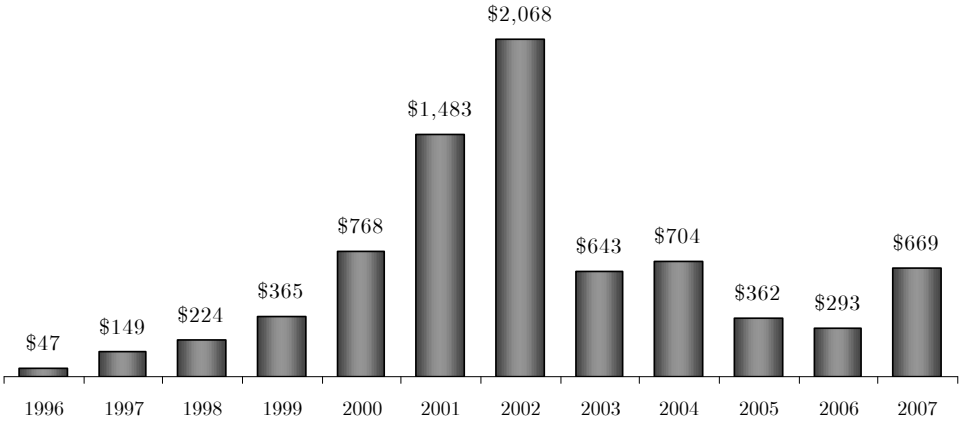


Similar to the DDL Index the Maximum Dollar Loss Index (MDL Index™) shows a large increase in market value declines for companies subject to class action

filings in 2007 compared to 2006. Total MDL for 2007 was $669 billion, which was a 128 percent increase relative to 2006. As in the case of the DDL Index, the increase in the MDL Index was driven by several large case filings in the fourth quarter of 2007 (see Figure 6).

Figure 6
Maximum Dollar Loss Index (dollars in billions)

This figure reports the Maximum Dollar Loss Index (MDL). The MDL Index, also known as Dollar Class Period Market Cap Decline, is the running sum of maximum dollar losses (so the decline of market capitalization from the trading day when market capitalization reached its maximum during the class period to the trading day immediately following the end of the class period) for all class action lawsuits filed year-to-date.



The previous snapshot of the recent trend in shareholder class action litigation and its economic importance justifies the academic study of the phenomena. Using the engagement in a SCAS as a proxy for a corporate scandal assures me of dealing with cases that are considerably important to shareholders.

1.2.2 Relative neglect of the specific research problem by previous researchers

The previous section showed statistical data that justified the importance of corporate fraud phenomena (proxied by a security class action suit) in the recent years. In a speech by SEC Commissioner in 2005 it was said that "*...during the past few years, politicians and pundits have pointed to revelations of corporate wrongdoings serious enough to shake the foundations of seemingly unshakable corporations as raising the level of anxiety of investors all over the country and, indeed, all over the world...*"[1]. Even tough it is commonly known that corporate scandals are a subject of current interest there are several research gaps that must be filled to achieve full understanding of the phenomena. It is interesting to ask whether managerial behavior in companies engaged in a corporate scandal affects also financial decision on capital raising, and in particular whether managers, anticipating the risks of a corporate scandal exhibit different capital structure policies than those of their peers. Surprisingly though there are no previous studies that analyze the financing pattern of firms engaged in a corporate scandal or studies that analyze the effect that a SCAS has at the industry level. I contribute to the academic literature by addressing these novel topics.

1.2.3 Usefulness of potential applications of the research's findings

The present research is useful for both the academic and practitioners' fields.

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[1] *Speech by SEC Commissioner: Remarks before the Atlanta Chapter of the National Association of Corporate Directors by Commissioner Paul S.Atkins. U.S. Securities, Atlanta, Georgia. February 23, 2005.*

First, from the academic point of view, the results obtained in my dissertation fill the gap of a previously unstudied topic - the financing pattern of troubled firms and their effect on the industry-. A second contribution to the literature is the use of a new (and tested) proxy for corporate scandals - the engagement in a security class action suit-. Finally I also contribute by using a new methodological approach that extends the application of the contagion effect concept at the financing pattern dimension.

The results of this study are also relevant for the practitioners' community in at least two ways. Knowing the financing pattern of a troubled firm might help analysts to refine their judgments about firms -for estimation of both present and future expectations-. Secondly, investors can also be aware of the fact that peers do react to SCAS filings not only in terms of stock prices but also in terms of financing decisions and the effects that these financing decisions might carry to their overall portfolio return.

1.3 Delimitations of scope and key assumptions

In order to answer my research questions, I study the capital structure decisions that managers undertake when engaged in corporate scandals. My main objective is to determine if there exists a behavioral component in capital structure decisions and if these decisions affect not only the troubled firm but also its competitors. My dissertation project limits itself to the contribution of the empirical corporate finance

literature. I do not address the psychological motivations that managers have in order to act in a certain way, neither the origin of their cognitive biases. It is also out of the scope of my research to study the probability of being engaged in a security class action suit (as it has already been addressed by the legal literature).

Finally, it is also worth noting that one of the main assumptions of my dissertation is that managers maximize their profits under a bounded rationality setting. Under this assumption I am able to legitimize the existence of equity mispricings and the use of the Market Timing Theory of capital structure.

1.4 Conclusion

This chapter laid the foundations for the dissertation document. It introduced the research problem, research questions and hypotheses. Then the research was justified, the document was outlined, and the limitations were given. On these foundations, I can proceed with a detailed description of the research.

Chapter 2
Literature review

2.1 Introduction

Three main streams of research serve as ground for my dissertation: research on corporate scandals, research on capital structure and research on contagion effect. In the following sections I aim to build a theoretical foundation upon which the research is based. I review the conceptual and theoretical dimensions of each relevant literature stream and finally position my research problem within the literature. After reviewing the parent disciplines and fields I develop the research questions introduced in section 1.2 into testable hypotheses.

2.2 Parent Disciplines and Fields

2.2.1 Corporate Scandals

Corporate scandals can be defined as widely publicized incidents involving allegations of managerial wrongdoing, disgrace, or moral outrage of one or more members of a company. Typical schemes of fraudulent behavior include misstatements of financial figures on current, past or future investments or operations, delay or failure to disclose information, bribery, insider trading, and any other illegal activities that hurt

the shareholders of the firm (Dyck, Morse and Zingales, 2007). Previous literature has mainly addressed the phenomenon of corporate scandals by studying cases of bankruptcy announcements, public announcements of fraud in the press and earnings restatements. In order to review previous empirical results it is worth dividing the literature into three main groups: literature regarding i) stock price reactions to corporate scandals, ii) corporate governance and corporate scandals, and iii) propensity of firms to be sued.

Stock price reactions to corporate scandals

Empirical evidence shows that there is a negative stock price reaction of investors towards the announcement of bankruptcy or earnings restatements (Palmrose, Richardson and Scholz, 2004; Lang and Stultz, 1992, Brewer and Jackson, 2002). Palmrose et. al (2004) examine the market reaction of 403 restatements announced from 1995 to 1999 and document an average abnormal return of about 9.00% over a 2-day announcement window. Lang and Stultz (1992) demonstrate that on average, bankruptcy announcements generate a percentage shareholder wealth loss of 21.66%. in a [-5,+5] event day window. Stock market's reaction is also statistically significant to two events in the litigation process: the revelation of potential fraud, and the filing a lawsuit (Ferris and Pritchard, 2001). Beck and Baghat (1997) find that firms sued under SEC rule 10b-5, are more likely to experience episodes of very poor price performance compared to a population of nonsued firms. Karpoff, Lee and Martin

(2006) document that the stock market also imposes significant reputational penalties on firms targeted by SEC enforcement actions for financial misrepresentations.

Corporate governance and corporate scandals

Previous literature on corporate scandals has also tested that sound corporate governance mechanisms decrease the probability of a firm restating its earnings (Agrawal and Chadha, 2005). Agrawal and Cooper (2007) support this evidence highlighting the fact that, soon before and immediately after an accounting scandal, the firm experiences a higher turnover of CEOs and CFOs. Ferris et al. (2007) find that derivative suits, brought on behalf of all shareholders, are also associated with increased turnover. Beasley (1996) and Dechow et al. (1996) find that accounting fraud is less likely when there are more outside directors. By examining the connection between published reports of unethical behavior by publicly traded U.S. and multinational firms and the performance of their stock, Rao and Hamilton (1996) test that there exists a significant connection between ethics and profitability.

Propensity of firms to be sued

The last stream of literature is related to the legal field and to the probability of a firm of being sued (under the Securities and Exchange Commission Rule 10b-5). Francis, Philbrick, and Schipper (1994) examine whether firms that preemptively disclose adverse earnings news benefit from a lower incidence of shareholder initiated lawsuits; they conclude that early disclosures increase litigation risk. Jones and

Weingram (1996) show that firms with good stock price performance in the recent past are less likely to be sued by shareholders. Field, Lowry and Shu (2005) argue that lawsuits are less likely to be filed against retail firms because they tend to release monthly sales figures, meaning that the market has better information about their current operating environment and is thus less likely to be surprised with bad news. Dyck, Morse and Zingales (2007) study all reported fraud cases in large U.S. companies between 1996 and 2004 and find that fraud detection does not rely on obvious actors (investors, SEC, and auditors), but involves a mix of several non-traditional players (employees, media, and industry regulators).

Conclusion

Thus, while it is generally accepted that a corporate scandal results in immediate losses to shareholders, the academic literature has not yet addressed the financial characteristics of firms engaged in corporate scandals. There is no previous empirical evidence on the capital structure of firms engaged in corporate scandals and how do they finance their operations before and after a scandal is unveiled. Furthermore little is known about the consequences that competitors might suffer due to these scandals.

In order to address the literature gap I must also choose a definition of corporate scandal. I choose the engagement in a security class action suit as the proxy for a corporate scandal. This measure of corporate scandals allows me to enhance the generality of my results because it deals with actions that are important enough to

have significant effects on shareholders value and because they leave the company as a going concern allowing meaningful ex-ante and ex-post differential analysis.

2.2.2 Capital Structure

Modigliani and Miller (1958) demonstrate that under the assumptions of a the perfect world with no frictions -such as transaction costs and taxes-, the capital structure of a firm is irrelevant. Adding back frictions, the capital structure of the firm is not irrelevant anymore and thus the corporate finance literature has developed three main accepted theories of capital structure: i) the Trade-off Theory, ii) the Pecking Order Theory and iii) the Market Timing Theory of Capital Structure.

The Trade-off Theory

The static Trade-off Theory of Capital Structure states that firms have an interior leverage optimum determined by the balance between tax savings advantage of debt and the costs of bankruptcy (Myers, 2001). The overall reasoning lies on the negative relationship between the marginal benefit coming from tax shields from debt financing and leverage; and the positive relationship between costs of financial distress and leverage. So, when choosing their debt level, firms optimize their overall value focusing on this trade-off among tax shield benefits and costs of financial distress. The Trade-off theory of capital structure lies under the full rationality assumption and several studies support its predictions. Marsh (1982), Hovakimian, Opler, and Titman (2001), Korajczyk and Levy (2003), Hovakimian (2004), and Ho-

vakimian, Hovakimian, and Tehranian (2004) confirm the role of target leverage in security issues and repurchases. Frank and Goyal (2004) examine the relative importance of 39 factors in leverage decisions, and argue in favor of the trade-off theory. Flannery and Rangan (2004) find that firms quickly offset the effects of prior stock price movements when target market leverage is allowed to vary with firm characteristics and firm fixed effects are controlled for. Leary and Roberts (2004) show that firms are inactive with respect to their financial policy most of the time, but do issue or buy back securities in clusters to adjust toward target leverage. Hennessy and Whited (2004) and Strebulaev (2004) try to reconcile empirical findings inconsistent with the trade-off theory in a dynamic framework.

Although it is the predominant model in textbooks, the Trade-off theory of capital structure has long been questioned empirically (Miller, 1977; Myers, 1984; Graham, 2000; Fama and French, 2002). Special critiques have addressed the empirical fact that managers do not take into account tax shields benefits as one important factor when taking their capital structure decisions, but value more flexibility and the current valuation of their equity (Graham and Harvey, 2001). Jalilvand and Harris (1984) and Fama and French (2002b) show that the speed of adjustment toward target leverage is slow. Welch (2004) finds that prior stock returns are the main determinant of market leverage, and firms do not actively offset the effects of stock returns on their capital structure.

The Pecking Order Theory

The Pecking Order Theory of Capital Structure bases its predictions on the information asymmetry existing between firms and investors. This is a theory of leverage in which there is no assumption of an optimal leverage ratio. Based on the adverse selection risk premium of the several funding instruments, the theory states that firms prioritize their funding sources preferring to raise external equity as a financing means of last resort (Myers, 1984). Hence, using a simple model with three sources of funds, internal equity is used first, once it is depleted debt is issued, and when there is no other source of funding available external equity is issued. Shyam-Sunder and Myers (1999) provide an influential empirical test of the pecking order theory against the trade-off theory. Using a sample of 157 firms that had traded continuously from 1971 to 1989, they find that the basic pecking order model, which predicts external debt financing driven by the financing deficit, has much greater explanatory power than the static trade-off model. Fama and French (2002) find that more profitable firms are less levered, consistent with the pecking order model. Frank and Goyal (2003) extend the pecking order tests for a much larger sample of U.S. firms, and find that net equity issues track the financing deficit more closely, especially in the 1990s.

Nonetheless, several researchers have questioned the veracity of the Pecking Order Theory. Chirinko and Singha (2000) question the validity of the simple pecking order tests of Shyam-Sunder and Myers by showing that the tests may generate

misleading inferences when evaluating plausible patterns of external financing. Lemmon and Zender (2002) argue that the large proportion of debt-constrained small growth firms weakens the standard pecking order in the 1990s. Fama and French (2004) challenge the pecking order theory by showing that firms frequently issue and repurchase equity. They suggest that external equity can be raised with financing tools that involve less information asymmetry. Several authors have also stated that although the information asymmetry in Myers and Majluf is one potential reason, the standard pecking order may arise for other reasons. Donaldson (1961) cites transaction costs. The preference for debt over equity could also be driven by managerial optimism (Lee, 1997; Heaton, 2002; and Hackbarth, 2003). Optimistic entrepreneurs are unwilling to issue external equity because they think their stock is undervalued. Graham (1999) finds that the majority of corporate executives surveyed believed that their common equity was undervalued even when the Dow was approaching 10,000 in 1999. As with the Trade-Off Theory, the Pecking Order Theory of Capital Structure doesn't predict capital structure consequences coming from equity misvaluation.

The Market Timing Theory

The third and most important theory for the purpose of my dissertation is the Market Timing Theory of capital structure. This theory is classified within the behavioral finance literature stream and has been increasing in popularity in the academic literature since 2001. The theory states that when making decisions about funding, managers take into account the current conditions of the debt and equity markets.

Managers will thus choose the funding scheme that looks more favorable at the moment, and if none seems to be favorable then fund raising may even be deferred. The main surge of this theory comes from empirical evidence that supports the existence of managers' opportunism when it comes to the firm's financing needs. Graham and Harvey (2001) interviewed 392 U.S. and Canadian CFOs and results reported that they placed considerable weight on market timing when it comes to corporate finance decisions. Sixty seven percent of the interviewed CFOs stated that the amount by which their stock was over or undervalued was an important or very important consideration when making decisions about equity issuance. The theory's major exponents, Baker and Wurgler (2002), base their capital structure predictions on the historical stock prices of firms and further evidence confirms indeed stock prices play an important role in explaining capital structure and capital structure changes (Welch, 2004). Baker and Wurgler (2002) find that an external finance-weighted average of historical market-to-book ratios is negatively related to current market leverage, and they interpret this as evidence for market timing. In terms of stock prices, the market timing theory argues that firms tend to issue equity after the value of their stock has increased (Hovakimian, Opler and Titman, 2001) and that corporate leverage is best understood as the cumulative effect of past attempts to time the market (Baker and Wurgler, 2002). The main assumption underlying the market timing hypothesis is the possible existence of stock price misvaluation. If this is the case, managers of a firm that holds overvalued (undervalued) stock will act in an opportunistic way to obtain

advantages of it through equity (debt) issuances. As it will be seen on the later sections, for the purposes of this proposal the fact that some firms might hold misvalued equity and that this affects its financing pattern is crucial.

The key difference between the pecking order theory and the market timing theory is whether the assumption of semi-strong form market efficiency is maintained. The pecking order theory assumes markets are semi-strong efficient, thus the announcement effect of securities issues is the primary proxy for the degree of information asymmetry. The market timing theory does not rely on the assumption of semi-strong form market efficiency. Windows of opportunity exist as long as the relative cost of equity varies over time for either rational or irrational reasons.

Conclusion

In order to address my research problem, thus to understand *Which Capital Structure theory explains the financing pattern of troubled firms*, I choose the Market timing Theory of capital structure. I assume that stock market prices might suffer from misvaluation and that this might influence managers' decisions on capital raising. Section 2.3.2. explains in detail my theoretical choice and sets the ground for the hypothesis related to the empirical data.

2.2.3 Contagion effect

Most studies on contagion effects have focused mainly on US bank failures (Kannas, 2004). These studies state that the failure of a large bank can undermine public con-

fidence in the banking system as a whole, which may in turn threaten the stability of the financial system by causing runs on other banks (Diamond and Dybvig, 1983; Aharony and Swary, 1983; Swary 1986). Diamond and Dybvig (1983) demonstrate that contagion effects can develop from random shocks that induce some depositors to withdraw funds, even when no fundamental change in a bank's prospects has occurred. Aharony and Swary (1983) focus on the failure of FNB in 1974 and find evidence of contagion effects. Lamy and Thompson (1986), and Peavy and Hempel (1988) examine contagion effects caused by Penn Square's failure, with mixed results. Swary (1986) examines the Continental Illinois' failure and finds evidence of significant contagion effects. Dickinson et al. (1991) fail to find evidence of contagion effects arising from the failure of First Republic Bank.

Lang and Stulz (1992) departed from the banking industry and did a seminal study in the topic of the contagion effect at the corporate level. The authors investigate the effect of bankruptcy announcements on the equity value of the firm's competitors. Thus, in the corporate context, the term contagion effect usually refers to the spillover of the effects of shocks from one or more firms to other firms. Lang and Stulz (1995) find that on average a weighted average of industry portfolios experience average stock-price reactions significant at the 0.05 level of - 1.07% for the period from day -5 to +5 and of - 0.35% for the traditional event window of days [-1,0]. Ferris et al. (1997) demonstrated that large firm bankruptcies generate a dominant contagion effect. In their study, competitors experience a significant loss of

0.56% in the three-day window around Chapter 11 announcement. Small firm bankruptcies also generate a dominant contagion effect among smaller sized competitors. In a study focused on the Telecom industry, Akhigbe et al. (2005) show that these effects are significant the higher the degree of similarity in size and cash flows of the competitors. These results support the idea that existing stakeholders react to bankruptcy filing news since it reveals adverse information about asset values, practices and future prospects of the industry as a whole. While, price reactions to a bankruptcy filing are not surprisingly associated with large price drops, reactions to SCAS initiation on stock prices of filing companies and their peers may be less intuitive since less than 6% of the SCAS eventually evolve in a bankruptcy filing. Romano (1991) and Francis, Philbrick, and Schipper (1994) documented negative stock price reactions upon the initiation of a security lawsuit using two small sets of cases. Gande and Lewis (2009) provide a first comprehensive analysis of the effect on stock prices upon the filing of a SCAS. They document an average, stock market price drop of more than 14% in the [-10,+1] window around the filing. Additionally, they provide preliminary evidence that stock market prices exhibit contagion effects similar to those observed by Lang and Stulz (1995) and Ferris et al (1997).

Conclusion

The engagement of a industry participant in a security class action suit presumably generates a negative contagion effect on its peers' stock prices. At the same time, if market prices react to a peer's bankruptcy filing and a SCAS, arguably equity and

debt financing should become relatively more costly changing the external financing opportunity cost. Companies in fact continuously manage their capital structure by issuing or buying back equity, raising and repaying debt conditional to market conditions. Surprisingly though, there is no previous study on contagion effect on capital structure decisions of companies following a corporate scandal. Contagion in security issuances would thus be a reaction of investors to readjustments in their risk evaluation of the overall industry which imposes greater costs of financing. In section 3.3.6. I propose to adopt the regression analysis using a trend variable to empirically test the existence of a contagion effect on the financing pattern of an industry.

2.3 Immediate Discipline and Hypotheses

2.3.1 Corporate Scandals and Security Offerings

A common feature of corporate misconduct is the biased, deferred or hindered revelation of information which would have meaningful effects on managerial actions: first, it would significantly reduce stock prices making secondary equity offerings increasingly diluting and costly; second it would reasonably reduce, or cancel altogether, managerial independence in taking capital structure-related decisions; third it would heavily affect managers' payoffs driving stock-options out-of-the money, not triggering bonuses' payments or determining managers firing. Managers, arguably, are aware of these effects and therefore have strong incentives to "make the best out

of it while it lasts" by illegally exploiting this information asymmetry to increase the amount of funds they collect in anticipation of potential capital and managerial constraints. Funds then may be used in several ways: to deliver a steady stream of cash flows, dividend payments and investments, to pursue buyback plans, to rebalance - at a lower cost - the financial structure of the company or simply to enhance the liquidity stock in a similar spirit to Ivashina and Scharfstein (2009). SCAS filing documents provide meaningful examples of these behaviors. In Cisco (2001) the plaintiff alleges that: "[...] *After completing more than 20 major acquisitions between 9/99 and 2/01, by issuing more than 400 million shares of Cisco stock,* [...] *, on 2/6/01, Cisco announced extremely disappointing 2ndQ F01 results*"; similarly in Bay Networks (1997) it is alleged that: "[...] *materially false or misleading statements enabled Bay Networks to Complete stock-for-stock acquisitions during the Class Period*". Working capital financing is claimed by the plaintiff in Supergen (2003): "[...] *SuperGen sold millions of shares and notes* [...] *so as to provide it with ample monies to fund its operations. However, this all took place prior to revelations concerning the veracity of the Company's statements regarding Mitozytrex* [a drug]". In this spirit I conjecture my first hypothesis:

Hypothesis 1: Ex-ante, firms engaged in a corporate scandal have a greater amount of security offerings compared to their industry average.

The Market Timing Hypothesis of Capital Structure states that when making decisions about funding, managers take into account the current conditions of the

debt and equity markets. Managers will choose the funding scheme that looks more favorable "pro tempore", and if none seems to be favorable then fund raising might be deferred. Support to the market timing theory comes from the empirical evidence that shows the existence of managers' opportunism when it comes to the firm's financing needs (Graham and Harvey, 2001). Although this theory is short in explaining many of the factors that have been traditionally considered in the studies of corporate capital structure, it has strong empirical evidence that supports the existence of a behavioral component in managers when it comes to financing their firms. Baker and Wurgler (2002) build their capital structure predictions on the historical stock prices of firms and further evidence confirms that indeed stock prices play an important role in explaining capital structure and capital structure changes (Welch, 2004). As for stock prices, the market timing hypothesis argues that firms tend to issue equity after the value of their stock has increased (Hovakimian, Opler and Titman, 2001) and that corporate leverage is best understood as the cumulative effect of past attempts to time the market (Baker and Wurgler, 2002). One important assumption underlying the market timing hypothesis is the possible existence of stock price misvaluation. If this is the case, managers of a firm that has overvalued (undervalued) stock price will opportunistically exploit this mispricing by issuing equity (debt). This later fact was confirmed by Graham and Harvey (2001). In a interview survey to 392 U.S. and Canadian CFOs, 76% of the sample reported that the amount by which their stock

was over or undervalued was an "important" or "very important" factor when taking decisions about equity issuance.

Corporate scandals act as information revelation mechanisms to equity market participants. A scandal sheds new light on the actual managerial and accounting practices of the firm, revealing information that was previously unavailable to investors. Evidence show that in extreme cases ending in bankruptcy filing, investors reaction is strong and significant with sharp declines in stock prices of the firms involved in the scandal (Lang and Stulz, 1992; Rao and Hamilton, 1996; Agrawal and Chadha, 2005). The stock price drop following such events can be interpreted as evidence of a previous stock overvaluation due to either an accounting phenomenon (such as a misrepresentation of earnings) or also because some information regarding the company's investments or risk exposure was not fully available to the market. Accordingly, I hypothesize that:

Hypothesis 2: Ex-ante, firms engaged in a corporate scandal made greater use of equity financing compared to their industry averages.

If managers -due to the information asymmetry which eventually lead to a scandal - time the market issuing more equity when the stock is overvalued, then it is possible to develop two ancillary predictions. First, if equity issuance is higher than their peers, leverage by construction should be lower. Similarly, once a scandal erupts, the abnormal security issuance pattern should revert towards the industry mean. Accordingly I conjecture the following two hypotheses:

Hypothesis 3: Ex-ante, firms engaged in a corporate scandal had lower levels of leverage compared to their industry average.

Hypothesis 4: After the corporate scandal is unveiled, the stock price of these firms adjusts to its "fair" price and thus firms start financing themselves as the mean of their industry.

2.3.2 Corporate Scandals and Contagion Effect on Financing Pattern

Academic research on contagion effects at the corporate level, has focused on the spillovers of shocks occurring in one entity to other entities. Previous literature has explored the contagion effects on stock returns following a bankruptcy (Lang and Stulz 1992), earning restatement (Gleason et al. 2008) and managerial forecasts announcements (Ramnath 2002). Similarly, Giesecke (2003) and Theocarides (2007) have explored contagion in the corporate bond market showing that bond prices, yields and spreads react to firm-specific information. Yet, no previous study has investigated the existence of a contagion effect on capital structure decisions by companies. Since listed companies raise capital in the market, they are exposed to investor sentiments and market momentum and, possibly, to information concerning contiguous companies that investors may transfer to the entire industry. The recent financial crisis has provided an illuminating example of this phenomenon where inherently sound companies have experienced the same dry-up in capital as weaker peers in their industry. Despite their managers' efforts, "the capital market window

[was] just closed" for both high and low quality companies (Federal Reserve Board (2008)). In this spirit, a SCAS filing is a signal that a meaningful mismanagement has occurred in a company. Investors may infer that this behavior can be common practice across the industry and therefore increase the capital constraints on peer companies. A highly constrained financing environment will lead to increased cost of external financing and ultimately to a contraction of the total security offerings of the industry. Thus, I hypothesize:

Hypothesis 5: The eruption of a corporate scandal will cause a contagion effect on the financing pattern of the industry peers, generating a contraction in both debt and equity issuances.

There are several characteristics in an industry that can affect the existence and magnitude of a contagion effect. I expect the degree of similarity among the firms' cash flows to intensify the extent of the contagion effect on the financing pattern of one industry. This intensification of the contagion effect is due to the fact that highly similar firms are likely to have investments with similar cash flow characteristics and similar risk exposures (Lang and Stulz, 1992). If a security class action suit conveys bad news about the projection of cash flows or firm risk, then investors will be more likely to reassess also the firm's competitors' cost of financing. I thus expect that:

Hypothesis 6: Ceteris paribus, the contagion effect on the financing pattern of the peers group is larger for industries in which competitors show a higher degree of cash flows similarity with firms involved in the corporate scandal.

2.3.3 Corporate Scandals and Contagion Effect on Stock Prices

A natural second step to the present research project would be to evaluate if corporate scandals affected also the competitors' returns. Most studies on contagion effects have focused mainly on US bank failures (Kannas, 2004). These studies state that the failure of a large bank can undermine public confidence in the banking system as a whole, which may in turn threaten the stability of the financial system by causing runs on other banks (Diamond and Dybvig, 1983; Aharony and Swary, 1983; Swary 1986). One seminal study in the topic of the contagion effect that departs from the banking industry, investigates the effect of bankruptcy announcements on the equity value of the firm's competitors (Lang and Stulz, 1992). The authors find that on average the market value of a weighted portfolio of the common stock of the bankrupt firm's competitor's decreases by 1% at the time of the bankruptcy announcement and that this decline is statistically significant. Lang and Stulz (1992) tested the existence of a contagion effect in non-financial firms at an interindustry level and later Brewer and Jackson (2002) extended these results at the inter-industry level working on a database of commercial banks and life insurance companies. Ferris et al. (1997) demonstrated that large firm bankruptcies generate a dominant contagion effect. In their study, competitors experience a significant loss of 0.56% in the three-day window around Chapter 11 announcement. Small firm bankruptcies also generate a dominant contagion effect among smaller sized competitors. My hypothesis is closely related with Gande and Lewis (2009) who documented statistically

significant market price effects following a corporate scandal. Looking at security class actions they use stock price returns, legal environment and the expected effects of a class action to develop a probabilistic model to predict the initiation of a SCAS. The corporate finance-related variables they use in their model are unexpected earnings and managerial compensation but there is no metric addressing capital structure phenomena. Yet, it is reasonable to expect that corporate scandal have a different impact on stock prices of industry peers of a company involved in a SCAS conditional on previous capital structure decisions such as leverage and cash flow level. The following hypotheses concern the contagion effect on stock prices:

Hypothesis 7: Ex-post, firms engaged in a corporate scandal will cause a negative contagion effect on stock prices within their industry.

Standard corporate finance show that leverage increases a company's riskiness and therefore its stock volatility. Thus, when a scandal is unveiled, stock price reaction by peers should be positive and increasing in leverage due to greater elasticity of equity value to the total value of the firms.

Hypothesis 8: The contagion effect on stock prices of peer companies is larger for highly leveraged industries.

Firms' cash flows similarity may as well result in a higher response of peers stock prices. Firms with comparable investment structures generating similar cash flows are arguably exposed to the same risk factors (Lang and Stulz, 1992). Since a security class action suit generally conveys bad news about future cash flows and

the firm's risk, investors will be more likely to reassess the value of peers' equity the higher the degree of similarity in cash flows. Measuring similarity as the correlation of returns between the competitors and the firm engaged in a corporate scandal, I expect that:

Hypothesis 9: The contagion effect on stock prices of peer companies is larger the higher the degree of cash flow similarity of the competitors of the firm involved in the corporate scandal.

2.4 Conclusion

This chapter introduced the three main streams of research that serve as a ground for my dissertation: research on corporate scandals, research on capital structure and research on contagion effect. I presented the main contributions of each stream of literature and determine the theoretical assumptions that I chose in order to address my research problem and hypotheses. After reviewing the parent disciplines and fields I developed nine hypotheses. The following two chapters will address the methodology and empirical analysis that serve to test the hypotheses introduced in this chapter.

Chapter 3
Methodology

3.1 Introduction

This chapter describes the data that was used to answer the hypotheses outlined in Chapter 2. I also describe here the three main methodologies adopted throughout the study –mean comparisons, regression analysis and event study-, in a far more detailed way than in the introductory description. The operational definitions used in the research are described.

3.2 Data

Previous literature on corporate scandals has adopted earnings restatements, bankruptcy announcements and announcements of frauds in the press as measures of a scandal. In this paper I depart from these approaches and I proxy a corporate scandal by the filing of a security class action suit in the United States, as emerging from the Stanford Securities Class Action Clearinghouse database. This definition of corporate scandal helps me generalize the results to a broader set of corporate events because it deals with less severe cases than a financial default, as less than 10% of the cases end up in bankruptcy announcements. By adopting data at the Security Class Action level I can test whether scandals do affect firms and their peers behav-

ior conditionally and unconditionally on the scandal intensity. The database includes several types of corporate scandals such as self-dealing frauds, disclosure failure, misrepresentation of accounting data, etc. One important concern, as highlighted by Dyck, Morse and Zingales (2007), is the possible inclusion of cases that were just frivolous allegations; to deal with this potentially severe sample bias issue I also exclude actions filed before the passing of the Private Securities Litigation Reform Act of 1995 (PSLRA) that was designed, among others, with the goal of reducing courts' workload on frivolous claims.

The original Class Action Suits database has 2,479 cases from January 1996 to December 2006. I only keep cases filed between January 1996 and December 2005 to allow for the availability of at least two years of financial statement data after the suit filing. I then dropped highly specific SCAS classified as "Analyst related" , "IPO Allocation", "Mutual Fund" and "Option Backdating" (thus I only leave "Classic" SCAS cases)[2]. Classic cases are all cases that are not IPO Allocation, Analyst and Mutual Fund cases. The rationale is that these cases are generally related to one isolated event (listings or managerial compensation) that is less likely to have an impact on a broader cross-section of security holders. I dropped private holdings, firms in the financial and utilities sectors (sic codes 6000-6999 and 4900-4999), and cases

[2] The majority of the cases in the database are classified as Classic."IPO Allocation" cases are cases filed from 2001 to 2002 alleging that underwriters engaged in undisclosed practices in connection with the distribution of certain IPO shares."Analyst related" cases are cases filed from 2001 to 2004 alleging that the brokerage firm analysts falsely provided favorable coverage for certain issuers.These Analyst cases involve securities directly affected by allegedly false analyst research reports. "Mutual Fund" cases are cases filed from 2003 to 2004 alleging wrongful acts in the management of the funds. "Classic" cases are cases involving 10(b) claims (misstatements or omissions) and/or other common securities law violations.

that didn't have Compustat and CRPS information for the period required. The final sample reduces to 793 security class action suit cases. Fifty four percent (432) of the cases involve accounting allegations, and the remaining 46 percent (361) are classified as cases involving non-accounting allegations. At the time of data collection, 16 percent (127) of the cases were still ongoing, while the remaining 84 percent (666) of the cases were already settled. I matched the firms from the SCAS database with Compustat and CRPS using the firm's cusip. In the final sample of SCAS cases I have 765 cusips, meaning that several firms might have more than one security class action suit filing. Mean total assets in the filing year of these firms were $4,642.62 millions. The sample contains a total of 204 different 4-digit sic codes, that I used to generate peer-groups comparisons. To identify the dispersion of cases by industry I classified each case according to the Fama & French industry classification (1997); on average there are 21 different Fama & French industries in each filing year (see Table I).

Table I
Yearly distribution of events and
Fama & French industries

This table reports the distribution of security class action suit cases by filing year, from January 1996 to December 2006. Fama & French industries were assigned using 4-digit sic codes and the classification provided in their paper of 1997.

Filing year (SCAS)	N	Fama French industries
1996	47	19
1997	66	22
1998	88	24
1999	75	22
2000	87	21
2001	81	20
2002	90	25
2003	63	21
2004	82	21
2005	67	24
2006	47	18
Total	793	

Finally, to control that security class action suits are not a proxy of bankruptcy - more specifically of Chapter 11 filings - I matched the data with LoPucki's UCLA Bankruptcy Research Database. I thus, manually merged information from the two databases and observed that on average only 6% of the firms in our sample filed for chapter 11 in the period 2 years before or after the filing of the suit. This result allows me to argue that, since SCAS are not a proxy for bankruptcy, capital structure changes are not a result of bankruptcy driven corporate restructuring .

Table II provides the distribution of cases included in the sample by event year, type of allegations and by amount of companies that eventually filed for Chapter 11 in the two years before or after the filing of the security class action suit.

Table II

Amount of cases studies by event year, type of allegation and chapter 11 filing

This table reports the distribution of security class action suit cases by event year. The event year (t=0) is defined as the year in which the security class action suit was filed against the firm. The percentages of cases according to the type of allegation (accounting and non-accounting), and to the filing of chapter 11 (2 years after or before the filing) are also presented.

Year (event)	N	Accounting allegations	Non-accounting allegations	Filed for Chapter 11 in t=[-2,2]	Didn't file for Chapter 11 in t=[-2,2]
t=-3	735	55.50%	44.50%	8.50%	91.50%
t=-2	754	55.00%	45.00%	8.80%	91.20%
t=-1	717	54.30%	45.70%	7.60%	92.40%
t=0	627	53.40%	46.60%	5.40%	94.60%
t=1	551	53.40%	46.60%	4.40%	95.60%
t=2	458	54.80%	45.20%	4.20%	95.80%
t=3	366	54.80%	45.20%	4.00%	96.00%

3.3 Research Procedures

3.3.1 Variables definition

Capital structure variables were constructed following Baker & Wurgler (2002). Book equity is measured as total assets minus total liabilities and preferred stock plus deferred taxes and convertible debt. Market equity is measured as the number of common shares outstanding multiplied by the stock price. Book debt is measured as total assets minus book equity. Book leverage is measured as book debt divided by total assets. Market leverage is measured as book debt divided by the sum of total assets minus book equity plus market equity. The amount of total –yearly- security offerings is measured as the sum of debt issuances and book equity issuances. Debt issuances

are measured as the change in total assets minus change in book equity divided by total assets. Book equity issuances are measured as the change in book equity minus the change in balance sheet retained earnings, divided by total assets[3]. Additionally, since debt and equity issuances are sometimes negative, indicating repurchases or debt and equity voluntary cancellations, I constructed a dummy variable equal to one when either equity or debt issuances are smaller than zero, and zero otherwise. Appendix 1 reviews in detail each variable construction and their corresponding codes from Compustat.

3.3.2 Peers definition

To allow comparisons with the average financing behavior industry peers, for each event year, I constructed a measure given by the value-weighted portfolio of firms classified in the same 4-digit sic code and not involved in a SCAS. For each sic-code observation -in each event year- the same variables described in 3.3.1. were estimated.

3.3.3 Security offerings

To test Hypotheses No. 1 and No. 4, I had to compare the weighted average amount of security offerings made by the sample of firms engaged in a SCAS with the average amount of offerings made by their peers (the value-weighted portfolio of the

[3] Debt and equity issues could also be measured using cash flow data. I used balance sheet data because there was more data available, and thus the amount of cases under analysis was greater.

remaining firms with the same 4-digit sic code). To test my hypotheses I performed a Two-Sample t-Test for Equal Means. The two-sample t-test (Snedecor and Cochran, 1989) is used to determine if two population means are equal. I used equal samples of SCAS and Peers (paired data) and made the following assumptions that are traditional to these type of tests:

- The two samples have the same variance (assumption of homogeneity of variance).
- The samples are normally distributed.
- Each value is sampled independently from each other value.

The two-sample t test for unpaired data was thus defined as:

$$H_o : \mu_1 = \mu_2 \tag{3.1}$$

$$H_a : \mu_1 \neq \mu_2 \tag{3.2}$$

The t statistic to test whether the means are different was calculated as follows:

$$T = \frac{\overline{Y}_1 - \overline{Y}_2}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}} \tag{3.3}$$

where N_1 and N_2 are the sample sizes, and $\overline{Y}_1$and $\overline{Y}_2$ are the sample means, and s_1^2 and s_2^2 are the sample variances.

If equal variances are assumed -as in the case of my analysis- then the formula reduces to:

$$T = \frac{\overline{Y}_1 - \overline{Y}_2}{s_p\sqrt{\frac{1}{N_1} + \frac{1}{N_2}}} \tag{3.4}$$

where

$$s_p = \frac{(N_1 - 1)s_1^2 + (N_2 - 1)s_2^2}{N_1 + N_2 - 2} \tag{3.5}$$

Given a significance level of α, I reject the null hypothesis that the two means are equal if $T < -t_{(\alpha/2,v)}$ or $T > t_{(\alpha/2,v)}$, where $t_{(\alpha/2,v)}$ is the critical value of the t distribution with v degrees of freedom. Where if equal variances are assumed, then $v = N_1 + N_2 - 2$.

3.3.4 Financial mix: Equity and Debt offerings

In this section I tested hypothesis No. 2. I thus compared the weighted average amount of equity and debt issuances made by the sample of firms engaged in a SCAS with the average amount of equity and debt issuances made by their corresponding peers (the value-weighted portfolio of the remaining firms with the same 4-digit sic code). As in section 3.3.3, I performed a Two-Sample t-Test for Equal Means to test

my hypothesis. I run independent analysis for equity issuances and debt issuances and for both analyses I used equal samples (of SCAS and Peers) and assumed homogeneity of variance.

3.3.5 Leverage

Hypothesis 3 suggested that the behavior of leverage of SCAS was different from that of their peers. I tested this intuition by analyzing the market and book leverage figures for companies sued by security-holders and the control peers' group around the event date. The methodology used was again the Two-Sample t-Test for Equal Means (using equal samples and assuming homogeneity of variance).

3.3.6 Contagion effect on external financing decisions

In this section I test the existence of a contagion effect on external financing decisions by exploring external financing decisions of the competitors of firms involved in a security class action lawsuit. Following Hypothesis 5, I model a trend variable T aimed at capturing the evolution of external capital rasing by the aggregate of competitors in the same industry. The values of the trend variable are such that $T \in \{1, 6\}$ and are linked to the event years, so that T is equal to one when the event year is –2, T takes a value of two when the event year is –1 and so forth. To explore these trends in security offerings I performed the following cross-sectional regression:

$$Y_{it} = \alpha_i + \beta_i(T) + \varepsilon_{it} \tag{3.6}$$

Where, Y_{it} is the amount of either equity, debt or total security offerings, T is the trend variable, and e_{it} is the error term of the regression. In this analysis, if the trend coefficient for the peers sample is statistically significant it means that event time is indeed correlated with the amount of issuances of a SCAS firm or its peers (confirming Hypotheses 5 and 6). It is worth noting that these regression results are robust to exogenous factors like market momentum, business cycles and sentiment since we are working with event years and not calendar years. Business cycles, market trends, sentiment and other variables should not affect interpretation of our results. Additional robustness tests are presented in Chapter 4.

3.3.7 Contagion effect on stock prices

In this section I begin by testing general contagion effects on stock prices following a SCAS announcement and control for correlation of returns, leverage and type of allegation (Hypotheses 7 to 9). Adopting the event study methodology, I estimate the firms' abnormal returns on a set of short-term windows (2 days, 3 days, 11 days, 13 days and 21 days around the event). I chose to restrict my study to short-term windows as working with longer horizon could introduce noise in the results. The

specific bracketings are constructed to capture quasi-instantaneous and anticipated or delayed stock price reactions to the filing announcement.

Following MacKinley (1997) and Khotari and Warner (2006) I estimate the normal performance using a standard market model through the following equation:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{3.7}$$

Where R_{it} is the predicted normal rate of return of security i at time t, R_{mt} is the value-weighted return of the S&P500 index, α_i and β_i are the estimated parameters, and ε_{it} is the error term of the regression. The distributions of stock returns are assumed to be independent and identically distributed over time, thus $E(\varepsilon_{it}) = 0$ and $\mathrm{var}(\varepsilon_{it}) = \sigma^2_{\varepsilon_i}$. Equation 3.7 is estimated using a 201 trading-day window. Thus, the estimation window includes all observations over the period $[\tau - 250, \tau - 50]$ .Using the estimated market model parameters, I compute the daily abnormal returns for both sued firms and their peers' weighted average observations. The daily abnormal return of a security is computed by subtracting the predicted normal return from the actual return for each day in the event window. Letting $\widehat{AR}_{i\tau}$ be the abnormal returns for firm i at time τ the sample abnormal return is:

$$\widehat{AR}_{i\tau} = R_{i\tau} - (\hat{\alpha}_i + \hat{\beta}_i R_{m\tau}) \tag{3.8}$$

where $\widehat{AR_{i\tau}}$is the abnormal rate of return of the security i in the event window, R_{it} is the actual rate of return of the security i in the event window, and $(\hat{\alpha}_i + \hat{\beta}_i R_{m\tau})$ is the expected normal rate of return of the security i estimated using the market model. The aggregation of abnormal returns is bi-dimensional: through time and across securities and follows this process. I first compute the average abnormal returns for all i as:

$$\overline{AR_\tau} = \frac{1}{N} \sum_{i=1}^{N} \widehat{AR_{i\tau}} \tag{3.9}$$

For any security i, the average cumulative abnormal return from $\tau_1$to τ_2 is the sum of the average abnormal returns within that event window:

$$\widehat{CAR_i}(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} \widehat{AR_{i\tau}} \tag{3.10}$$

The average abnormal returns, across the N SCAS cases, are aggregated over the event window as follows:

$$\overline{CAR}(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} \overline{AR_\tau} \tag{3.11}$$

Finally, to know whether the cumulative abnormal returns were statistically different from zero I performed the following non-parametric test:

$$\theta_1 = \frac{\overline{CAR}(\tau_1, \tau_2)}{\text{var}(\overline{CAR}(\tau_1, \tau_2))^{1/2}} \sim N(0, 1) \tag{3.12}$$

I followed the same procedure for calculating average abnormal returns and cumulative abnormal returns for the 4-digit SIC-code peer group observations.

3.4 Conclusion

This chapter described the samples and methodologies used to answer each of the hypotheses outlined in Chapter 2. The operational definitions of each variables and the peers observations used throughout the research were described.

Chapter 4
Data Analysis

4.1 Introduction

This chapter presents the results obtained in each methodological step described in Chapter 3 and analyses them for their relevance to the formulated hypotheses. This chapter is restricted to the presentation and analysis of the collected data, without drawing general conclusions or comparing results to those of other researchers. The linkage to the previous literature and development of conclusions is left for the last chapter of the dissertation.

4.2 Patterns of Data for each Hypothesis

4.2.1 Security offerings

I previously conjectured that since fraud detection may affect the availability and cost of future financing, managers have incentives to take advantage of this information asymmetry to increase the amount of funds they raise. Similarly, I expected a firm engaged in a fraudulent behavior -such as lack of disclosure of information and/or misstatement of accounts- to have greater needs of cash and liquidity, which would translate in a greater amount of capital raise. Following this intuition, I com-

pared the weighted average amount of security offerings made by the sample of firms engaged in a SCAS with the average amount of offerings made by their peers (the value-weighted portfolio of the remaining firms with the same 4-digit sic code). The comparison was performed using data for the 6 years window [-2,+3] around the filing of the SCAS. Results reported in Table III offer support to Hypotheses 1 and 4.

Table III
Mean security offerings by event year

This table reports the total mean security offerings of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and that of a value-weighted portfolio of the remaining firms with the same 4-digit sic code (by event year). The event year (t=0) is defined as the year in which the security class action suit was filed against the firm. The amount of total –yearly- security offerings is measured as the sum of debt issuances and book equity issuances. Debt issuances are measured as the change in total assets minus change in book equity divided by total assets. Book equity issuances are measured as the change in book equity minus the change in balance sheet retained earnings, divided by total assets. The last two columns of the table present the results of the one and two-tailed mean-difference tests.

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|)[(1)]	Pr(T>t)[(2)]
-2	Security offerings SCAS	629	0.5763			
-2	Security offerings PEERS	629	0.10765	0.46865	0.000 (***)	0.000 (***)
-1	Security offerings SCAS	638	0.38963			
-1	Security offerings PEERS	638	0.11058	0.27905	0.000 (***)	0.000 (***)
0	Security offerings SCAS	553	0.18403			
0	Security offerings PEERS	553	0.09158	0.09245	0.000 (***)	0.000 (***)
1	Security offerings SCAS	483	0.04206			
1	Security offerings PEERS	483	0.07192	-0.02986	0.409	0.796
2	Security offerings SCAS	403	0.06428			
2	Security offerings PEERS	403	0.06875	-0.00447	0.884	0.558
3	Security offerings SCAS	322	0.07422			
3	Security offerings PEERS	322	0.06732	0.0069	0.928	0.464

[(1)]Ha: mean(diff) ? 0

[(2)]Ha: mean(diff) $>$ 0

In line with Hypothesis 1, ex-ante, firms engaged in a corporate scandal issue significantly more securities than their peers. Yet, this issuance pattern is abnormal and disappears after the SCAS filing, also consistent with Hypothesis 4. On average, two years before the event, firms engaged in a corporate scandal issue 5.35 times

more securities than their peer sample. One year before the filing, abnormal security issuance starts decreasing but is still 2.52 times higher than that of the industry peers. In the event year, i.e. when the SCAS is filed, the abnormal issuance is twice that of the peer group. All differences are statistically significant at the 1% level for both the one and two-tailed tests.

Hypothesis 4 predicted that once the information gap with the market that allowed abnormal security issuance is eliminated, the issuance pattern should revert towards the market mean. Results reported in Table 3 confirm this intuition: the three years following the SCAS filings, sued firms decrease considerably their security offerings and their issuance pattern is not statistically different from that of their peers. In fact there is a mild evidence, although insignificant, that issuances are less than the industry average. This result is not surprising and can be interpreted as an overshooting effect: market reacts sharply to the SCAS and prices drop below their "fair" value reducing the chances for capital raising.

4.2.2 Financial mix: Equity and Debt offerings

The analysis presented in section 4.2.1 showed that there is robust evidence of greater security issuance before a scandal erupts, which supports the idea that firms and managers exploited a temporary overpricing due to undisclosed information. Yet, this information gap should affect more heavily equity than debt issuances. According to the Market Timing Hypothesis, firms with higher current stock prices -relative to

their past stock prices, book values or earnings- are more likely to issue equity rather than debt and repurchase debt rather than equity (Hovakimian, Opler and Titman, 2001). In this light I argued that the retained information allows firms to maintain overvalued stocks, leading to higher equity issuances. Accordingly, I expected these firms to show smaller evidence of a differential issuance of public debt. Results reported in Table IV confirm my predictions.

Ex-ante SCAS firms issue far more equity than their comparable weighted average portfolio of peers, and the difference is statistically significant for all years. Two years before the event, firms engaged in a corporate scandal issue 7.7 times more equity than their peer sample. Similarly to results observed for the security issuances test, this pattern is decreasing in time although significance is consistently high at the 1% level. In particular, one year before the event (at t=-1) SCAS firms issued 4.26 times more than their peers; during the year of the filing of the security class action, the abnormal equity issuance drops to 2.39 times than the peers' sample. As predicted, after the event, SCAS firms reduce considerably their equity issuances which are never significantly different from the industry average. Debt issuance evidence provides additional support to the hypothesis. Before the scandal is unveiled, SCAS firms make a remarkably smaller use of debt as opposed to equity. Cross-sectionally, debt offerings are aligned with those of the industry peers with the exception of one year before the filing. Yet, financing decisions after the SCAS filing change sharply: equity issuances shrink and debt issuances turn negative and significant for the first

Table IV

Mean debt and equity issuances by event year

This table reports mean equity and debt issuances of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and a value-weighted portfolio of the remaining firms with the same 4-digit sic code (by event year). The event year (t=0) is defined as the year in which the security class action suit was filed against the firm. Debt issuances are measured as the change in total assets minus change in book equity divided by total assets. Book equity issuances are measured as the change in book equity minus the change in balance sheet retained earnings, divided by total assets. The last three columns of the table present the results of the one and two-tailed mean-difference tests.

EQUITY

t	Variable	Obs	Mean	Mean (diff)	Pr(|T|>|t|)[1]	Pr(T>t)[2]	Pr(T<t)[3]
-2	Equity issuances SCAS	629	0.53837				
-2	Equity issuances PEERS	629	0.06988	0.46849	0.018 (**)	0.009 (***)	0.991
-1	Equity issuances SCAS	638	0.30894				
-1	Equity issuances PEERS	638	0.07248	0.23647	0.000 (***)	0.000 (***)	1.000
0	Equity issuances SCAS	553	0.14792				
0	Equity issuances PEERS	553	0.06199	0.08593	0.000 (***)	0.000 (***)	1.000
1	Equity issuances SCAS	483	0.07433				
1	Equity issuances PEERS	483	0.04548	0.02885	0.256	0.128	0.872
2	Equity issuances SCAS	403	0.08934				
2	Equity issuances PEERS	403	0.0459	0.04344	0.089 (*)	0.044 (*)	0.956
3	Equity issuances SCAS	322	0.08192				
3	Equity issuances PEERS	322	0.04269	0.03923	0.091 (*)	0.046 (*)	0.955

DEBT

t	Variable	Obs	Mean	Mean (diff)	Pr(|T|>|t|)[1]	Pr(T>t)[2]	Pr(T<t)[3]
-2	Debt issuances SCAS	632	0.03773				
-2	Debt issuances PEERS	632	0.03988	-0.00215	0.990	0.505	0.495
-1	Debt issuances SCAS	640	0.08122				
-1	Debt issuances PEERS	640	0.0392	0.04202	0.008 (***)	0.004 (***)	0.996
0	Debt issuances SCAS	555	0.03606				
0	Debt issuances PEERS	555	0.03158	0.00448	0.766	0.383	0.617
1	Debt issuances SCAS	485	-0.03259				
1	Debt issuances PEERS	485	0.02934	-0.06193	0.003 (***)	0.999	0.001 (***)
2	Debt issuances SCAS	406	-0.02519				
2	Debt issuances PEERS	406	0.02368	-0.04887	0.069 (*)	0.966	0.034 (**)
3	Debt issuances SCAS	325	-0.01069				
3	Debt issuances PEERS	325	0.02472	-0.03541	0.568	0.716	0.284

[1]Ha: mean(diff) ? 0

[2]Ha: mean(diff) $>$ 0

[3]Ha: mean(diff) $<$ 0

two years of the event window. At t=3, debt issuance is still negative although not significant. Firms in the peers' sample show a significantly different behavior with both debt and equity offerings being relatively stable in the two periods before and after the SCAS filing. Interestingly, issuance figures show a strong evidence of discrete, one-time downward changes around the event date. Since figures are estimated over event windows distributed over a 10 years time horizon, it is not likely that this change is correlated with market conditions. Differently, I interpret this change as a possible consequence of a contagion effect on peers: when a SCAS is filed, investor may increase their risk estimates that other companies have engaged in similar practices thus reducing stock prices and increasing debt required yields, which ultimately result in more costly capital and deferred or reduced capital raising. I address this issue in more detail in section 4.2.4.

4.2.3 Leverage

The previous analyses show remarkable differences in the security issuance patterns of companies engaged in a SCAS. Yet these figures may not fully capture the complete set of financing decisions by companies. In fact privately negotiated financing like bank loans are by construction excluded from the data. This source of capital is largely used in addition to publicly placed securities to shape up companies' financial structures. In particular, following Hypothesis 3 and previous results, it is natural to expect market leverage to be not significantly different or decreasing from that of the

industry due to overpriced equity before the SCAS, and to increase soon thereafter due to the strong adjustment in prices following the SCAS announcement. Similarly, book leverage should decrease before the filing as an effect of incremental equity increase and rise in the following years as evidence of a greater use of non-public debt by the company due to too costly or closed market conditions. I tested these intuitions by analyzing the market and book leverage figures for companies sued by security-holders and the control peers' group around the event date. Results reported in Table V confirms these predictions.

Table V

Market and book leverage by event year

This table reports the mean market and book leverage of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and for a the value-weighted portfolio of firms with the same 4-digit sic code by event year, excluding the SCAS firm. The event year (t=0) is defined as the year in which the security class action suit was filed against the firm. Market leverage is measured as book debt divided by the sum of total assets minus book equity plus market equity. Book leverage is measured as book debt divided by total assets. The last two columns of the table present the results of the one and two-tailed mean-difference tests.

MARKET LEVERAGE

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|)[(1)]	Pr(T>t)[(2)]
-2	Market leverage SCAS	607	0.23636			
-2	Market leverage PEERS	607	0.23316	0.0032	0.719	0.359
-1	Market leverage SCAS	633	0.2519			
-1	Market leverage PEERS	633	0.23412	0.01778	0.050 (**)	0.025 (**)
0	Market leverage SCAS	570	0.37213			
0	Market leverage PEERS	570	0.23748	0.13465	0.000 (***)	0.000 (***)
1	Market leverage SCAS	498	0.38113			
1	Market leverage PEERS	498	0.23873	0.1424	0.000 (***)	0.000 (***)
2	Market leverage SCAS	417	0.35992			
2	Market leverage PEERS	417	0.23091	0.12901	0.000 (***)	0.000 (***)
3	Market leverage SCAS	327	0.36473			
3	Market leverage PEERS	327	0.23017	0.13456	0.000 (***)	0.000 (***)

BOOK LEVERAGE

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|)[(1)]	Pr(T>t)[(2)]
-2	Book leverage SCAS	706	0.65327			
-2	Book leverage PEERS	706	0.42999	0.22328	0.027 (**)	0.013 (**)
-1	Book leverage SCAS	660	0.48329			
-1	Book leverage PEERS	660	0.42294	0.06035	0.106	0.053 (*)
0	Book leverage SCAS	572	0.52615			
0	Book leverage PEERS	572	0.42488	0.10127	0.000 (***)	0.000 (***)
1	Book leverage SCAS	501	0.62556			
1	Book leverage PEERS	501	0.43461	0.19096	0.007 (***)	0.003 (***)
2	Book leverage SCAS	420	0.58146			
2	Book leverage PEERS	420	0.42081	0.16065	0.000 (***)	0.000 (***)
3	Book leverage SCAS	330	0.75497			
3	Book leverage PEERS	330	0.41863	0.33634	0.037 (**)	0.019 (**)

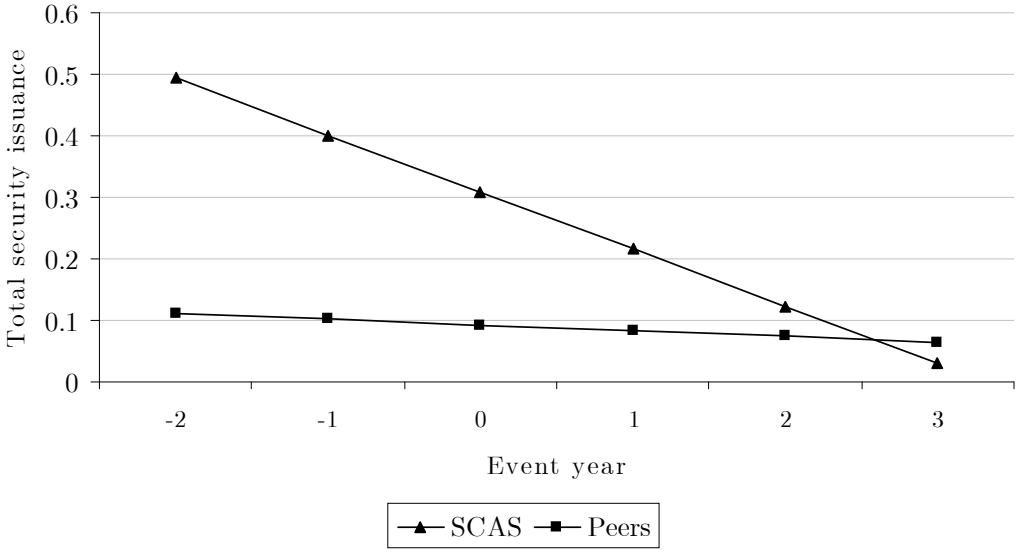
[(1)]Ha: mean(diff) ? 0

[(2)]Ha: mean(diff) $>$ 0

Firms engaged in SCAS show decreasing levels of market leverage, although differences are not significant except for the event year -2. Differently, book leverage differences increase significantly from the filing date. Furthermore, this result is fully generated by SCAS firms' changes since the peer group doesn't show any significant

Figure 7
Total security offerings' trend analysis

This figure reports the results of the regression No. (3.6). The amount of total –yearly- security offerings is measured as the sum of debt issuances and book equity issuances.



change in the average book leverage over the 5 years event window. Market leverage figures are not largely different between the two groups before the filing date. Yet, it is documented a strongly significant increase in market leverage at the event date and for all the following years. Similarly to book leverage, market leverage figures for the peer group are constant over time suggesting that differences are determined by drops in the market value of equity of SCAS firms.

4.2.4 Contagion effect on external financing decisions

Figure 7 and Table VI show regression results for SCAS firms and their peers.

The results support the intuition of Hypothesis 5 as overall issuances decrease at an increasing rate over time for both subsamples.

Table VI
Security offering trend analysis

This table reports the results of the regression: $Y_{jt} = \alpha_j + \beta_j(T) + \varepsilon_{jt}$; where, Y_{jt} are either equity, debt or total security issuances, T is a trend variable that ranges from {1,6}, and e_{it} is the error term of the regression. The amount of total –yearly- security offerings is measured as the sum of debt issuances and book equity issuances. Debt issuances are measured as the change in total assets minus change in book equity divided by total assets. Book equity issuances are measured as the change in book equity minus the change in balance sheet retained earnings, divided by total assets.

SCAS			
Dependent variable	Total security offerings	Equity issuances	Debt issuances
Intercept	0.58644 (***)	0.50952 (***)	0.08248
P>|z|	0.000	0.000	0.313
Trend coeff.	-0.09279 (***)	-0.07831 (***)	-0.01875
P>|z|	0.000	0.001	0.392
N	721	721	724
Wald chi-square	32.05 (***)	10.67 (***)	0.73
P>chi-square	0.000	-0.001	-0.392

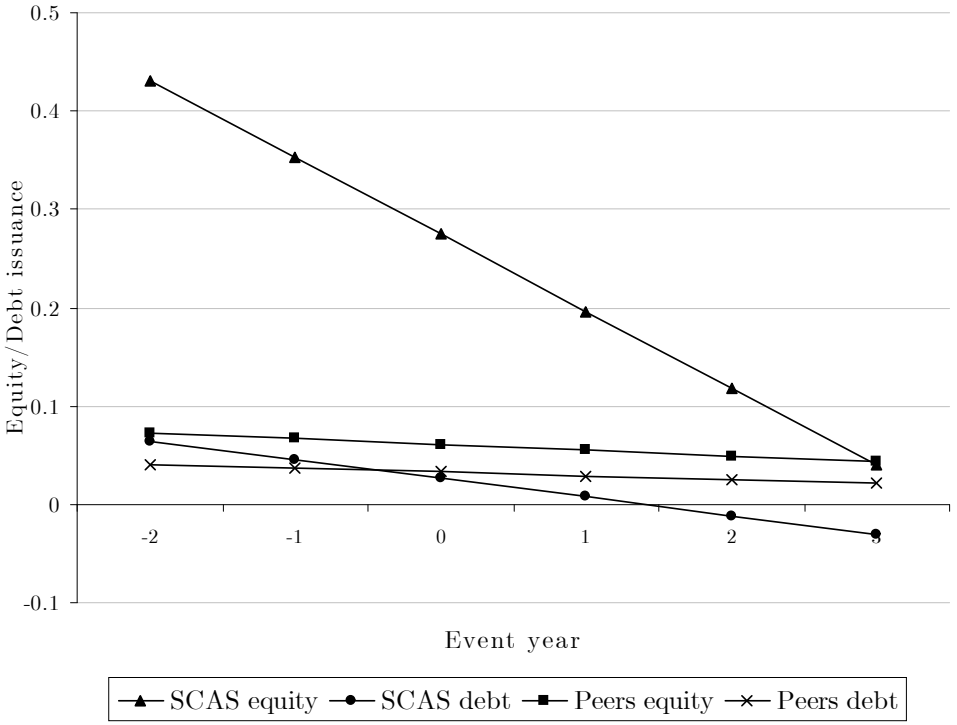
PEERS			
Dependent variable	Total security offerings	Equity issuances	Debt issuances
Intercept	0.12045 (***)	0.07807 (***)	0.04463 (***)
P>|z|	0.000	0.000	0.000
Trend coeff.	-0.00929 (***)	-0.00573 (***)	-0.00387 (***)
P>|z|	0.000	0.000	0.000
N	782	782	782
Wald chi-square	57.18 (***)	47.75 (***)	21.96 (***)
P>chi-square	0.000	0.000	0.000

The trend coefficient for both subsamples is negative, statistically significant and, not surprisingly, greater for SCAS firms. Intercepts are large and positive, indicating a positive net security issuance over time. Regression significance as captured by Wald statistic's chi^2 is robustly significant at the 1% level. Previous results on security issuance by SCAS firms suggested the existence of a different effect on debt

and equity deals. Following this evidence and the prediction in Hypothesis 6, I break down the security issuance trend analysis by type of security. As reported in Figure 8 and Table VI, I find that equity issuances decrease for both peers and SCAS firms.

Figure 8
Equity and Debt issuance trend analysis

This figure reports the results of the regression No. (3.6). Debt issuances are measured as the change in total assets minus change in book equity divided by total assets. Book equity issuances are measured as the change in book equity minus the change in balance sheet retained earnings, divided by total assets.



The trend coefficient of the troubled firms is over 13 time larger than the one of their peers. Still, peers present a negative, strongly significant coefficient which indicates a contraction in capital raising in public equity markets. Results for debt

issuances are somewhat different. Not surprisingly, regression estimates for SCAS firms are not significant. This result can be explained recalling the evidence on debt issuance and book leverage of SCAS firms, which showed a strong decrease in debt issuance after the filing followed at t=+2 by a recovery. On the other hand, results for the peers group are strongly significant with a negative coefficient for the trend variable which indicates that a security class action suit on one competitor affects the debt capacity of the entire industry. In summary, I find that in the vicinity of the event there is a decrease of both debt and equity issuances for both samples, and this effect can be interpreted as a contagion effect in the financing pattern of the industry.

Contagion effect and cash flow similarity

Hypothesis 6 argued that if a contagion on capital structure decisions exists, it should be larger the higher the similarity of companies' cash flows. To test this hypothesis I estimate similarity as the correlation of returns between the industry portfolio and the firms engaged in the corporate scandal during the year preceding the filing of the class action suit. I then define a dummy variable equal to one if the correlation of returns between the industry portfolio and the firms engaged in the corporate scandal for the year preceding the file of the class action suit falls within the 51st and 100th percentile (high correlation), and zero otherwise (low correlation). Table VII presents results for the peers group sorted by the degree of similarity with the relevant SCAS company.

Results are statistically significant at all levels and indicate that security issuance opportunities are positively affected by corporate events in the industry the higher the degree of cash flows similarity between the sued company and its peers. This result is twice as strong for equity rather than debt suggesting that shareholders sharply react, reducing financing opportunities or increasing their cost for any company in the same industry niche.

Table VII
Contagion effect analysis according to correlation of stock returns

This table reports the results of the regression: $Y_{jt} = \alpha_j + \beta_j(T) + \varepsilon_{jt}$; where, Y_{jt} are either equity, debt or total security issuances, T is a trend variable that ranges from {1,6}, and e_{it} is the error term of the regression. The amount of total –yearly- security offerings is measured as the sum of debt issuances and book equity issuances. Debt issuances are measured as the change in total assets minus change in book equity divided by total assets. Book equity issuances are measured as the change in book equity minus the change in balance sheet retained earnings, divided by total assets. The high/low correlation of returns dummy is defined as: 0 if correlations of returns (between SCAS and PEERS in the year preceding the filing) lies within the [1-50th] percentile and 1 if it lies within the [51-100]th percentile in the year before the filing of the SCAS.

Dependent variable: Total security offerings		
	High	Low
Intercept	0.13833 (***)	0.10074 (***)
P>|z|	0.000	0.000
Trend	-0.01160 (***)	-0.00459 (***)
P>|z|	0.000	0.000
N	197	198
Wald chi-square	3746.4	705.71
P>chi-square	0.000	0.000

Dependent variable: Equity issuances		
	High	Low
Intercept	0.09610 (***)	0.06669 (***)
P>|z|	0.000	0.000
Trend	-0.00909 (***)	-0.00281 (***)
P>|z|	0.000	0.000
N	197	198
Wald chi-square	4397.23	611.42
P>chi-square	0.000	0.000

Dependent variable: Debt issuances		
	High	Low
Intercept	0.04936 (***)	0.03599 (***)
P>|z|	0.000	0.000
Trend	-0.00452 (***)	-0.00126 (***)
P>|z|	0.000	0.000
N	197	198
Wald chi-square	1533.82	93.26
P>chi-square	0.000	0.000

Negative issuance

Previous results have shown that both SCAS firms and their peers have a lower level of security issuance after the security class action filing. Interestingly, this

phenomenon also generates cases of negative issuances. Negative debt issuance can be often the simple repayment of outstanding debt without any rollover. In such a case, assuming that companies have a fairly stable short term financial structure, the negative issuance pattern should be rather stable throughout the event window. Yet, if some extraordinary event occurs, affecting the company current and expected cash-flows an abnormal negative issuance pattern would be a signal of a debt restructuring process involving some degree of debt cutting. Negative equity interpretation is less intuitive since book equity is a permanent liability in a company's balance sheet. Table VIII reports figures for a simple discrete analysis of the number of firms for which debt and equity issuances were less or equal to zero during the [-2,+3] years surrounding the filing of the security class action suit.

Table VIII
Security offering trend analysis – Discrete analysis

This table reports the results of a discrete analysis of negative debt and equity issuances in the different event years. For each event year we calculated the number of case where debt/equity issuances were less or equal than zero. Percentage are calculated on the total number of observations.

Equity issuances

	SCAS			PEERS		
t	Obs	Eq_iss<=0	Eq_iss<=0 (%)	Obs	Eq_iss<=0	% Eq_iss<=0
-2	629	90	14.31%	754	91	12.10%
-1	638	95	14.89%	717	103	14.40%
0	553	145	26.22%	627	99	15.80%
1	483	135	27.95%	551	108	19.60%
2	403	105	26.05%	458	97	21.20%
3	322	96	29.81%	366	73	19.90%

Debt issuances

	SCAS			PEERS		
t	Obs	Debt_iss<=0	% Debt_iss<=0	Obs	Debt_iss<=0	% Debt_iss<=0
-2	632	175	27.69%	754	154	20.40%
-1	640	174	27.19%	717	135	18.80%
0	555	211	38.02%	627	153	24.40%
1	485	244	50.31%	551	128	23.20%
2	406	217	53.45%	458	109	23.80%
3	325	159	48.92%	366	92	25.10%

Results show that after the filing SCAS firms retire and/or repurchase about 88% more equity and 74% more debt. In the SCAS subsample, negative debt issuance may be the result of debt repayment and cancellation due to restructuring taking place after the suit has been filed. Agrawal and Cooper (2007) show in fact that immediately after a scandal, most of the companies change their top management and initiate profound restructuring processes encompassing also debt renegotiation. This same interpretation may apply to the equity figures as most of the restructuring plans imply large dilutions for existing shareholders which result in negative changes in book equity and retained earnings. Surprisingly though, also companies in the peer

group show an increasing amount of negative issuances. The differences are strong and significant both across samples and time. In line with Hypotheses 5 and 6 I interpret this result as a contagion effect of the filing of a SCAS in the industry, which results in decreased opportunities for security offerings of the peers' group around the event.

4.2.5 Contagion effect on stock prices

Table IX reports the event study results.

For SCAS firms I observe significant, large negative returns on all estimation windows. In the 21 days window the market price of sued firms dropped by -19.84%. The biggest CAR (-17.64%) is observed in the [-10,+1] window. Then, a CAR of -7.12% is observed in the three days around the filing date. The price adjustment process extends with significant daily abnormal returns up to three days after the filing and an additional -2.2% significant CAR up to 10 days after the filing. Interestingly, the results are stronger in size and significance than those reported in Gande Lewis (2009). I interpret this evidence as a result of the different sample adopted. In my sample I have excluded financial companies and non-capital structure relevant allegations such as IPO and Option Backdating-related filings. This different composition suggests that investors of industrial firms react to the information conveyed by the filing as a signal of a greater risk exposure of all securities, and accordingly, adjust more their portfolios. This adjustment is confirmed by looking at the peer group.

Table IX
Contagion effect analysis by event window

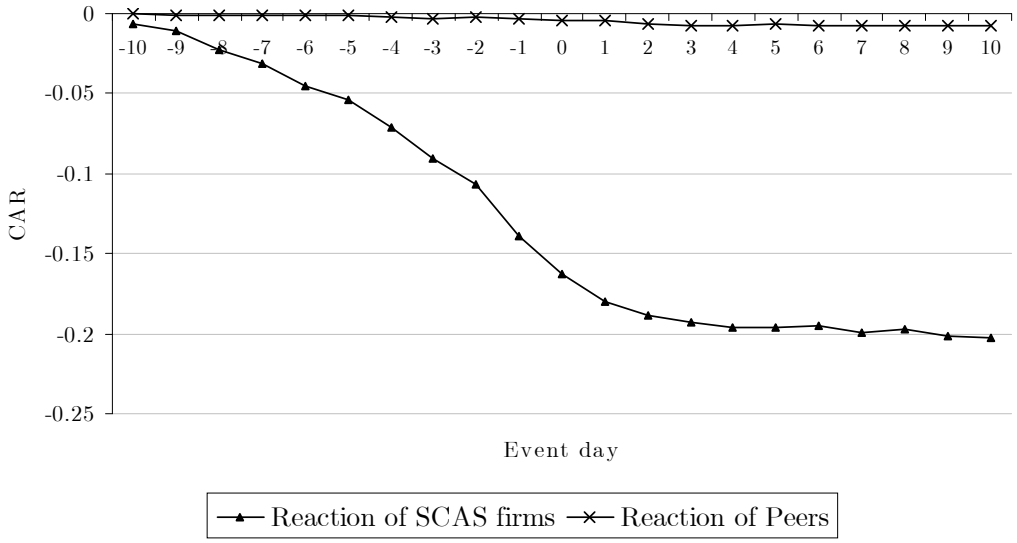
This table reports the cumulative abnormal returns of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and a value-weighted portfolio of the remaining firms with the same 4-digit sic code (by event year). The event year (t=0) is defined as the year in which the security class action suit was filed against the firm. The daily abnormal return of a security is computed by subtracting the predicted normal return (estimated using the market model) from the actual return for each day in the event window.

Day/window relative to SCAS filing	Reaction of SCAS firms				Reaction of PEERS			
	N	AR/CAR	t	P>|t|	N	AR/CAR	t	P>|t|
-10	693	-0.60%	-2.63	0.009 (***)	705	-0.04%	-0.64	0.520
-9	694	-0.50%	-1.89	0.060 (**)	705	-0.05%	-0.76	0.448
-8	692	-1.11%	-4.18	0.000 (***)	705	-0.04%	-0.52	0.602
-7	692	-0.90%	-3.56	0.000 (***)	705	0.04%	0.44	0.658
-6	693	-1.38%	-4.26	0.000 (***)	705	-0.04%	-0.47	0.640
-5	692	-0.88%	-1.55	0.122	705	-0.01%	-0.11	0.915
-4	693	-1.77%	-4.89	0.000 (***)	705	-0.03%	-0.38	0.700
-3	693	-1.90%	-5.68	0.000 (***)	705	-0.17%	-2.39	0.017 (**)
-2	688	-1.68%	-3.84	0.000 (***)	705	0.16%	1.81	0.070 (*)
-1	685	-3.21%	-6.81	0.000 (***)	705	-0.10%	-1.35	0.177
0	686	-2.34%	-5.17	0.000 (***)	705	-0.11%	-1.64	0.101
1	687	-1.77%	-6.42	0.000 (***)	705	-0.02%	-0.21	0.834
2	687	-0.80%	-3.30	0.001 (***)	705	-0.29%	-3.68	0.000 (***)
3	686	-0.49%	-1.86	0.063 (*)	705	-0.06%	-0.86	0.389
4	686	-0.23%	-0.83	0.405	705	0.04%	0.55	0.581
5	685	-0.03%	-0.10	0.924	705	0.02%	0.30	0.761
6	686	0.05%	0.18	0.854	705	-0.04%	-0.47	0.637
7	686	-0.43%	-1.73	0.084 (*)	705	-0.05%	-0.70	0.484
8	686	0.21%	0.79	0.431	705	0.08%	0.93	0.352
9	686	-0.34%	-1.22	0.225	705	-0.04%	-0.60	0.550
10	687	-0.20%	-0.83	0.406	705	-0.01%	-0.20	0.840
[-1,0]	705	-5.40%	-8.38	0.000 (***)	705	-0.21%	-2.11	0.036 (*)
[0,+1]	705	-4.00%	-7.80	0.000 (***)	705	-0.12%	-1.27	0.206
[-1,+1]	705	-7.12%	-10.03	0.000 (***)	705	-0.23%	-1.73	0.084 (*)
[-5,+5]	705	-14.73%	-12.60	0.000 (***)	705	-0.56%	-1.98	0.048 (**)
[-10,+10]	705	-19.84%	-14.01	0.000 (***)	705	-0.75%	-1.92	0.056 (*)
[-10,-2]	705	-10.52%	-9.69	0.000 (***)	705	-0.18%	-0.73	0.465
[-10,+1]	705	-17.64%	-14.04	0.000 (***)	705	-0.41%	-1.36	0.173
[+2,+10]	705	-2.20%	-3.34	0.001 (***)	705	-0.35%	-1.53	0.127

Stock price reaction is less strong but still significant both around the event date and in a longer window with CAR equal to -0.21%, -0.56% an -0.75% for, respectively, the [-1,0], [-5,+5] and [-10,+10] windows. Figure 9 graphically presents the daily CARs for both the SCAS and peers samples.

Figure 9
Daily cumulative abnormal returns of SCAS and Peers

This figure reports the daily cumulative abnormal returns of firms engaged in a corporate scandal (proxied by the filing of a SCAS), and a value-weighted portfolio of the remaining firms with the same 4-digit sic code (by event year). The event day 0 is defined as the day in which the security class action suit was filed against the firm. The daily abnormal return of a security is computed by subtracting the predicted normal return (estimated using the market model) from the actual return for each day in the event window.



The latter price drops may seem somewhat surprising since companies litigation damages are generally fully insured and the expected direct and indirect costs should be recovered. Gande and Lewis (2009) suggest that the downward adjustments are the result of shareholders capitalization of future higher insurance premia,

legal costs and loss of reputation. Yet these additional costs are unlikely to be large enough to motivate these price adjustments. A different explanation is related with our previous evidence that companies involved in a security class action issue significantly more than their peers due to overvaluation. In this spirit, investors, therefore may interpret the SCAS filing as a credible signal of previous overvaluation thus sharply adjusting stock prices. Such a case carries a straightforward, testable implication: if SCAS reaction is a consequence of previous overvaluation, the magnitude of the reaction should be a function of the severity of the managerial misbehavior. Unfortunately class actions are filed without any explicit monetary claim, making a direct test impossible. Yet, the filing claims and support documentation should allow investors to understand the likely outcome of the suit. In other words investors may be able to measure the extent of managerial misbehavior by anticipating the potential monetary outcome. In such a case CARs should be correlated with the realized SCAS settlements. I test this intuition by regressing the CARs of SCAS firms and peers over the monetary payments imposed by courts, as recorded by courts documents and extracted from the Stanford Securities Class Action Clearinghouse database. The cross-sectional regression is as follows:

$$\overline{CAR}_i(\tau_1, \tau_2) = \alpha_{it} + \beta_{it}(S) + \varepsilon_{it} \tag{4.1}$$

where $\overline{CAR}_i$ is the average Cumulative Abnormal Return over the event window $[\tau_1, \tau_2]$ for the i SCAS firms or the peer group and S is the natural logarithm of the monetary settlement at the closing of the Security Class Action measured in millions. Table X reports outcomes for these tests.

Table X
CARs and settlement size

This table reports the relationship between the cumulative abnormal returns of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and a value-weighted portfolio of the remaining firms with the same 4-digit sic code (by event year) with the size of the settlement. The regression performed is CARi=ait+bitS+eit.

SCAS

	[-1;0]	[0;1]	[-1;1]	[-5;5]	[-10;10]	[-10;-2]	[-10;1]
Intercept	-0.016	-0.032 (***)	-0.048 (***)	-0.080 (***)	-0.135 (***)	-0.071 (***)	-0.118 (***)
p>|t|	0.161	0.001	0	0	0	0	0
Sett size log	-0.022 (***)	-0.007 (*)	-0.016 (***)	-0.036 (***)	-0.037 (***)	-0.016 (*)	-0.032 (***)
p>|t|	0.000	0.068	0.002	0.000	0.001	0.051	0.001
R2	0.035	0.006	0.015	0.028	0.021	0.007	0.020
F	22.14	3.35	9.97	17.78	12.09	3.82	12.1
p>F	0.000	0.067	0.001	0.000	0.001	0.051	0.001

PEERS

	[-1;0]	[0;1]	[-1;1]	[-5;5]	[-10;10]	[-10;-2]	[-10;1]
Intercept	-0.004	-0.004	-0.005	-0.012	-0.009	-0.004	-0.009
p>|t|	0.022 (**)	0.010 (***)	0.020 (**)	0.009 (***)	0.177	0.358	0.065 (*)
Sett size log	0.001	0.001	0.001	0.002	0.000	0.001	0.002
p>|t|	0.381	0.047 (**)	0.265	0.182	0.918	0.727	0.422
R2	0.001	0.006	0.002	0.003	0.000	0.007	0.001
F	0.77	3.95	1.25	1.79	0.01	3.82	0.65
p>F	0.387	0.048	0.265	0.182	0.918	0.051	0.422

Results support the intuition on all prediction windows with CARs' size and significance increasing in the length of the event window. In particular the larger the monetary settlement the higher the ex-ante investors' reaction. This result suggests that investor can meaningfully discriminate between class actions and react accord-

ingly. Peers results not surprisingly are insignificant, as in-depth analysis of security class actions' filings is a highly firm-specific task. Investors in other firms most likely react to the general information of the filing without screening extensively the case. This generates a contagion effect which is less affected by expected settlement issues on the sued firms.

Interaction effect with industry characteristics

Similarly to arguments on capital structure decisions, the previous evidence should be increasing in the degree of similarity among firms measured by cash flows and leverage characteristics. In Table XI I control for cash-flows similarity by introducing a dummy variable capturing the correlation of returns between the industry portfolio and the firms engaged in the corporate scandal in the years before the filing of the class action suit. This dummy takes a value of 1 if the correlation of returns falls within the top 50th percentile of the distribution (HIGH correlation), and zero otherwise (LOW correlation).

Table XI
Contagion effect analysis according to correlation of stock returns

This table reports the cumulative abnormal returns of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and a value-weighted portfolio of the remaining firms with the same 4-digit sic code (by event year). The event year (t=0) is defined as the year in which the security class action suit was filed against the firm. The daily abnormal return of a security is computed by subtracting the predicted normal return (estimated using the market model) from the actual return for each day in the event window. The high/low correlation of returns dummy is defined as: 0 if correlations of returns (between SCAS and PEERS in the year preceding the filing) lies within the [1-50th] percentile and 1 if it lies within the ⌊51-100⌋th percentile in the year before the filing of the SCAS.

Sample A: HIGH correlation of returns

Day/window relative to SCAS filing	Reaction of SCAS firms				Reaction of PEERS			
	N	AR/CAR	t	P>|t|	N	AR/CAR	t	P>|t|
[-1,0]	344	-5.99%	-6.71	0.000 (***)	344	-0.21%	-1.68	0.093 (*)
[0,+1]	344	-3.91%	-5.18	0.000 (***)	344	-0.13%	-0.88	0.379
[-1,+1]	344	-7.31%	-7.34	0.000 (***)	344	-0.24%	-1.32	0.188
[-5,+5]	344	-14.69%	-9.70	0.000 (***)	344	-0.72%	-2.00	0.046 (**)
[-10,+10]	344	-18.74%	-9.98	0.000 (***)	344	-0.94%	-1.71	0.089 (*)
[-10,-2]	344	-10.56%	-7.86	0.000 (***)	344	-0.54%	-1.84	0.067 (*)
[-10,+1]	344	-17.88%	-10.62	0.000 (***)	344	-0.77%	-2.10	0.036 (**)
[+2,+10]	344	-0.86%	-1.09	0.278	344	-0.16%	-0.48	0.629

Sample B: LOW correlation of returns

Day/window relative to SCAS filing	Reaction of SCAS firms				Reaction of PEERS			
	N	AR/CAR	t	P>|t|	N	AR/CAR	t	P>|t|
[-1,0]	361	-4.83%	-5.22	0.000 (***)	361	-0.21%	-1.37	0.173
[0,+1]	361	-4.09%	-5.86	0.000 (***)	361	-0.12%	-0.91	0.365
[-1,+1]	361	-6.94%	-6.86	0.000 (***)	361	-0.22%	-1.14	0.256
[-5,+5]	361	-14.77%	-8.34	0.000 (***)	361	-0.40%	-0.94	0.349
[-10,+10]	361	-20.89%	-9.9	0.000 (***)	361	-0.58%	-1.03	0.304
[-10,-2]	361	-10.49%	-6.19	0.000 (***)	361	0.16%	0.40	0.687
[-10,+1]	361	-17.42%	-9.37	0.000 (***)	361	-0.06%	-0.12	0.901
[+2,+10]	361	-3.46%	-3.36	0.001 (***)	361	-0.52%	-1.71	0.088

Results validate the hypothesis highlighting that, for the HIGH correlation group, the contagion effect is approximately 25% stronger in both the [-5,+5] and [-10,+10] windows. Additionally, significant negative reactions are observed also for the [-10,-2] and [-10,+1] windows supporting the idea that investors in the peer group are sensitive to the information incorporated in the SCAS filing if the sued firm and its competitors have similar operations and, therefore risk exposure. This intuition

is confirmed by the insignificance of results for the LOW correlation sub-sample on any window.

Table XII provide results for the leverage control. Following Lang & Stulz (1992), I sorted firms according to a dummy variable equal to zero if the industry leverage mean was within the 1st and 50th percentile of the sample in the year of the filing (LOW leverage) and 1 otherwise.

Table XII
Contagion effect according to leverage

This table reports the cumulative abnormal returns of firms engaged in a corporate scandal (proxied by the filing of a security class action suit or a bankruptcy announcement), and a value-weighted portfolio of the remaining firms with the same 4-digit sic code. The sample is divided using a dummy variable equal to one if the SCAS firm was within the 51-100 percentile of book leverage. Results of the market leverage analysis are not presented but remain unchanged.

Sample A: HIGH Leverage								
Day/window relative to SCAS filing	Reaction of SCAS firms				Reaction of PEERS			
	N	CAR	t	P>|t|	N	CAR	t	P>|t|
[-1,0]	242	-5.86%	-5.42	0.000 (***)	242	-0.21%	-1.35	0.178
[0,+1]	242	-3.43%	-4.59	0.000 (***)	242	-0.19%	-1.15	0.251
[-1,+1]	242	-7.38%	-6.68	0.000 (***)	242	-0.27%	-1.36	0.176
[-5,+5]	242	-13.53%	-7.24	0.000 (***)	242	-0.46%	-1.07	0.285
[-10,+10]	242	-18.66%	-8.04	0.000 (***)	242	-0.49%	-0.81	0.417
[-10,-2]	242	-8.06%	-4.42	0.000 (***)	242	-0.28%	-0.83	0.409
[-10,+1]	242	-15.44%	-7.54	0.000 (***)	242	-0.55%	-1.30	0.195
[+2,+10]	242	-3.22%	-3.05	0.003 (***)	242	0.06%	0.17	0.869

Sample B: LOW Leverage								
Day/window relative to SCAS filing	Reaction of SCAS				Reaction of PEERS			
	N	CAR	t	P>|t|	N	CAR	t	P>|t|
[-1,0]	251	-4.95%	-4.46	0.000 (***)	251	0.00%	0.03	0.979
[0,+1]	251	-4.93%	-5.31	0.000 (***)	251	-0.02%	-0.13	0.896
[-1,+1]	251	-6.93%	-5.67	0.000 (***)	251	-0.03%	-0.17	0.865
[-5,+5]	251	-14.45%	-7.20	0.000 (***)	251	-0.71%	-1.80	0.074 (*)
[-10,+10]	251	-20.20%	-8.39	0.000 (***)	251	-0.77%	-1.28	0.203
[-10,-2]	251	-12.14%	-6.95	0.000 (***)	251	-0.57%	-1.67	0.097 (*)
[-10,+1]	251	-19.06%	-8.83	0.000 (***)	251	-0.61%	-1.62	0.107
[+2,+10]	251	-1.13%	-1.01	0.315	251	-0.16%	-0.42	0.674

Results show that price reactions for SCAS firms are stronger for LOW leverage industries as opposed to HIGH Leverage. In particular, SCAS firms experience -20.2% CAR over the [-10,+10] window while peers experience a significant -0.71% CAR over the [-5,+5] window. This result is only apparently counterintuitive: differently from the Capital Structure analysis, in these tests we are looking at price reactions to events that may carry a signal of overvaluation. In such a case, an overvalued stock market price would result in lower market leverage. Therefore when investors react to the SCAS announcement, the price adjustments generate a sharper reduction in price for companies that have high levels of equity and, therefore low levels of leverage.

Accounting and non-accounting allegations

The effects of a SCAS filing on capital structure decisions of peers may be interpreted as a long-term negative outlook on the industry conditional on the type of information revealed by the SCAS filing. These effects are slow to take place and translate into reduced capital raising for both SCAS firms and their peers. Shorter term effects on the other hand should be increasing in size and significance conditional on the likelihood of observing an event on other firms in the industry. A simple test of this intuition can be performed by dividing the sample into two subsets based on the type of allegations. The information available from the SCAS database allows for a dicothomic breakdown between "accounting-related" and "non-accounting related" allegations. Following the stated argument, I should observe larger price re-

actions both for SCAS firms and their peers for accounting related allegations. In fact non-accounting related allegations can be highly firm-specific and although they may convey a medium to long term signal on the industry status, they are less likely to have immediate effects on prices. On the other hand, accounting allegations may indicate that deteriorated industry conditions have induced the management to defer the revelation of the true financial situation. This can be a behavior that investors may assume to be possible for competitors thus adjusting prices. Table XIII report results for this test.

Table XIII
Cumulative abnormal returns and contagion effect by type of allegation

This table reports the cumulative abnormal returns of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and a value-weighted portfolio of the remaining firms with the same 4-digit sic code. The results are divided in two subsamples according to the type of allegations related to the security class action suit (accounting and non-accounting).

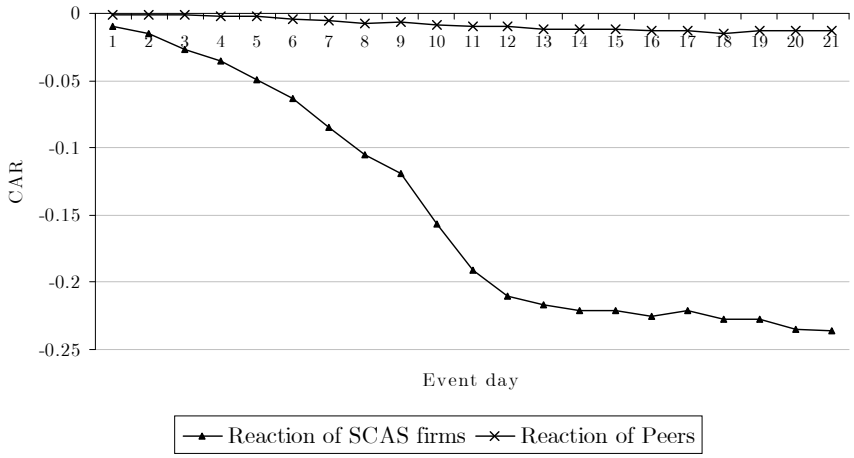
Accounting allegations								
Day/window relative to SCAS filing	Reaction of SCAS firms				Reaction of PEERS			
	N	CAR	t	P>|t|	N	CAR	t	P>|t|
[-1,0]	366	-6.94%	-6.95	0.000 (***)	366	-0.31%	-2.38	0.018 (**)
[0,+1]	366	-5.16%	-6.35	0.000 (***)	366	-0.10%	-0.79	0.432
[-1,+1]	366	-8.78%	-8.00	0.000 (***)	366	-0.30%	-1.79	0.075 (*)
[-5,+5]	366	-16.96%	-10.07	0.000 (***)	366	-1.06%	-3.01	0.003 (***)
[-10,+10]	366	-22.85%	-11.44	0.000 (***)	366	-1.25%	-2.33	0.020 (**)
[-10,-2]	366	-11.58%	-7.77	0.000 (***)	366	-0.69%	-2.35	0.019 (**)
[-10,+1]	366	-20.36%	-11.58	0.000 (***)	366	-0.99%	-2.76	0.006 (***)
[+2,+10]	366	-2.48%	-2.68	0.008 (***)	366	-0.26%	-0.77	0.443

NON-accounting allegations								
Day/window relative to SCAS filing	Reaction of SCAS				Reaction of PEERS			
	N	CAR	t	P>|t|	N	CAR	t	P>|t|
[-1,0]	339	-3.73%	-4.76	0.000 (***)	339	-0.11%	-0.69	0.489
[0,+1]	339	-2.75%	-4.57	0.000 (***)	339	-0.15%	-1.00	0.319
[-1,+1]	339	-5.32%	-6.12	0.000 (***)	339	-0.15%	-0.73	0.466
[-5,+5]	339	-12.33%	-7.67	0.000 (***)	339	-0.02%	-0.04	0.968
[-10,+10]	339	-16.59%	-8.31	0.000 (***)	339	-0.22%	-0.38	0.701
[-10,-2]	339	-9.39%	-5.92	0.000 (***)	339	0.37%	0.93	0.351
[-10,+1]	339	-14.71%	-8.24	0.000 (***)	339	0.22%	0.46	0.642
[+2,+10]	339	-1.88%	-2.02	0.044 (**)	339	-0.45%	-1.45	0.149

Price reactions to accounting-related filings are the strongest with SCAS firms prices dropping by -22.85% on average in the [-10,+10] window and peers similarly yielding a -1.25% negative and significant abnormal return over the same window. As expected, results for non-accounting related class-actions are milder and less significant. Figure 10 graphically presents the cumulative daily CARs for both the SCAS and peers samples within the accounting allegations classification.

Figure 10
Daily cumulative abnormal returns of SCAS and Peers
(Accounting allegations subsample only)

This figure reports the daily cumulative abnormal returns of firms engaged in a corporate scandal (proxied by the filing of a SCAS), and a value-weighted portfolio of the remaining firms with the same 4-digit sic code (by event year). The results include only firms with SCAS classified as accounting related. The event day 0 is defined as the day in which the security class action suit was filed against the firm. The daily abnormal return of a security is computed using event study methodology.



4.3 Robustness tests

To control for possible factors that may affect the quality and interpretation of my results, I performed a set of robustness tests, by checking the capital structure and

event study outcomes, conditional on: the market sentiment in the year of the SCAS filing, the severity of the allegations measured by a bankruptcy filing of the sued firm, the size of companies, both SCAS and peers, and the type of allegations. Table XIV summarizes the tests outcomes and in the following sections I extend some of the most interesting outputs of each control test performed.

Table XIV
Robustness tests summary outcomes

This table presents qualitative results for a set of robustness tests on all 6 hypothesis. The first tests controls for the sentiment of the SCAS filing year as measured by the Sentiment index in Baker and Wurgler (2006). The second tests controls for the bankruptcy filing of the SCAS firms in the two years after the SCAS filing. The third and fourth tests control for the company size measured as the market value of Total Assets relative to the SCAS sample (control 3a) and the market value of Total Assets relative to the industry (control 3b). The firth test controls for the type of SCAS allegation. All controls are performed by dividing the sample into two subgroups according to the test criterion. In all tests "YES" indicate that the results are significant and aligned in sign and size with the hypothesis. If results are significant and aligned in size but different in magnitude, the observed difference is reported in parentheses. "NO" indicates insignificant results or results not confirming the hypothesis.

Control 1: Sentiment of the filing year

	High sentiment	Low sentiment
Hypothesis 1: Ex-ante SCAS issuances > PEERS issuances	YES	YES (higher means)
Hypothesis 2: Ex-ante SCAS equity issuance > PEERS equity issuance	YES	YES
Hypothesis 3: Ex-ante SCAS book leverage < PEERS book leverage	YES	YES
Hypothesis 4: Ex-post SCAS issuances = PEERS issuances	YES	YES
Hypothesis 5 (Contagion): ex-post contraction of both debt and equity issuances for PEERS	YES	YES
Hypothesis 6 (Contagion 2): stock prices drop also for PEERS around SCAS filing date	YES	YES

Control 2: Chapter 11 filing

	Bankruptcy Filing	No Bankruptcy filing
Hypothesis 1: Ex-ante SCAS issuances > PEERS issuances	YES (smaller difference)	YES
Hypothesis 2: Ex-ante SCAS equity issuance > PEERS equity issuance	YES (smaller difference)	YES
Hypothesis 3: Ex-ante SCAS book leverage < PEERS book leverage	NO (stable book leverage before SCAS filing)	YES
Hypothesis 4: Ex-post SCAS issuances = PEERS issuances	YES	YES
Hypothesis 5 (Contagion): ex-post contraction of both debt and equity issuances for PEERS	YES	YES
Hypothesis 6 (Contagion 2): stock prices drop also for PEERS around SCAS filing date	YES	YES

Control 3a: Firms size in the filing year (within SCAS cases)

	Big firms	Small firms
Hypothesis 1: Ex-ante SCAS issuances > PEERS issuances	YES	YES
Hypothesis 2: Ex-ante SCAS equity issuance > PEERS equity issuance	YES (smaller difference)	YES (greater difference)
Hypothesis 3: Ex-ante SCAS book leverage < PEERS book leverage	YES	YES
Hypothesis 4: Ex-post SCAS issuances = PEERS issuances	YES	YES
Hypothesis 5 (Contagion): ex-post contraction of both debt and equity issuances for PEERS	YES	YES
Hypothesis 6 (Contagion 2): stock prices drop also for PEERS around SCAS filing date	YES	YES

Control 3b: Firms size in the filing year (within industry)

	Big firms	Small firms
Hypothesis 1: Ex-ante SCAS issuances > PEERS issuances	YES (greater difference)	YES (greater difference)
Hypothesis 2: Ex-ante SCAS equity issuance > PEERS equity issuance	YES (smaller difference)	YES
Hypothesis 3: Ex-ante SCAS book leverage < PEERS book leverage	YES	YES
Hypothesis 4: Ex-post SCAS issuances = PEERS issuances	YES	YES
Hypothesis 5 (Contagion): ex-post contraction of both debt and equity issuances for PEERS	YES	YES
Hypothesis 6 (Contagion 2): stock prices drop also for PEERS around SCAS filing date	YES	YES

Control 4: Type of allegations

	Accounting	Non- Accounting
Hypothesis 1: Ex-ante SCAS issuances > PEERS issuances	YES	YES
Hypothesis 2: Ex-ante SCAS equity issuance > PEERS equity issuance	YES	YES
Hypothesis 3: Ex-ante SCAS book leverage < PEERS book leverage	NO	YES
Hypothesis 4: Ex-post SCAS issuances = PEERS issuances	YES	YES
Hypothesis 5 (Contagion): ex-post contraction of both debt and equity issuances for PEERS	YES	YES
Hypothesis 6 (Contagion 2): stock prices drop also for PEERS around SCAS filing date	YES	YES

4.3.1 Sentiment of the filing year

In the finance literature there is no single commonly accepted definition of investor sentiment to date. Existing definitions of sentiment range from vague statements about investors' mistakes to specific psychological biases that are model-specific (Shefrin 2007). Furthermore, the term itself is subject to a wide spectrum of classifications and is used in different ways by academic researchers, financial analysts, and the media (Barberis, Shleifer, Vishny 1998; Welch and Qiu 2004; Brown and Cliff 2004). Some researchers refer to investor sentiment as a propensity to trade on noise rather than information, and others use the same term to refer to investor optimism or pessimism. The term sentiment also has connotations with emotions, so the media may refer to it as investor fear or risk-aversion. For the purposes of my analysis I interpret investor sentiment as optimism or pessimism about stocks in general (Baker and Wurgler, 2006).

In the context of my dissertation, the market reaction should be stronger in negative market-sentiment year: as the market is already down-turning, additional negative news further increase the negative momentum on the stock and the expectations on the industry. Differently, in positive market sentiment years, investors may be more lenient towards both sued companies and peers which results in weaker reactions both on capital structure adjustments and prices. Using Baker and Wurgler's (2006) sentiment index[4] I run the set of analyses identifying the market sentiment

[4] This composite index of sentiment is based on the common variation in six underlying proxies for sentiment: the closed-end fund discount, NYSE share turnover, the number and average first-day

of the SCAS filing year as high or low. I create a dummy variable equal to one if the sentiment of the filing year of the security class action suit is greater than zero (positive sentiment), and zero otherwise (negative sentiment). Table XV provides the distribution of cases included in the sample by event year, according to the sentiment of the filing year.

Table XV
Yearly distribution of events according to the sentiment of the filing year
This table reports the distribution of security class action suit cases by filing year according to positive and negative sentiment.

Filing year (SCAS) - Event years	Positive sentiment		Negative sentiment	
-3	276	37.9%	452	62.1%
-2	282	37.5%	471	62.5%
-1	266	36.9%	454	63.1%
0	237	37.7%	392	62.3%
1	214	38.6%	341	61.4%
2	179	39.2%	278	60.8%
3	122	33.3%	244	66.7%
Total	1576		2632	

As depicted in Table XIV all results hold robustly both for the capital structure and stock price hypotheses, with results, as expected, relatively stronger in low sentiment years. To extend these results, Table XVI provides the results obtained for the capital structure analysis (in terms of total security offerings). As with the analysis of the entire sample (and in line with Hypothesis 1), ex-ante, firms engaged in a corporate scandal issue significantly more securities than their peers. Yet, this issuance pattern is abnormal and disappears after the SCAS filing, also consistent with Hy-

returns on IPOs, the equity share in new issues, and the dividend premium.

pothesis 4. It can also be seen that both subsamples (positive and negative sentiment) have very similar results, all consistent with my hypotheses.

Table XVI

Mean security offerings by event year, according to teh sentiment of the filing year

This table reports the total mean security offerings of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and that of a value-weighted portfolio of the remaining firms with the same 4-digit sic code (by event year). The event year (t=0) is defined as the year in which the security class action suit was filed against the firm. The amount of total –yearly- security offerings is measured as the sum of debt issuances and book equity issuances. Debt issuances are measured as the change in total assets minus change in book equity divided by total assets. Book equity issuances are measured as the change in book equity minus the change in balance sheet retained earnings, divided by total assets. The last two columns of the table present the results of the one and two-tailed mean-difference tests.

Panel A: Positive sentiment of the filing year

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|) [1]	Pr(T>t) [2]
-2	Security offerings SCAS	383	0.59086			
-2	Security offerings PEERS	383	0.13317	0.45769	0.0027 (**)	0.0014 (**)
-1	Security offerings SCAS	400	0.44681			
-1	Security offerings PEERS	400	0.12529	0.32152	0.0000 (***)	0.0000 (***)
0	Security offerings SCAS	344	0.18555			
0	Security offerings PEERS	344	0.10589	0.07966	0.0123 (*)	0.0061 (**)
1	Security offerings SCAS	299	0.01306			
1	Security offerings PEERS	299	0.07228	-0.05922	0.2256	0.8872
2	Security offerings SCAS	244	0.02448			
2	Security offerings PEERS	244	0.06598	-0.04150	0.2975	0.8513
3	Security offerings SCAS	216	-0.00478			
3	Security offerings PEERS	216	0.07368	-0.07846	0.3508	0.8246

Panel B: Negative sentiment of the filing year

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|) [1]	Pr(T>t) [2]
-2	Security offerings SCAS	247	0.54406			
-2	Security offerings PEERS	247	0.06706	0.47699	0.0281 (*)	0.014 (*)
-1	Security offerings SCAS	242	0.29823			
-1	Security offerings PEERS	242	0.08797	0.21026	0.0153 (*)	0.0076 (**)
0	Security offerings SCAS	213	0.16878			
0	Security offerings PEERS	213	0.07009	0.09868	0.0119 (*)	0.006 (**)
1	Security offerings SCAS	186	0.08760			
1	Security offerings PEERS	186	0.07083	0.01677	0.7453	0.3726
2	Security offerings SCAS	157	0.14040			
2	Security offerings PEERS	157	0.07223	0.06817	0.1408	0.0704
3	Security offerings SCAS	106	0.21476			
3	Security offerings PEERS	106	0.05485	0.15991	0.3035	0.1517

[1]Ha: mean(diff) ? 0

[2]Ha: mean(diff) > 0

Another interesting result that I obtained from the sentiment control regards the contagion effect on the financing pattern of the industry. Table XVII presents these results.

Table XVII
Security offering trend analysis according to the sentiment of the filing year

This table reports the results of the regression: $Y_{jt} = \alpha_j + \beta_j(T) + \varepsilon_{jt}$; where, Y_{jt} are either equity, debt or total security issuances, T is a trend variable that ranges from {1,6}, and e_{it} is the error term of the regression. The amount of total –yearly- security offerings is measured as the sum of debt issuances and book equity issuances. Debt issuances are measured as the change in total assets minus change in book equity divided by total assets. Book equity issuances are measured as the change in book equity minus the change in balance sheet retained earnings, divided by total assets.

Panel A: Positive sentiment of the filing year

Variable	Intercept	z	P>|z|	Trend coeff.	z	P>|z|
Equity issuances SCAS	0.631293	4.02	0.000 (***)	-0.1264101	-2.62	0.009 (**)
Equity issuances PEERS	0.093849	17.8	0.000 (***)	-0.0085933	-6.15	0.000 (***)
Variable	Intercept	z	P>|z|	Trend coeff.	z	P>|z|
Debt issuances SCAS	0.092910	0.63	0.530	-0.0265011	-0.57	0.569
Debt issuances PEERS	0.061994	15.92	0.000 (***)	-0.0089071	-7.02	0.000 (***)

Panel B: Negative sentiment of the filing year

Variable	Intercept	z	P>|z|	Trend coeff.	z	P>|z|
Equity issuances SCAS	0.439226	3.5	0.000 (***)	-0.0571584	-1.84	0.065 (*)
Equity issuances PEERS	0.050697	9.76	0.000 (***)	-0.0006289	-0.44	0.663
Variable	Intercept	z	P>|z|	Trend coeff.	z	P>|z|
Debt issuances SCAS	0.081059	2.42	0.015 (*)	-0.0154922	-1.49	0.136
Debt issuances PEERS	0.017531	3.14	0.002 (***)	0.0039209	2.38	0.017 (*)

For cases filed during a positive sentiment year, the industry suffers a statistically significant contagion effect on both debt and equity issuances. The same is not true for cases filed during a negative sentiment year. For the latter cases the contagion effect on equity issuances is not significant, and that of debt issuances is of the opposite sign as expected. It seems that debt issuances of peers do not change with the filing of a security class action suit within the industry. It is worth noting that even tough I find a mild difference in these results, the coefficients are almost zero so the sentiment of the filing year do not threat the credibility of the analysis of the entire sample.

4.3.2 Chapter 11 filing

In Section 4.2.5 I demonstrated that investors seem to be able to discriminate the severity of SCAS cases and react accordingly. In this spirit, particularly severe cases ultimately ending in a bankruptcy filing should generate stronger effects both on SCAS firms and their peers. I control for this possible effect by matching the data with LoPucki's Bankruptcy Research Database at UCLA, generating a subsample given by sued companies which filed for chapter 11 in the 2 years before and 2 years after the security class action suit filing. I thus repeat all the analyses dividing the original sample into cases that ended in Chapter 11 filing and those who did not. Results support the intuition with the exception of the behavior of book leverage. The book leverage pattern of SCAS firms that are latter engaged in Chapter 11 filing doesn't decrease significantly before the filing. As depicted in Table XVIII, for this subsample we can observe a constantly increasing book leverage through the studied event window.

Table XVIII
Book leverage by event year according to Chapter 11 filing

This table reports the mean book leverage of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and for a the value-weighted portfolio of firms with the same 4-digit sic code by event year, excluding the SCAS firm. The event year (t=0) is defined as the year in which the security class action suit was filed against the firm. Book leverage is measured as book debt divided by total assets. The last two columns of the table present the results of the one and two-tailed mean-difference tests.

Panel A: Firms that filed for Chapter 11 in t=[-2,2]

t	Variable	Obs	Mean		Pr(|T|>|t|)[(1)]	Pr(T>t)[(2)]
-2	Book leverage SCAS	50	0.58498			
-2	Book leverage PEERS	50	0.50693	0.0780	0.0655 (*)	0.0327 (*)
-1	Book leverage SCAS	35	0.60399			
-1	Book leverage PEERS	35	0.49634	0.1076	0.0253 (*)	0.0126 (*)
0	Book leverage SCAS	22	0.90311			
0	Book leverage PEERS	22	0.43326	0.4698	0.0008 (***)	0.0004 (***)
1	Book leverage SCAS	15	0.95738			
1	Book leverage PEERS	15	0.53884	0.4185	0.0199 (*)	0.0099 (**)
2	Book leverage SCAS	15	0.95004			
2	Book leverage PEERS	15	0.51212	0.4379	0.0035 (**)	0.0018 (**)
3	Book leverage SCAS	12	0.92913			
3	Book leverage PEERS	12	0.48753	0.4416	0.0052 (**)	0.0026 (**)

Panel B: Firms that didn't file for Chapter 11 in t=[-2,2]

t	Variable	Obs	Mean		Pr(|T|>|t|)[(1)]	Pr(T>t)[(2)]
-2	Book leverage SCAS	568	0.64126			
-2	Book leverage PEERS	568	0.42073	0.221	0.0766	0.0383 (*)
-1	Book leverage SCAS	544	0.41096			
-1	Book leverage PEERS	544	0.41166	-0.001	0.9661	0.517
0	Book leverage SCAS	485	0.49967			
0	Book leverage PEERS	485	0.41726	0.082	0.0000 (***)	0.0000 (***)
1	Book leverage SCAS	430	0.60279			
1	Book leverage PEERS	430	0.42247	0.180	0.0269 (*)	0.0134 (*)
2	Book leverage SCAS	360	0.51412			
2	Book leverage PEERS	360	0.41198	0.102	0.0011 (**)	0.0005 (***)
3	Book leverage SCAS	282	0.55566			
3	Book leverage PEERS	282	0.40843	0.147	0.0049 (**)	0.0025 (**)

[(1)]Ha: mean(diff) ? 0

[(2)]Ha: mean(diff) $>$ 0

4.3.3 Size

Information on large firms should provide stronger signals for their industry peers than that from smaller firms. In a set of tests, I control for size using two different measures. First, I looked at size of the SCAS firms as measured by total assets, dividing the sample into BIG and SMALL if, respectively, the SCAS firm total assets

variable falls within the 51st and 100th percentile of the SCAS firms sample or not. I similarly model the second measure but looking at the relative ranking of total assets with respect to the whole industry. Table XIX provides the distribution of cases included in both size controls.

Table XIX
Distribution of SCAS filings according to size control
This table reports the distribution of security class action suit cases according to the size control. The intra-sample control is structured as follows: a BIG firm is classified as such if its total assets range in the top 50th percentile of the overall sample's total assets, SMALL otherwise. For the industry control: a BIG firm is classified as such if its total assets are greater than the peer's average total assets in the filing year, SMALL otherwise.

	Intra-sample analysis		Analysis compared to peers	
BIG fims	306	50.0%	446	71.1%
SMALL firms	306	50.0%	181	28.9%
Total	612		627	

Results are aligned with the expectations and offer some interesting additional evidence. In particular, the volume of security issuance for big SCAS firms according to the industry measure, decreases much more sharply, falling below the peers' average after the filing, which suggest that market penalizes big firms relatively more than small ones. This effect seem to be known by small firms which issue more than the aggregate SCAS' firm sample (See Table XX).

Table XX

Mean security offerings by event year according to relative size

This table reports the total mean security offerings of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and that of a value-weighted portfolio of the remaining firms with the same 4-digit sic code (by event year). The event year (t=0) is defined as the year in which the security class action suit was filed against the firm. The amount of total –yearly- security offerings is measured as the sum of debt issuances and book equity issuances. Debt issuances are measured as the change in total assets minus change in book equity divided by total assets. Book equity issuances are measured as the change in book equity minus the change in balance sheet retained earnings, divided by total assets. The last two columns of the table present the results of the one and two-tailed mean-difference tests.

Panel A: Big firms (compared to average total assets of peers)

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|)[1]	Pr(T>t) [2]
-2	Security offerings SCAS	148	0.18648			
-2	Security offerings PEERS	148	0.10709	0.07939	0.0002 (***)	0.0001 (***)
-1	Security offerings SCAS	148	0.22159			
-1	Security offerings PEERS	148	0.11570	0.10588	0.0012 (**)	0.0006 (***)
0	Security offerings SCAS	138	0.08147			
0	Security offerings PEERS	138	0.08888	-0.00741	0.6674	0.6663
1	Security offerings SCAS	127	0.01033			
1	Security offerings PEERS	127	0.07044	-0.06011	0.0053 (**)	0.9974
2	Security offerings SCAS	119	-0.03281			
2	Security offerings PEERS	119	0.06053	-0.09334	0.0290 (*)	0.9855
3	Security offerings SCAS	104	0.02073			
3	Security offerings PEERS	104	0.08421	-0.06348	0.0066 (**)	0.9967

Panel B: Small firms (compared to average total assets of peers)

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|)[1]	Pr(T>t) [2]
-2	Security offerings SCAS	481	0.69625			
-2	Security offerings PEERS	481	0.10783	0.58842	0.0003 (***)	0.0002 (***)
-1	Security offerings SCAS	490	0.44038			
-1	Security offerings PEERS	490	0.10903	0.33135	0.0000 (***)	0.0000 (***)
0	Security offerings SCAS	415	0.21814			
0	Security offerings PEERS	415	0.09248	0.12566	0.0001 (***)	0.0000 (***)
1	Security offerings SCAS	356	0.05338			
1	Security offerings PEERS	356	0.07245	-0.01907	0.6941	0.6529
2	Security offerings SCAS	284	0.10497			
2	Security offerings PEERS	284	0.07220	0.03277	0.4077	0.2038
3	Security offerings SCAS	218	0.09974			
3	Security offerings PEERS	218	0.05927	0.04048	0.7166	0.3583

[1]Ha: mean(diff)

[2]Ha: mean(diff) > 0

4.3.4 Type of allegations

I also controlled the security issuance pattern conditional on the type of allegation of the security class action suit. I have previously shown that accounting allegations generate stronger price reactions around the filing date. Yet, while investors may be immediately less sensitive to the information conveyed by a non-accounting related filing, they may process this additional information in the long term thus affecting the

future financing pattern of sued companies and, through contagion, also their peers. With an illustrative purpose Table XXI provides the results obtained for the capital structure analysis (in terms of total security offerings).

Table XXI
Mean security offerings by event year, according to the type of allegations

This table reports the total mean security offerings of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and that of a value-weighted portfolio of the remaining firms with the same 4-digit sic code (by event year). The event year (t=0) is defined as the year in which the security class action suit was filed against the firm. The amount of total –yearly- security offerings is measured as the sum of debt issuances and book equity issuances. Debt issuances are measured as the change in total assets minus change in book equity divided by total assets. Book equity issuances are measured as the change in book equity minus the change in balance sheet retained earnings, divided by total assets. The last two columns of the table present the results of the one and two-tailed mean-difference tests.

Panel A: Accounting allegations

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|)[1]	Pr(T>t)[2]
-2	Security offerings SCAS	350	0.36346			
-2	Security offerings PEERS	350	0.11052	0.25294	0.0000 (***)	0.0000 (***)
-1	Security offerings SCAS	342	0.36552			
-1	Security offerings PEERS	342	0.10698	0.25853	0.0000 (***)	0.0000 (***)
0	Security offerings SCAS	287	0.17897			
0	Security offerings PEERS	287	0.08528	0.09369	0.0069 (**)	0.0035 (**)
1	Security offerings SCAS	254	0.03384			
1	Security offerings PEERS	254	0.07138	-0.03754	0.5127	0.7436
2	Security offerings SCAS	221	0.04742			
2	Security offerings PEERS	221	0.07071	-0.02329	0.5520	0.7240
3	Security offerings SCAS	180	0.09335			
3	Security offerings PEERS	180	0.05851	0.03484	0.4757	0.2378

Panel B: Non-accounting allegations

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|)[1]	Pr(T>t)[2]
-2	Security offerings SCAS	279	0.84331			
-2	Security offerings PEERS	279	0.10406	0.73925	0.0087 (**)	0.0044 (**)
-1	Security offerings SCAS	296	0.41748			
-1	Security offerings PEERS	296	0.11473	0.30275	0.0000 (***)	0.0000 (***)
0	Security offerings SCAS	266	0.18950			
0	Security offerings PEERS	266	0.09838	0.09112	0.0088 (**)	0.0044 (**)
1	Security offerings SCAS	229	0.05118			
1	Security offerings PEERS	229	0.07253	-0.02135	0.6139	0.6931
2	Security offerings SCAS	182	0.08476			
2	Security offerings PEERS	182	0.06638	0.01838	0.7050	0.3525
3	Security offerings SCAS	142	0.04997			
3	Security offerings PEERS	142	0.07849	-0.02852	0.8593	0.5704

[1]Ha: mean(diff) ? 0

[2]Ha: mean(diff) > 0

Results fully support this intuition, showing no meaningful differences in the outcomes of the capital structure tests for accounting and non-accounting related security class actions.

4.3.5 Beta

The beta of a stock is a measure of the volatility, or systematic risk of the firm. I generated a dummy variable equal to one if the beta of the firm was higher than the mean beta of its peers and zero otherwise. Table XXII shows the results of the issuance pattern according to the firms' beta.

Table XXII
Mean security offerings by event year, according to the firms' beta

This table reports the total mean security offerings of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and that of a value-weighted portfolio of the remaining firms with the same 4-digit sic code (by event year). The event year (t=0) is defined as the year in which the security class action suit was filed against the firm. The amount of total –yearly- security offerings is measured as the sum of debt issuances and book equity issuances. Debt issuances are measured as the change in total assets minus change in book equity divided by total assets. Book equity issuances are measured as the change in book equity minus the change in balance sheet retained earnings, divided by total assets. The last two columns of the table present the results of the one and two-tailed mean-difference tests.

Panel A: High Beta subsample (beta SCAS> beta PEERS)

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|)[1]	Pr(T>t) [2]
-2	Security offerings SCAS	329	0.37058			
-2	Security offerings PEERS	329	0.11043	0.26015	0.0000 (***)	0.0000 (***)
-1	Security offerings SCAS	327	0.32610			
-1	Security offerings PEERS	327	0.11747	0.20863	0.0000 (***)	0.0000 (***)
0	Security offerings SCAS	294	0.12843			
0	Security offerings PEERS	294	0.09380	0.03462	0.1746	0.0873 (*)
1	Security offerings SCAS	261	0.02835			
1	Security offerings PEERS	261	0.07759	-0.04924	0.3642	0.8179
2	Security offerings SCAS	211	0.08582			
2	Security offerings PEERS	211	0.06710	0.01872	0.6168	0.3084
3	Security offerings SCAS	169	0.06277			
3	Security offerings PEERS	169	0.07416	-0.01139	0.8412	0.5794

Panel B: Low Beta subsample (beta SCAS< beta PEERS)

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|)[1]	Pr(T>t) [2]
-2	Security offerings SCAS	117	0.75476			
-2	Security offerings PEERS	117	0.09966	0.65510	0.1604	0.0802 (*)
-1	Security offerings SCAS	118	0.31055			
-1	Security offerings PEERS	118	0.10972	0.20084	0.0000 (***)	0.0000 (***)
0	Security offerings SCAS	103	0.18214			
0	Security offerings PEERS	103	0.10560	0.07654	0.0818 (*)	0.0409 (**)
1	Security offerings SCAS	88	0.08344			
1	Security offerings PEERS	88	0.08212	0.00133	0.9799	0.0252 (**)
2	Security offerings SCAS	75	0.08138			
2	Security offerings PEERS	75	0.07938	0.00200	0.9691	0.4846
3	Security offerings SCAS	60	0.15032			
3	Security offerings PEERS	60	0.07557	0.07475	0.2641	0.1321

[1]Ha: mean(diff) ? 0

[2]Ha: mean(diff) > 0

The overall results of the analysis hold. The differential security offerings in the event year -2 is considerably greater for the LOW beta subsample. Firms holding

a lower beta issue securities 7.57 times more the amount of their peers, while HIGH beta firms issue 3.36 times The later result could be interpreted as a sign of consistence in the level of conservatism of the firms. Firms with lower volatility (compared to its peers) issue less additional capital than those that exhibit greater volatility than their industry.

4.3.6 Dismissed cases

The last test that I performed was the direct comparison of the financing pattern results of my sample versus a sample of dismissed SCAS cases. The intuition behind the test was that dismissed SCAS cases should present different results as those of my SCAS sample (so those cases that went on until finalization). The later is due to the fact that if a case was dismissed it means that the allegation was untruthful or frivolous. Firms that suffer a frivolous allegation should not present differential issuance pattern than their peers but this is not the case with my data.

Table XXIII
Mean security offerings by event year

This table reports the total mean security offerings of firms engaged in a corporate scandal (proxied by the filing of a security class action suit), and that of a value-weighted portfolio of the remaining firms with the same 4-digit sic code (by event year). The event year (t=0) is defined as the year in which the security class action suit was filed against the firm. The amount of total –yearly- security offerings is measured as the sum of debt issuances and book equity issuances. Debt issuances are measured as the change in total assets minus change in book equity divided by total assets. Book equity issuances are measured as the change in book equity minus the change in balance sheet retained earnings, divided by total assets. The last two columns of the table present the results of the one and two-tailed mean-difference tests.

Panel A: SCAS sample cases

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|)[1]	Pr(T>t) [2]
-2	Security offerings SCAS	629	0.5763			
-2	Security offerings PEERS	629	0.10765	0.46865	0.000 (***)	0.000 (***)
-1	Security offerings SCAS	638	0.38963			
-1	Security offerings PEERS	638	0.11058	0.27905	0.000 (***)	0.000 (***)
0	Security offerings SCAS	553	0.18403			
0	Security offerings PEERS	553	0.09158	0.09245	0.000 (***)	0.000 (***)
1	Security offerings SCAS	483	0.04206			
1	Security offerings PEERS	483	0.07192	-0.02986	0.409	0.796
2	Security offerings SCAS	403	0.06428			
2	Security offerings PEERS	403	0.06875	-0.00447	0.884	0.558
3	Security offerings SCAS	322	0.07422			
3	Security offerings PEERS	322	0.06732	0.0069	0.928	0.464

Panel B: Subsample of DISMISSED SCAS cases

t	Variable	Obs	Mean	Mean(diff)	Pr(|T|>|t|)[1]	Pr(T>t) [2]
-2	Security offerings SCAS	375	0.3367088			
-2	Security offerings PEERS	375	0.1032734	0.2334354	0.000 (***)	0.000 (***)
-1	Security offerings SCAS	383	0.2767215			
-1	Security offerings PEERS	383	0.096461	0.1802605	0.000 (***)	0.000 (***)
0	Security offerings SCAS	358	0.1381412			
0	Security offerings PEERS	358	0.0827731	0.0553681	0.140	0.070 (*)
1	Security offerings SCAS	331	0.0675354			
1	Security offerings PEERS	331	0.0720543	-0.0045189	0.940	0.530
2	Security offerings SCAS	287	0.1106236			
2	Security offerings PEERS	287	0.0681847	0.0424389	0.347	0.174
3	Security offerings SCAS	224	0.1609726			
3	Security offerings PEERS	224	0.0691059	0.0918667	0.101	0.050 (*)

[1]Ha: mean(diff) ? 0

[2]Ha: mean(diff) $>$ 0

As depicted in Table XIV all results hold robustly for the capital structure hypotheses. I repeated the analysis and found that both continuing and dismissed SCAS samples presented differential issuing pattern when compared to their peers. Firms with frivolous or dismissed allegations consistently issue more securities than their peers in the period ex-ante to the filing. These results must be interpreted with cau-

tion given that the second sample (the dismissed cases one) is much more smaller and thus its representativeness in the study is reduced.

4.4 Conclusion

This chapter presented the results obtained in the process of testing each hypothesis. The chapter was restricted to the presentation and analysis of the collected data, without drawing general conclusions or comparing results to those of other researchers. The linkage to the previous literature and development of conclusions is developed in the following chapter of the dissertation.

Chapter 5
Conclusions and implications

5.1 Introduction

Corporate scandals have attracted considerable attention due to their large, negative effects on shareholders' value. In this dissertation I argue that these effects are known by corporate managers who try to anticipate higher future costs in capital raising by abnormally issuing more securities before a corporate scandal is unveiled. Measuring corporate scandals as the filing of a security class action suit, I additionally argue that investors may interpret this event as a signal of deteriorating condition on the whole industry, thus generating significant negative contagion effects on the capital raising opportunities and share price levels of the competitors. My results provide robust evidence that firms involved in a corporate scandal issue significantly more securities before the filing and in particular, they raise more equity than their industry peers. After the scandal surfaces both sued firms and their peers face constraints in further capital raising which result in decreasing issuance. Additionally, I document significant stock price effects around the SCAS filing date which spread on all industry constituents. Both capital structure and share price reactions are increasing in the similarity of operating and financial characteristics of sued firms and their industry peers. My results suggest that managers "time" the market by exploiting transient

overvaluation as in anticipation of future more costly or reduced fund-raising opportunities. Yet, markets evaluate information revealed in a corporate scandal as a possibly widespread phenomenon generating negative fall-outs also on peers' financing opportunities. These results have important implications since they suggest that financial structures are the result of firm-level choices, market conditions, as suggested by Baker and Wurgler (2006) but also of industry-level information and behavioral components in managerial decisions.

5.2 Conclusions about each hypothesis

5.2.1 Security offerings

Hypothesis 1 argued that managers and investors suffer from information asymmetry regarding the true practices and operations of a troubled firms. Managers thus exploit this information asymmetry to increase the amount of funds they collect to anticipate a potential capital constraint after a scandal eruption. In my empirical analysis I found that, in line with Hypothesis 1, ex-ante, firms engaged in a corporate scandal issue significantly more securities than their peers. All the event-year differences are considerable and statistically significant in both the one and two-tailed tests and are robust to all the control variables explained in section 4.3.

Hypothesis 4 predicted that once the information gap with the market that allowed abnormal security issuance is eliminated, the issuance pattern should revert

towards the market mean. Results reported in the empirical section of the dissertation confirm this intuition. The abnormal issuance pattern detected before the public knowledge of the scandal disappears after the SCAS filing, sued firms decrease considerably their security offerings and their issuance pattern is not statistically different from that of their peers. In the same fashion as Hypothesis No. 1, all the event-year differences are considerable and statistically significant in both the one and two-tailed tests and are robust to all the control variables explained in section 4.3.

5.2.2 Financial mix: Equity and Debt offerings

In order to explain the financing choice of firms I advocated for the Market Timing Hypothesis of Capital Structure. According to the Market Timing Hypothesis, firms with higher current stock prices -relative to their past stock prices, book values or earnings- are more likely to issue equity rather than debt, thus I argued that the retained information allows SCAS firms to maintain overvalued stocks, leading to higher equity issuances before the eruption of the scandal. In the same light, I expected these firms to show smaller evidence of a differential issuance of public debt. The empirical results of my analysis confirm my predictions.

Ex-ante SCAS firms issue far more equity than their comparable weighted average portfolio of peers, and the difference is statistically significant for all years. As predicted, and also consistent with Hypothesis No. 4, after the event SCAS firms re-

duce considerably their equity issuances which are never significantly different from the industry average. Debt issuance evidence provides additional support to my predictions. Before the scandal is unveiled, SCAS firms make a remarkably smaller use of debt as opposed to equity. Cross-sectionally, debt offerings are aligned with those of the industry peers with the exception of one year before the filing. All the event-year differences (of equity and debt issuances) are statistically significant for both the one and two-tailed tests and are robust to all the control variables explained in section 4.3. One interesting and differential result obtained through the robustness tests is that the increased use of equity financing in the ex-ante period is more pronounced for small firms and their decrease of equity issuances is less pronounced than that of big firms (which suggest that market penalizes big firms relatively more than small ones)

5.2.3 Leverage

In section 2.3.1. I argued that if equity issuances of SCAS firms are higher than those of their peers, then leverage by construction should lower with event time. Following Hypothesis 3 I expected ex-ante market leverage not to be different or to be decreasing from that of the industry due to overpriced equity, and to increase ex-post due to the strong adjustment in prices following the SCAS announcement. Similarly, I expected book leverage decrease before the filing as an effect of incremental equity increase and rise in the following years as evidence of a greater use of non-public debt

by the company due to too costly or closed market conditions. The analysis of the data confirm my predictions. Ex-ante, firms engaged in SCAS show decreasing levels of market leverage. Differently, book leverage differences increase significantly from the filing date. Furthermore, this result is fully generated by SCAS firms' changes since the peer group doesn't show any significant change in the average book leverage over the 5 years event window. Market leverage figures are not largely different between the two groups before the filing date. Yet, it is documented a strongly significant increase in market leverage at the event date and for all the following years. Similarly to book leverage, market leverage figures for the peer group are constant over time suggesting that differences are determined by drops in the market value of equity of SCAS firms. All the event-year differences are statistically significant for both the one and two-tailed tests and are robust to all but one of the control variables explained in section 4.3. The book leverage pattern of SCAS firms that are latter engaged in Chapter 11 filing doesn't decrease significantly before the filing. In this subsample we can observe a constantly increasing book leverage through the studied event window. Given that Hypothesis No. 3 was just a consequence of its preceding ones, the latter differential behavior do not change the overall conclusions of my dissertation.

5.2.4 Contagion effect on external financing decisions

In section 2.3.2. I highlighted the fact that no previous study has ever investigated the existence of a contagion effect on capital structure decisions of companies. In this spirit, I argued that a SCAS filing is a signal that a meaningful mismanagement has occurred in a company and investors may infer that this behavior can be common practice across the industry and therefore increase the capital constraints on peer companies. A highly constrained financing environment will lead to increased cost of external financing and ultimately to a contraction of the total security offerings of the industry. I also expected the degree of similarity among the firms' cash flows to intensify the degree of the contagion effect on the financing pattern of one industry. This intensification of the contagion effect is due to the fact that highly similar firms are likely to have investments with similar cash flow characteristics and similar risk exposures.

The empirical results of the data offer support to Hypotheses 5 and 6. Overall security issuances decrease at an increasing rate over time for both the SCAS and peers samples. I tested the existence of a contagion effect using a trend variable. The trend coefficient was found to be negative and statistically significant for both samples. Not surprisingly, the trend coefficient was greater for SCAS firms. When splitting overall security issuances into equity and debt issuances I found consistent results. Peers present a negative, strongly significant trend coefficient of equity issuances which indicates a contraction in capital raising in public equity markets. The

peers group also presents a negative and strongly significant coefficient for the trend variable of debt issuances, which indicates that a security class action suit on one competitor affects the debt capacity of the entire industry. In summary, I find that in the vicinity of the event there is a decrease of both debt and equity issuances for both samples, and this effect can be interpreted as a contagion effect in the financing pattern of the industry. Departing from the empirical results obtained here I was able to test the fact that a theoretical concept such as the one of contagion effect can also be tested under different settings if the appropriate methodological approach is used.

5.2.5 Contagion effect on stock prices

The last set of hypotheses of my dissertation concerned the existence of a contagion effect on stock prices due to the filing of a SCAS. In Hypothesis No. 7 I argued that stock prices of an industry are negatively affected by the engagement in a SCAS of one of its participants. Furthermore, I expected the stock price reaction of peers to be positive and increasing in leverage due to greater elasticity of equity value to the total value of the firms (Hypothesis 8). Finally, in Hypothesis 9, I argued that since a security class action suit generally conveys bad news about future cash flows and the firm's risk, investors will be more likely to reassess the value of peers' equity the higher the degree of similarity in cash flows. Thus, I expected the contagion effect on stock prices of peer companies to be larger the higher the degree of cash flow similarity of the competitors of the firm involved in the corporate scandal. Reported

results confirm all my predictions. I find that SCAS firms experience significant, large negative returns on all estimation windows. For the peers sample the stock price reaction is less strong but still significant both around the event date and in longer windows.

Furthermore I argued that if SCAS reaction is a consequence of previous overvaluation, the magnitude of the stock price reaction should be a function of the severity of the managerial misbehavior. In such a case CARs should be correlated with the realized SCAS settlements. Results support the intuition on all prediction windows with CARs' size and significance increasing in the length of the event window. In particular the larger the monetary settlement the higher the ex-ante investors' reaction. This result suggests that investor can meaningfully discriminate between class actions and react accordingly. Peers results not surprisingly are insignificant, as in-depth analysis of security class actions' filings is a highly firm-specific task. Investors in other firms most likely react to the general information of the filing without screening extensively the case. This generates a contagion effect which is less affected by expected settlement issues on the sued firms.

When evaluating the effect of the contagion effect according to the industry characteristics I find that for the high correlation group, the contagion effect is stronger, supporting the idea that investors in the peer group are sensitive to the information incorporated in the SCAS filing if the sued firm and its competitors have similar operations and, therefore risk exposure. The empirical results also show that

when investors react to the SCAS announcement, the price adjustments generate a sharper reduction in price for companies that have high levels of equity and, therefore low levels of leverage.

5.3 Conclusions about the Research Problem

In the introductory Chapter of this document I established as the research problem of my dissertation: *Which capital structure theory explains the pattern of firms engaged in corporate scandals?*. I then developed a series of hypotheses and used the Market Timing Hypothesis to address my research questions. The empirical data positively tested the entire set of hypotheses thus I can now confirm that the theoretical approach used in this project was correct. Although the Market Timing Hypothesis is short in explaining many of the factors that have been traditionally considered in the studies of corporate capital structure, it has strong empirical evidence that supports its propositions. My study is additional evidence of the existence of a behavioral component in managers when it comes to financing their firms. Using a cross-sectional database of "troubled" firms I was able to verify the predictions of the Market Timing Hypothesis. Corporate scandals act as information revelation mechanisms to equity market participants. A scandal sheds new light on the actual managerial and accounting practices of the firm, revealing information that was previously unavailable to investors and this at the same time affect the firms and its industry financing pattern. For a sample of firms engaged in a corporate scandal I was able to test the fact

that firms that have overvalued stock will opportunistically exploit this mispricing by issuing equity. At the same time, the existence of a negative stock price reaction of the SCAS sample allowed me to test one of the main assumptions of the Market Timing Hypothesis: the existence of stock price misvaluation. In summary, an additional contribution of my dissertation is the compelling evidence that the Market Timing Hypothesis of capital structure is a valid theoretical approach to explain capital raising behavior under certain circumstances such as troubled firms.

5.4 Implications for Theory and Practice

The present research is useful for both the academic and practitioners fields. First, from the academic point of view, this project fills the gap of a previously unstudied topic - the financing pattern of troubled firms-. It also contributes using a new proxy for corporate scandals - the engagement in a security class action suit-. Finally I also contribute by using a new methodological approach that extends the application of the contagion effect concept at the financing pattern dimension.

The results of this study are relevant for the practitioners' community in at least two ways. Knowing the financing pattern of a troubled firm might help analysts to refine their judgments about firms -for both the present and future expectations-. Secondly, investors can also be aware of the fact that peers do react to SCAS filings not only in terms of stock prices but also in terms of financing decisions and the effects that these financing decisions might carry to their overall portfolio return.

5.5 Limitations

As in any other research project this dissertation has several limitations that are worth considering before closure. The first and main limitation of the project concerns the sample used. The entire analysis is focused on U.S. public firms. The use of only american public firms might bias the analysis for two main reasons: i) these firms are based on a developed financial market; and ii) their size and complexity might be greater than that of firms located in other countries or traded in other markets. The overall results are thus difficult to generalize in a context of medium and small private firms or other geographical locations. It is worth noting that this limitation is characteristical of corporate capital structure studies as the availability of financial data is greater for the american market. Finally, another limitation of my study regards the fact that it cannot be easily replicated for a sample of firms outside the U.S. Security class action suits are predominantly a U.S. phenomenon. During the last years, several European have undergone changes to allow consumer organizations to bring claims on behalf of large groups of consumers, unfortunately this does not applies for security fraud cases. Most of the jurisdiction concerns collective actions brought by associations on behalf of injured parties (outside the capital markets) seeking a judicial declaration that the company is liable for the damage it has caused. The most similar jurisdiction is practiced in Germany. At the end of 2005, Germany approved the "Capital Markets Model Case Act", allowing sample proceedings to be brought before the courts in litigation arising from mass capital markets transactions. This

act, is not like class actions in the United States because it only applies to parties who have already filed suit and does not allow a claim to be brought in the name of an unknown group of claimants.

5.6 Further Research

Several research questions were born during the realization of my dissertation. The first one regards the motivations that managers could have to behave in an opportunistic manner when taking capital structure decisions. This question is clearly related to the literature of behavioral finance and deals with the psychological motivations that managers have in order to act in a certain way, and with the origin of their cognitive biases. The second question regards to the gains attached to the capital structure decisions of troubled firms. Thus further research should address the aftermath of the SCAS, who exactly wins? existing or new shareholders?. The third question that my dissertation generated was: Does a SCAS generates differential returns in the long run? Thus, it would be interesting to know if there are there different returns for long and short term investors. If there exists differential returns then an imperfection of the market and a profit opportunity would be found.

My dissertation also has the possibility of being extended in the contagion effects analyses. One interesting extension of my research is to analyze wether the contagion effects -of financing pattern and stock prices- affect also other countries or other industries. By extending the definition of peers (to an inter-country and

inter-industry level) one can understand the extent of contagion effects and even discriminate on which one is more persistent.

Finally, another extension of the present work at the theoretical level would be the development of a consistent and comprehensive definition of a corporate scandal. As it was presented in chapter 2, the literature -in different fields- uses different proxies and thus definitions of corporate scandals. An important contribution would be the theoretical definition of what a corporate scandal is and which are the main variables of factors that an event must present in order to be considered a corporate scandal.

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Appendix A
Variable definition and codes

Panel a: Variables downloaded from COMPUSTAT		
Variable	Synonym	COMPUSTAT Item
Total Assets	TA{t}	Item [6]
Total Liabilities	TL{t}	Item [181]
Preferred Stock	Preferred stock{t}	Item [10]
Deferred taxes	Def. taxes{t}	Item [35]
Convertible debt	Convertible debt{t}	Item [79]
Common shares outstanding	Common shares outstanding{t}	Item [25]
Price	Price{t}	Item [199]

Panel B: Variables Constructed for the study

Variable	Definition
Book equity {t}	TA{t} -TL{t} - Preferred stock{t} + Def. taxes{t} + Convertible debt{t}
Market equity {t}	Common shares outstanding{t} x price{t}
Book Debt {t}	TA{t} - Book equity{t}
Book Leverage {t}	Book debt{t} / TA{t}
Market Leverage {t}	Book debt{t} / (TA{t} - Book equity{t} + Market equity{t})
Change assets {t}	TA{t} - TA{t-1}
Change RE {t}	RE{t} - RE{t-1}
Change Liabilities {t}	TL{t} - TL{t-1}
Debt Issuances {t}	(Change assets{t} - Change Book Equity{t})/ TA{t}
Book Equity Issuances {t}	(Change book equity{t} - Change RE{t}) / TA{t}
Total security offerings {t}	Equity issuances{t} + Debt issuances{t}