The Stock Price Impact of Securities Class Action Litigations on U.S.-Listed Chinese Companies

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April 15, 2015

Submitted to the Department of Economics of Amherst College
in partial fulfillment of the requirements for the degree of
Bachelor of Arts with honors
Abstract

Based on the literature studying securities class action litigations, my thesis focuses on a specific sample of public companies: the US listed Chinese companies. Compared to other public companies in the US, The US listed Chinese companies are sued at a disproportionately higher rate in securities class action lawsuits. Factors related to incidence of case filing, incidence of settlement, and price change on the day of fraud revelation are studied for the particular sample of US listed Chinese companies. Six potential factors and three categories of variables (basic firm characteristics, agency conflicts, and information asymmetry) are analyzed. This thesis demonstrates the aspects in which US listed Chinese companies conform to the general rules found in all US public companies, while also demonstrating other aspects in which US listed Chinese companies show characteristics that are distinct from other US public companies in the securities class action litigation process.

Keywords: Financial Markets, Asset Pricing, Business and Securities Law, Litigation Process
Acknowledgement

I would like to thank Professor Woglom for cultivating my interest in financial economics, and for his invaluable support and encouragement during the entire process of this work.

I would like to thank Professor Baisa for his incredible advice in helping me understand the complicated incentive structures and strategic interactions involved in the litigation process.

I would like to thank Professor Reyes for teaching a great seminar and equipping me with skills and knowledge for conducting economic research.

I would like to thank Professor Honig and Professor Reyes for reading my thesis and offering suggestions. I would also like to thank Professor Rabinovich and Professor Yarbrough for offering me great comments and helping me generate ideas.

To the entire Department of Economics at Amherst College, thank you for introducing me to the wonderful world of economics, which I love so much; thank you for offering me a great learning experience in the past four years, and for encouraging and supporting me through this long research work.

To my friends, thank you for making my time at Amherst so happy and meaningful.

To my parents, thank you for your love in the past twenty-three years.
Table of Contents

1. Introduction .................................................................................................................. 5

2. Literature Review .......................................................................................................... 12
   2.1 Incentive Analysis in Securities Class Action Litigations .................................. 12
   2.2 Factors Related to Incidence of Securities Class Action Litigations .................. 14
   2.3 Event Study Methodology in Securities Class Action Litigations .................. 15
   2.4 Stock Price Change in Securities Class Action Litigations ............................ 17

3. Data and Method ......................................................................................................... 18
   3.1 Data Source ........................................................................................................... 18
   3.2 Sample Selection ................................................................................................. 19
   3.3 Variables ............................................................................................................. 21
      3.3.1 Dependent Variables ................................................................................... 21
      3.3.2 Independent Variables ............................................................................... 22
   3.4 Method .................................................................................................................. 26
      3.4.1 Test 1: factors related to incidence of lawsuits filing ............................... 26
      3.4.2 Test 2: factors related to incidence of settlement .................................... 28
      3.4.3 Test 3: event study on revelation date ....................................................... 29
      3.4.4 Test 4: factors related to stock price change ............................................. 30

4. Results and Analysis ................................................................................................... 31
   4.1 Descriptive statistics and preliminary analysis .................................................. 31
   4.2 Test 1: factors related to incidence of lawsuits filing ....................................... 32
   4.3 Test 2: factors related to incidence of settlement ............................................ 34
   4.4 Test 3: event study on revelation dates ............................................................. 36
   4.5 Test 4: factors related to stock price change ..................................................... 37

5. Conclusions ................................................................................................................. 38

6. Works Cited .................................................................................................................. 40
1. Introduction

In 1996, Guangshen Railway, a railroad transportation company in southern China, successfully had its stocks listed in the New York Stock Exchange. It was the first Chinese company publicly traded in a stock exchange in the United States. Since then, an increasing number of Chinese companies sought to have their stocks listed in the United States. Hundreds of Chinese companies are now listed in New York Stock Exchange, NASDAQ and American Stock Exchange. This group of Chinese companies have become an important part of public companies in the United States. For example, in 2010, 42 Chinese companies successfully got their public listings in the United States, which takes about a quarter of the total number of Initial Public Offerings (IPOs) in the United States. As a result, both academic and industry researches have shown interests in studying this sample of US listed Chinese companies.

There are several reasons that Chinese companies seek to get their stocks listed in a stock exchange in the United States: First, the United States have the biggest and most developed capital market in the world, and having a US listing offers Chinese companies with the opportunity of gaining better and more convenient access to capitals. Second, compared to their Chinese equivalents, stock markets in the United States have a more developed regulatory systems, which may be very attractive to the fast-growing Chinese companies. Third, Chinese stock market has higher standard on financial conditions for companies seeking public listings. Some Chinese internet companies that went public in the United States, such as Baidu, RenRen and YouKu, could not meet listing rules in Shanghai Stock Exchange or Shenzhen Stock Exchange when they got their US listings. Fourth, stock markets in the United States offers a faster channel for public listings than Chinese stock
exchanges. A Chinese company may have to wait for as long as 3 years for government approval before they can get their Chinese listings. In comparison, getting an American listing can take as short as several months, and this is usually very attractive for the fast-growing Chinese companies that have an urgent need for access to capital. Finally, getting a public listing in the United States represents fame and success for Chinese companies, and such a branding effects may motivate many ambitious Chinese companies to get their stocks listed in the United States.

Despite the numerous advantages of having their US listings, US listed Chinese companies also face many potential threats. One of the most severe threats to these companies is securities class action litigation. A securities class action litigation is a lawsuit brought by investors who either bought or sold a company’s stocks within a specific period of time (which is known as “class period”), and who incurred an economic loss as a result of the company’s violation of securities laws. Securities class action litigation often emerges when a public company makes misleading statements, untrue information release, or omissions in public disclosures. Such misleading information may cause investors to make wrong investment decisions, and therefore lead to severe financial loss for investors. Once the truth is fully disclosed to the investing public, all investors who suffered such losses are eligible to sue the company and request financial recovery. As the number of investors involved are usually very large, such lawsuits usually takes the form of class action litigation, in which all plaintiff investors are combined into a group (the “class”) and are represented by one law firm.

The compensation structure for plaintiff attorneys in securities class action litigations creates strong incentives for law firms to bring such cases against public companies. The
plaintiff attorney is paid as long as recovery payment is made. The plaintiff attorney’s legal service fees are calculated according to the “lodestar method” in which a trail court multiply the number of hours reasonably spent by the attorney by a reasonable hourly rate. Such a payment may be adjusted upward or downward for certain factors called multipliers, such as contingency and work quality. The court usually sets an upper limit for the attorney’s compensation, which is a certain fraction of the total recovery amount. Therefore, under the “lodestar method”, plaintiff attorneys have an incentive to work for as many hours as permitted by this upper limit, and cases that involves a greater recovery amount are more attractive to plaintiff attorneys. Therefore, different from other litigation cases in which plaintiffs starts the suits and choose their attorneys, securities class action litigations are usually initiated by plaintiff law firms who conducted research on public companies. Once the law firms find their target companies with potential securities law violations, they law firms calculate the expected profitability for the law firms to initiate the securities class action cases. If law firms believe that such cases are profitable, law firm reach out to investors and build up the litigation “class”. Individual plaintiff investors have to do nothing other than offering the consent to be represented. Therefore, rather than an interaction between individual plaintiff investors and the defendant companies, a securities class action litigation is actually a strategic interaction between the plaintiff law firm and the defendant company.

Securities class action litigation offers substantial financial loss to public companies. There are few other liability exposures faced by a public company that can match the magnitude in a securities class action litigation case: the financial liability faced by the public company and its officers may range into several hundreds of millions of dollars. For
example, Cendant Corporation paid a record $2.38 billion for settlement in a securities class action litigation case that claimed Cendant for potential fraud. Damage of securities class action litigation to companies usually include three sources: First, public companies have to incur various legal costs, including payments to in-house legal counsels, outside attorney services, administrative costs in the litigation process, and others. Second, if the court denies the public company’s motion to dismiss a securities class action litigation case against itself, the company may have to pay a substantial amount of recovery fee to the plaintiff parties, either for the pre-trial settlement, or (much less often) for the judgment recovery amount ordered by the court. The last and most important financial loss is the drop in the stock price of the defendant company, which consists of the majority part of the financial loss suffered by the company. As securities class action litigations are generally associated with fraud, and therefore release negative signals to the financial market. The stock price of the public company can drop very substantially during the litigation process. Stock price drop may happen when the fraud is discovered, when the case is filed to the court, when the court makes a decision on whether to grant or to deny the motion to dismiss the case, and at other times. The loss of market value during the litigation process can be as great as many times of the legal service cost and recovery amount. Therefore, in my thesis I choose the loss of market value, rather than the legal service cost or recovery amount, as my focus, and the loss of market value can be a reasonable approximation for the overall level of financial loss suffered by the company during the process.

The first securities class action litigation case against a Chinese company happened in 2001, five years after the first Chinese company got its US listing. NetEase.com, Inc., one of the
biggest Chinese internet company was sued by Kaplan Fox & Kilsheimer LLP, Milberg Weiss Bershad Hynes & Lerach LLP and Stull & Brody. The plaintiff law firms claimed that NetEase violated Sections 11, 12(a) (2) and 15 of the Securities Act of 1933 and Sections 10(b) and 20(a) of the Securities Exchange Act of 1934, by issuing a series of material misrepresentations to the market between July 3, 2000 and August 31, 2001. The case was eventually settled with a settlement payment of $4,350,000. Among the gross settlement fund, $1,450,000 was paid as attorneys' fees.

Since the lawsuit against NetEase, a large number of Chinese companies have been targeted by law firms as defendants in securities class action cases. Until the end of 2014, more than 90 Chinese companies has been sued in securities class action litigations in the US. These Chinese companies have different sizes, ownership structure and come from different industries. Chinese companies that are sued in securities class action cases include giant state owned enterprise such as China National Offshore Oil Corporation (CNOOC), as well as much smaller, non-state-owned companies such as Lightinthebox Holding Co. Ltd. The defendant Chinese companies also come from a wide range of industries, including famous fast-growing internet companies (such as NetEase and Sina), education enterprise (such as New Oriental Education and Technology Group Inc. and China Education Alliance), energy companies (such as JA Solar Holdings Co., Ltd. and China Sunergy Company Limited), pharmaceutical firms (such as China Shenghuo Pharmaceuticals and China Sky One Medical, Inc.) and automobile manufacturers (such as China Automotive System, Inc. and Wonder Auto Technology, Inc.)

The most interesting aspect of securities class action cases against Chinese company, is the unusual high frequency of such lawsuits. While US-listed foreign companies consists of
about 15% of the public company listings in the US, every year the same proportion (15%) of securities class action litigation cases are brought against foreign companies. This means that a foreign company does not necessarily become an easier target for securities class action litigations. However, Chinese companies are sued significantly more often than companies from other countries. For example, in 2011, among the 62 foreign companies sued in securities class action litigations, 37 of them are Chinese. In 2012, 16 Chinese companies are sued among a total of 34 cases against foreign companies. In 2013, another 16 Chinese companies are sued among a total of 35 cases against foreign companies. While the reason why Chinese companies are more frequently sued than other foreign company is not the focus of my thesis, such statistics does clearly indicate that, compared to US companies and other US listed foreign companies, Chinese companies are sued at a disproportionally higher rate. This suggests that the sub-sample of US-listed Chinese company may behave differently from the larger sample of all public companies in the US, and this further makes US-listed Chinese companies a very interesting sub-sample to study.

With an increasing number of Chinese companies getting their public listings in the US in the 2010s, the importance of understanding the legal risk of securities class action litigations should not be underestimated by these Chinese companies. Chinese companies and their executives need to understand factors that are potentially related to securities class action litigations, and the possible financial losses incurred as the result of litigation, so they can be better informed of the potential risks involved in getting listed in the United States. Meanwhile, investors and regulators in the US also have the increasing need to understand factors related securities class action litigations against Chinese companies, in order to make better informed investment decisions and regulatory policies. Therefore, the
discussion of the economic impact of securities class action litigations on US listed Chinese
companies in my thesis is an important issued concerned by the different parties involved.

This thesis aims at answering several questions: I intend to study factors related to the
incidence of filing of securities class action litigation; I intend to study factors related to
the incidence of denial or grant of motion to dismiss the case brought by the defendant; I
intend to examine the stock price change during the litigation process and try to examine
factors related to such stock price changes.

Although there is a large volume of literature on securities class action litigation, studies
focusing specifically on class action litigation against foreign-based, US-listed companies
are much less common. Despite the uniqueness of the Chinese company subsample, as
explained above, studies that target specifically on US-listed Chinese companies have been
relatively rare. Therefore, this paper can potentially contribute to the existing literature on
securities class action litigations by testing the existing theories against the specific
Chinese sample, and indicate whether the subsample of US listed Chinese companies
behave differently compared to the larger sample of all public companies in the US.

The rest of the paper is organized as follows: Section 2 presents the literature that addresses
such issues: the impact of litigation on firm values, and factors related to securities class
action litigations. Section 3 addresses my sample selection method, data collection process,
variable details and analysis method. Section 4 presents the results of analysis. Section 5
offers the conclusion of this paper.

2. Literature Review
This thesis examines factors related to incidence of case filing, incidence of dismissal and stock price change in the securities class action litigation process. I look to prior empirical research to help me set up theoretical framework of analysis, and select variables for regression analysis.

Prior work relevant to my thesis are sorted into three categories: (1) the strategic interaction and incentive structures involved in litigations in general, and in securities class action litigations in particular, which offers a descriptive framework for the structure of the litigation process; (2) factors related to incidence of lawsuits and incidence of dismissal of the case, which helps me identify variables for my regression analysis; (3) the event study method used to measure changes in stock price in the litigation process; and (4) the change in stock price during securities class action litigation, and factors that are relevant to such stock price changes.

2.1 Incentive Analysis in Securities Class Action Litigations

A large amount of literature has been devoted to analyze the strategic interaction and incentive structures in litigation lawsuits. Some studies established broader theoretical framework for litigations in general, while others made revisions to general models to specifically fit class action litigations. Understanding the strategic interactions involved in this litigation process can offer a more accurate account for the incentives of different parties, their decision making process, and the subsequent impact on stock price.

In order to analyze the strategic interactions involved, it is first helpful to identify the different groups of interests involved. Coffee (1986) established a game theoretic framework by identifying that there are three sets of interests involved in the game: those
of the defendants, the plaintiffs, and the plaintiff's attorneys. Moreover, it is not always the case, as may be assumed, that the incentives of the plaintiff attorneys and the individual plaintiffs are well aligned. Coffee (1986) pointed out that it is possible for the plaintiff's attorneys and the defendants to settle on a basis that is adverse to the interests of the plaintiffs.

Without offering a complete game theory model for security class action litigations, Coffee (1987) pointed out three distinctive characteristics of class action litigations that are crucial in characterizing the strategic interactions involved: high agency cost, asymmetric stake, and cost differentials. Coffee (1987) pointed out that, since the defendants have more to gain or lose than the plaintiff attorneys, the defendants have more incentive to devote more resources than the plaintiff. This stake asymmetry will contribute to explaining the high rate of dismiss in class action litigations in my thesis. Also, Coffee (1987) pointed out that the initial cost differential tend to favor the plaintiff. This cost differential can help to explain the high rate of case filing in reality.

One of the most noticeable feature for securities class action litigation, in comparison to other kinds of lawsuits, is the predominant role played by the plaintiff attorneys in the litigation process, and the inability of individual investors to make strategic decisions. Coffee (1987) pointed out that, due to the high information cost and monitoring cost relative to the recovery amount, and the “reverse selection” relationship in which the agents (plaintiff attorneys) contact the principals (clients), the traditional monitoring mechanism in principal-agent models fails in a class action litigation. As a result, the author suggested modeling the plaintiff attorney as an independent player instead of an agent of the clients. Macey and Miller (1991) further confirmed the argument in Coffee (1987) that security
class action differ from most other litigation paradigms because the plaintiff attorneys act as independent self-interest maximizer instead of merely an agent for the clients. The author further identified free-rider effect and collective action problems as obstacles that the distinctive structure of class action litigation intended to avoid, supporting the opinion that the plaintiff law firm and the defendant company should be modeled as strategic players, while individual investors should not.

Another noticeable feature for securities class action litigation is that these cases are almost always settled instead of decided by the court. The Stanford Law School Securities Class Action Clearinghouse indicate that among all securities class action cases, only less than 1% eventually went to trials. The prevalence of settlement in securities class action litigation is widely documented in literature. Alexander (1991) noted that settlement is a much more common result for class action litigation than trials. To rationalize such an outcome, Alexander (1991) summarized a very general game theory framework for settlement, in which both sides make decisions based on the expected payoff and cost. In this model, a settlement will be reached if, and only if, both parties perceive that it would leave them at least as well off as they would expect to be after trial, and by choosing appropriate parameters settings, an equilibrium can possibly exist that leads to settlement rather than trial.

2.2 Factors Related to Incidence of Securities Class Action Litigations

Within the large body of literature concerning securities class action litigations, a substantial amount of empirical studies attempted to identify and evaluate factors that are potentially related to the incidence of litigation filing and case dismissal. Jones (1980) found out in an empirical research that larger firms are more likely to be sued by their
investors. Francis Philbrick and Schipper (1994) found out that sued firms have greater assets, higher dividend payout, higher systematic risks, and lower volatility in overall return. Jones and Weingram (1996) found out that trading volume, market capitalization, and share price drop in previous year are positively associated with incidence of case filing. Griffin (1996) found that earnings per share and return on equity in previous year are positively related to incidence of lawsuit.

Ferris and Pritchard (2001) summarized many of the potential factors identified in previous literatures into three categories: basic firm characteristics, agency problem, and information asymmetry. Measurements for basic firm characteristics include share turnover, firm size, beta, and prior year’s return. Measurements for agency conflicts include free cash flow, debt-equity ratio, and market-to-book ratio. Measurements for information asymmetry include insider equity holdings, institutional equity ownership, percentage of independent directors, and board size. These factors and categories offers potential candidates for independent variables in my regression analysis.

2.3 Event Study Methodology in Securities Class Action Litigations

Many studies on securities class action litigation try to evaluate the impact of the litigation process on stock price using the method of event study, which measure the abnormal return of the company (the company’s return adjusted for the market return) on critical dates and evaluate whether these abnormal returns are statistically significant. Such event study empirical test offers substantial information in telling the direction, magnitude and statistical significance of the stock price shock during critical dates of the litigation process. A comprehensive account of event study methodology in financial economics is offered by MacKinlay (1997), which summarized the procedure for an event study in a few key steps:
defining the event of interest; identifying the period; selecting firms; selecting a normal performance model; measuring abnormal returns; testing abnormal returns; analyzing sources and causes of the effects; and making concluding comments. MacKinlay (1997) also suggested several possible models for measuring normal performance, including the constant mean return model, the market model, and other statistic and economic models.

Bhagat and Romano (2002) specifically addressed how event studies should be applied to study commercial litigations. Besides outlining the general methodology of event studies for litigation, Bhagat and Romano (2002) also identified that defendant firms experiences economically meaningful and statistically significant wealth loss upon the filling of the suit, and that the settlement lead to a wealth increase for the defendant firm only when the plaintiff is a firm but not individuals. These findings offer grounds for forming hypothesis of stock price changes in my thesis. This paper also identified that the market sanction imposed on the firm than the actual criminal sanction, supporting my argument that using the decrease in market value instead of the settlement amount is a more accurate measure for the loss of the defendant firm.

Torchio (2009) took a more specific approach and addressed event study methodology for security class action litigation in particular. Besides confirming the arguments in Bhagat and Romano (2002), Torchio (2009) specifically emphasized that for security class action litigation, it is often necessary to consider how the correction for misstatements updates the current information and belief already existent in the market, and why this scenario should be distinguished from the case when no previous information has been released at all. Moreover, Torchio (2009) pointed out that information omission should be distinguished from other types of fraud due to its nature of lack of new information.
2.4 Stock Price Change in Securities Class Action Litigations

The event study method discussed above offered a possible method for measuring the stock price change during the litigation process, but it is still important to decide which dates are the “critical dates” that are used to define the “events” in event studies. Griffin et al. (2004) expanded the analysis in Ferris and Pritchard (2001) by examining the stock price response to three key events in securities class action fraud litigations: the end of the class period (ECP), the class action filing (CAF), and the beginning of the class period (BCP), with their corresponding mean excess returns of $-16.6\%$, $-4.1\%$ and $3.6\%$.

Studies on securities class action litigations also seek to explain what factors are potentially related to the change in stock price. In trying to identify factors related to stock price change in litigation process, Ferris and Pritchard (2001) pointed out that the degree of shock in each event can be at least partly explained by the amount of new information released to the market, and the cost of obtaining each piece of information. Griffin et al. (2004) identified fraud in accounting issues as one factor that may aggravate the negative price response, offering another potential candidate for my regression. Unlike Ferris and Pritchard (2001), Griffin et al. (2004) showed that the market responds to these events sequentially and conditionally, in ways that are correlated with the outcome of the litigation.

While most papers in related areas focus on American firms, Grande and Miller (2013) expanded the analysis to international companies traded in the US. Grande and Miller (2013) demonstrated that the U.S. securities laws are enforced against foreign firms mainly through the penalties levied by the stock market, and the public enforcement penalties by the SEC are infrequent and often comparatively insignificant. This provides a basis for my use of decrease in stock price rather than SEC enforced monetary penalty as the measure
of financial loss for the companies. Grande and Miller (2013) also calculated that the significant negative stock price reaction is -6.16% surrounding the lawsuit filing date, a magnitude that I can check and compare with my sample. Grande and Miller (2013) identified four factors for the propensity to be sued: the size of potential damages, litigation environment, country level legal environment, and U.S. based asset. Unlike Ferris and Pritchard (2001) and Griffin et al. (2004), this paper offered an international perspective.

Despite the large volume of literature studying securities class action litigation, it is necessary to point out the limitation of scholarship in this subfield for my thesis: First, none of these studies address Chinese companies specifically, and as I discussed above, the Chinese subsample, due to its higher chance of being sued, may possibly exhibit characteristics that are different from the large sample of US public company in general; Second, most of these studies aim at identifying the existence of the price shock instead of examining sources of variations in the price shock. Despite these limitations, these previous studies offer great insights for my thesis on shaping the overall analytic structure, establishing time line, identifying key events, and forming basis hypothesis.

3. Data and Method

3.1 Data Source

For my larger sample that include all the US-listed Chinese companies, I use the Research Insight database to obtain data on firm stock price and firm characteristics firm data. Within Research Insight, I choose to use the Compustat database. The Compustat database allow me to search for companies in my sample by name or ticker, and offers me data on firm
daily stock price, daily market index level, firm financial statements data, firm corporate
governance data, and other data that I need for my analysis.

For my smaller subsample that include all the US-listed Chinese companies that have been
sued in securities class action litigation, I use Stanford Law School Securities Class Action
Clearinghouse (SCAC) to get litigation data. The Securities Class Action Clearinghouse
(SCAC) is a free, online database containing more than 3,000 securities class actions cases
filed in U.S. federal court since the passage of the Private Securities Litigation Reform Act
(PSLRA) of 1995. It enables me to search for companies in my sample by name or ticker,
and offers me litigation information (such as case status, case filing date, case decision date,
the start and end of class period, and others), as well as full-text litigation documents such
as complaints, motions, dockets, judicial opinions and other major court filings. For each
of the case filed, I choose one critical date during the litigation process for my analysis:
end of class period, which is usually the time when a potential fraud is revealed. The end
of class period is preferred to case filing date (when the securities class action litigation
case is filed to the federal court) and case decision date (when the court make a decision
on whether grant or deny the motion to dismiss the case) because literature demonstrates
that the end of class period (also known as revelation date) is the time when the stock price
respond to the new information most significantly. The new information released during
case filing date and case decision date is not as much as the news released during the
revelation date, and the stock price shocks are much smaller and less noticeable.

3.2 Sample Selection

Before selecting the sample of study, first it is crucial for my research to determine a
relatively clear scope for the “Chinese companies” that I study. The company data in
Compustat are recorded by country of registration. However, many companies with headquarters in China and major operations in China may be registered outside China. For example, many of such companies are registered in British Virgin Islands or Cayman Islands in order to take advantage of policy and taxation benefits. Therefore, selecting companies based on country of registration will risk losing a large portion of China-based companies that are not registered in China. Considering that the Stanford Law School Securities Class Action Clearinghouse list companies by country of headquarters, I decide to use country of headquarters as my defining criteria for my sample of US-listed Chinese companies.

I obtained a list of US-listed Chinese companies from Sina Finance (http://finance.sina.com.cn/), one of the leading Chinese online financial news sources. This sample contains a total of 542 Chinese companies. Their headquarters are all based in China. Also each of them is either currently trading in a stock exchange in the United States, or was traded in a stock exchange in the United States during some time in history. These Chinese companies cover a wide range of industries and are listed in New York Stock Exchange, American Stock Exchange, and NASDAQ.

One problem that complicates the issue is the multiple lawsuits problem. There are several companies (for example, UT Starcom) that are sued for more than once in history. For those companies, I only take the litigation data of the first time that these companies are sued, while the second or further lawsuits are ignored. The subsequent lawsuits are taken out of the sample since companies that have been sued in securities class action before inevitably gain experience from its previous involvement in litigations, and are therefore likely to alter their strategies in subsequent securities class action cases. As a result, only
the first time that these companies are sued are comparable to cases of other companies that have been sued for only once.

A second problem is that the Stanford Law School Securities Class Action Clearinghouse offers most recent updates for cases that are filed in 2015. However, many of the firm characteristics data and stock price data are not available in 2015 due to the lack of financial statements disclosure for the most recent fiscal year. Therefore, in order to keep the consistency of the dataset, I only keep companies that have their case filed by the end of 2014, for my smaller sample of US listed Chinese companies that have been sued in securities class action litigations.

A third problem is that a number of companies in my original sample do not have full data available in Compustat database. This may be caused by inactive trading, de-listing, lack of financial statements, or others. Therefore, I have to remove these companies from my sample as well.

After removing invalid companies from my sample by the three criteria above, I obtain a sample with 293 US-listed Chinese companies. Among this larger sample, 66 of these companies have been sued for at least once in securities class action litigations. These 66 companies consists of my smaller sample for companies that have been named as a defendant in securities class action cases.

3.3 Variables

3.3.1 Dependent Variables

The first dependent variable (used for Test 1 later) is a dummy variable indicating whether a US-listed Chinese company have been sued in a securities class action litigation or not.
Companies that have been sued are coded as 1 and companies that have not been sued are coded as 0.

The second dependent variable (used for Test 2 later) is a dummy variable indicating whether the court grant the motion to dismiss the case (which is coded as 0). A motion to dismiss the case is filed by the defendant company after it is named as a defendant in a recent filing of a securities class action litigation. The courts’ grant of the motion to dismiss indicates the termination of the case and the victory for the defendant company, since no settlement payment has to be made. However, if the court deny the motion to dismiss, the defendant and plaintiff have to enter the pre-trial negotiation for settlement. Considering that the overwhelming majority of securities class action cases are settled rather than tried, the denial of motion to dismiss almost inevitably lead to the large amount of settlement payment from the defendant company, and therefore indicates a loss for the defendant company and a victory on the plaintiff’s side.

The third dependent variable (used as event study measurement for Test 3 later, and as dependent variable for Test 4 later) is the cumulative abnormal return (CAR). According to the Constant Mean Return Model described in Mackinlay (1997), Abnormal return (AR) is calculated as the difference between stock return and market return, as a measure of market adjusted performance. Cumulative average return (CAR) is calculated by aggregating the abnormal return from surrounding the event of interest (end of class period, case filing date, and case decision date).

3.3.2 Independent Variables
Similar to the categorization in Ferris and Pritchard (2001), I here use six independent variable that fall into three broad categories: basic firm characteristics, agency conflict and information asymmetry.

Incidence for a firm to be sued and to have the motion to dismiss granted or denied by the court is largely related to the susceptibility of the company to lawsuits. Such susceptibility may be captured by basic financial characteristics of the firm. In my thesis, I choose two variables for capture basic firm characteristics that are relevant to litigations: firm size and share turnover.

The first independent variable is firm size. Firm size here is measured by the market value of the firm. Based on the data available, I calculate market value of a firm as a product of its daily stock price and its shares outstanding. In my subsequent regression analysis, since firm size varies with time, I use the most recent value of firm size (end of year 2014) for US listed Chinese companies that have never been sued in securities class action litigations. I use the firm size by the end of the year before case filing for US listed Chinese companies that were sued in securities class action litigations.

The second independent variable is share turnover. Share turnover indicates how actively and frequently the stocks of a public company is traded on stock exchange, and it reflects the liquidity of the stock as well as the overall level of attention investors devote to the stock. I calculating share turnover by normalizing the aggregate trading volume with shares outstanding. For companies that have not been sued in securities class action litigations, share turnover is calculated by summing up the total number of shares traded over the 120 trading days prior to the most recent data date (end of year 2014), divided by the total number of shares outstanding on the most recent data date (end of year 2014). For
companies that have been sued in securities class action litigation, share turnover is calculated by summing up the total number of shares traded over the 120 trading days before the case filing date, divided by the total number of shares outstanding on the trading date.

Literature mentions that potential agency problems can make a public company more susceptible to lawsuits: the higher the agency conflict between the manager and shareholder is, the more likely it is for the firm to commit fraud against its investors. Agency conflict are captured by three other variables: free cash flow, debt-to-equity ratio, price-earnings ratio.

The third independent variable is the debt-equity ratio. The debt-equity ratio is calculated by normalizing the total liability of the company by the total market value. As noted in financial economics literature, higher debt-equity ratio indicates a lower level of managerial discretion, and consequently a lower level of agency conflict because of the discipline that are required to satisfy debt obligations. Similar to the treatment for the previous independent variables, for companies that have never been sued in securities class action litigations, the data is taken from the most recent date (end of year 2014); for companies that have been sued, the data is taken from the end of the year prior to the lawsuit.

The fourth independent variable is the market-book ratio. The market-book ratio is defined as the ratio of the market value of a firm over the book value of a firm. Higher market-book ratio reflects the market’s evaluation of the efficiency of managers in using the resources of the firm, and a higher level of market-book ratio reflects a high level of trust on the managers from the investors, and, as a result, a lower level of agency conflicts. I calculate the market-book ratio by dividing the stock price by book value per share. As
stock prices and book value per share are not constant over time, I use the data value on the most recent date (end of year 2014) for companies that have never been sued, and use the data value at the end of the year prior to lawsuits for companies that have been sued.

The fifth independent variable is free cash flow. Free cash flow represents the free cash available to companies which is subject to managerial discretion and hence subject to waste by managers. Therefore, a greater level of free cash flow indicates a higher probability of potential agency conflicts. I use the total cash level reported in the companies’ financial statements, and standardize it by the total asset of the company reported in financial statements. Similar to previous variables, most recent data (end of year 2014) is used for companies that have never been sued, and data of the end of the year prior to the event is used for companies that have been sued.

Literature also suggests that the market return to the revelation of fraud, notice of case filing, and notice of the resolution to dismiss the case can be explained by the level of information asymmetry between the firm and its investors. Greater information asymmetry may be related to greater potential of fraud, as well as smaller market reaction for important information release. Therefore, I choose information asymmetry as the third category of independent variables, and include only one variable for this category: big 8 auditor

Big 8 auditor is my last variable. “The Big Eight” accounting firms are the largest eight accounting firms in the 20th century that dominated the auditing industry: Arthur Andersen, Arthur Young & Co., Coopers & Lybrand, Ernst & Whinney, Deloitte Haskins & Sells, Peat Marwick Mitchell, Price Waterhouse, and Touche Ross. The original “Big Eight” experienced a series of mergers and are now known as “the Big Four”: Pricewaterhouse Coopers (PwC), Ernst & Young (EY), Deloitte, and KPMG. For companies that hired a
big 8 auditor (or one of the new accounting firms formed by mergers between the Big Eight firms) as their independent auditor are coded as 1, and companies that hired other accounting firms as independent auditor are coded as 0. Though the hiring of independent auditor is expected to be more consistent compared to the other five variables, it is still not uncommon to see companies switch from non-big 8 auditors to big 8 auditors, or switch from big 8 auditor to non-big 8 auditor. As a result, I use the most auditor hiring condition for companies that have never been sued, and use the hiring condition of the year prior to case filing for companies that have been sued.

3.4 Method

In my thesis I conduct 4 tests: (1) study on factors related to incidence of lawsuit filing; (2) study on factors related to incidence of case dismissal; (3) event study on stock price change on revelation in the litigation process; and (4) study on factors related to stock price change. Since literature suggested that factors related to lawsuit filing, case dismissal and stock price shocks are often related or overlapping, I will use the same set of independent variables, as discussed before, for all the subsequent regression analysis.

3.4.1 Test 1: factors related to incidence of lawsuits filing

I first try to test variables that are potentially related to the incidence of a company being named as a defendant in a securities class action lawsuit. The filing of the case split the sample of all US listed Chinese companies into two subsamples: companies that have not been sued in securities class action litigations, and companies that have been sued. I start with a univariate comparison that compare means of the six independent variables for these
two subsamples. I conduct a significance t-test to evaluate whether the differences in the means of these two subsamples are statistically significant or not.

Following the univariate comparison, I conduct multivariate regression analysis on the incidence of lawsuit filing. The dependent variable is the dummy variable indicating whether the company has been sued. The independent variable are the six factors discussed above: firm size, share turnover, debt-equity ratio, market-book ratio, free cash flow, hiring of a big 8 auditor. Since the dependent variable is a dummy variable, I use a logistic regression instead of an OLS regression. The regression form for test 1 is specified as the following:

\[
\text{Logit (Sued)} = \alpha_0 + \alpha_1 \text{Size} + \alpha_2 \text{Turnover} + \alpha_3 \text{Debt/Equity} + \alpha_4 \text{Market/book} + \alpha_5 \text{Cashflow} + \alpha_6 \text{Big8} + \varepsilon_a
\] (1)

According to discussions in the literature, I try to make predictions on the coefficients. (1) Since larger firms attracts more attention from the market and are easier to be targeted, firm size can be possibly positively correlated with case filing; however, larger firms generally have better legal resources available to deter aggressive litigations against them, so firm size can also be possibly negatively associated with case filing. Therefore, for now I cannot make a clear prediction on coefficient for firm size. (2) Greater share turnover means more market transactions and a higher frequency of trading, which may make the company followed by more law firms and is therefore more susceptible to lawsuits. Firms are traded more frequently, unlike larger firms, are not necessarily better at defending lawsuits. Therefore, I predict a positive sign for share turnover. (3) Greater debt-equity ratio means more debt-related disciplines on the managers, a lower level of managerial discretion, and therefore a lower level of agency conflicts. Therefore, I predict a negative
sign for debt-equity ratio. (4) Greater market-book ratio indicates a greater level of trust by investors and therefore a lower level of agency conflicts. Therefore, I predict a negative coefficient for market-book ratio. (5) Greater free cash flow indicates a higher level of managerial discretion and, as a result, a higher level of agency conflict. Therefore, I predict a positive coefficient for free cash flow. (6) Hiring a big 8 auditor increases transparency of the internal operation of a company, and therefore reduces information asymmetry. Therefore, I predict a negative coefficient for big 8 auditor.

3.4.2 Test 2: factors related to incidence of settlement

After testing the factors related to case filing, I focus on the subsample of companies that are sued, and test factors related to the court’s resolution to deny the motion to dismiss the case. Since in my sample, all cases for which the motion to dismiss the case are denied by the court end up terminates in pre-trial negotiation, and none of these cases eventually went to a trial, here the denial of the motion is the same as reaching a settlement between the plaintiff investors and the defendant firms.

The analytic method I use in Test 2 is similar to the ones I used in test 1. As some of the recent cases are still ongoing and the courts have not yet made a decision on the motion to dismiss, I only focus on two subsamples among all companies that are sued: companies for which the court granted the motion to dismiss (and no settlement is made), and companies for which the court denied the motion to dismiss (and a settlement has to be made). Similar to test 1, I made a univariate comparison by conducting a significance t-test between these two subsamples. I also conduct a logistic regression analysis which is specified as the following:
Logit (Settled) = \beta_0 + \beta_1 Size + \beta_2 Turnover + \beta_3 Debt/Equity + \beta_4 Market/book + \beta_5 Cashflow + \beta_6 Big8 + \epsilon\beta 

(2)

Similarly, I make predictions on the coefficients. (1) Larger firms have better legal resources available to defend themselves against litigations against them, so firm size may be negatively associated with settlement. (2) Greater share turnover means more potential violations of securities regulations during the transaction process. Therefore, I predict a positive sign for share turnover. (3) Greater debt-equity ratio means more debt-related a lower level of agency conflicts, and the merit of the case in favor of the plaintiff may be greater. Therefore, I predict a positive sign for debt-equity ratio. (4) Greater market-book ratio indicates a lower level of agency conflicts, and the merit of the case in favor of the plaintiff may be greater. Therefore, I predict a positive coefficient for market-book ratio. (5). Greater free cash flow indicates a higher level of agency conflict, and the merit of the case in favor of the plaintiff may be greater. Therefore, I predict a negative coefficient for free cash flow. (6). Hiring a big 8 auditor decreases the potential of fraud and decrease the merit of the case in favor of the plaintiff. Therefore, I predict a positive coefficient for big 8 auditor.

3.4.3 Test 3: event study on revelation date

I also conduct an event study test to evaluate the stock price change on the revelation date. As explained before, the revelation date is the end of class period, and it is the time when the fraud of the defendant company is revealed to the public. According to literature, the stock price shock on event date is much greater and noticeable compared to the case filing date and case decision date. Therefore, I choose to use the revelation date for my event study.
The process of event study I conduct follows the process outlined by MacKinlay (1997). For each company, the daily stock return is calculated. Abnormal return (AR) is calculated as the companies’ average daily return minus the market return (indicated by the S&P 500 companies) according to the constant return model. The cumulative abnormal return (CAR) is calculated by aggregating the abnormal return over time. I calculate the z statistics of the cumulative abnormal return around the event date (the revelation date) and test whether it is statistically significant.

The sample of sued company can be divided into two subsamples: companies that had the court deny the motion to dismiss the case (the loser companies) and companies that had the court grant the motion to dismiss the case (the winner companies). Since these two samples may be qualitatively different, I also conduct event study for each subsample, and compare whether the stock response on the revelation date are significantly different for these two subsamples of companies.

### 3.4.4 Test 4: factors related to stock price change

Eventually I aim at testing factors that are potentially related to the stock price changes at the revelation date identified in Test 3 (the end of class period). Since my dependent variable in Test 4, change in stock price, is not a dummy variable as in Test 1 and Test 2, it is not possible to separate the sample into two different subsamples and conduct univariate comparison. Therefore, I will conduct only regression analysis for Test 4. Since the dependent variable, change in stock price (measured by cumulative abnormal return), is a continuous variable, I use ordinal least square (OLS) regression for test 4. The OLS regression is specified as the following:
\[ CAR = \gamma_0 + \gamma_1 \text{Size} + \gamma_2 \text{Turnover} + \gamma_3 \text{Debt/Equity} + \gamma_4 \text{Market/book} + \gamma_5 \text{Cashflow} + \gamma_6 \text{Big8} + \epsilon \]  

(3)

Based on the discussion in literature, I also try to make the following predictions on the sign of coefficients: (1) Firm size do not have an obvious implication on the magnitude of stock shock, so the sign of coefficient for firm size is undetermined. (2) I predict a negative relationship between share turnover and CAR, because firms that are traded more frequently (with higher share turnover rate) are more sensitive to the revelation of new information the market, and are more likely to produce a negative response to the revelation of a fraud. (3) The higher the agency conflict is, the greater the negative response to the revelation fraud will be. Therefore, I predict a negative coefficient for free cash flow, a positive coefficient for market-to-book ratio, and a positive coefficient for debt-equity ratio. (4) Hiring a big 8 auditor is likely to increase the transparency of the firm’s operation, and as a result, the negative stock price shock caused by the revelation of fraud may be diminished. Therefore, I predict a positive coefficient for big 8 auditor.

4. Results and Analysis

4.1 Descriptive statistics

Before conducting the four tests as outlined above, I first conduct a preliminary data analysis by calculating the descriptive statistics of the independent variables, in order to capture some basic characteristics of my data set. The descriptive statistics of the six independent variables that I choose are listed in table 1. These large standard deviation value for firm size and share turnover shows that the companies that are included in my sample vary widely in terms of market capitalization and trading frequency. Also, the large
spread in debt-equity ratio, market-book ratio, and free cash flow value shows that such sample includes a very diverse and heterogeneous group of US-listed Chinese companies.

### Table 1: Summary Statistics

<table>
<thead>
<tr>
<th>Category</th>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Characteristics</td>
<td>Size</td>
<td>282</td>
<td>6.94e+10</td>
<td>6.36e+11</td>
<td>0</td>
<td>1.01e+13</td>
</tr>
<tr>
<td></td>
<td>Turnover</td>
<td>280</td>
<td>.1007961</td>
<td>.2365226</td>
<td>0</td>
<td>1.849863</td>
</tr>
<tr>
<td>Agency Conflicts</td>
<td>Debt-equity ratio</td>
<td>260</td>
<td>2.015055</td>
<td>14.64892</td>
<td>-16.78</td>
<td>228.0189</td>
</tr>
<tr>
<td></td>
<td>Market-book ratio</td>
<td>260</td>
<td>11.47131</td>
<td>159.2124</td>
<td>-63.63</td>
<td>2567.545</td>
</tr>
<tr>
<td></td>
<td>Free cash flow</td>
<td>259</td>
<td>5.10e-07</td>
<td>1.98e-06</td>
<td>0</td>
<td>.0000268</td>
</tr>
<tr>
<td>Information Asymmetry</td>
<td>Big 8 auditor</td>
<td>293</td>
<td>.105802</td>
<td>.3081103</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

### 4.2 Test 1: factors related to incidence of lawsuits filing

In test 1, I am at studying factors that are related to the incidence of a company being sued. For Test 1, I first a univariate comparative significance test to see whether the companies that are sued are substantially different from companies that have not been sued. The larger sample containing a total of 282 companies is split into two sub-samples: companies that have been sued and companies that have never been sued.

### Table 2: Univariate comparative test for independent variables (Test 1)

<table>
<thead>
<tr>
<th>Category</th>
<th>Variable</th>
<th>Not sued (N=216)</th>
<th>Sued (N=66)</th>
<th>Difference (Ha: diff &gt; 0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Characteristics</td>
<td>Size</td>
<td>0.316 (0.121)</td>
<td>1.929 (1.568)</td>
<td>-1.613 **</td>
</tr>
<tr>
<td></td>
<td>Turnover</td>
<td>0.045 (0.008)</td>
<td>0.282 (0.047)</td>
<td>-0.238***</td>
</tr>
<tr>
<td>Agency Conflicts</td>
<td>Debt-equity ratio</td>
<td>2.463 (1.210)</td>
<td>0.670 (0.135)</td>
<td>1.792</td>
</tr>
<tr>
<td></td>
<td>Market-book ratio</td>
<td>14.701 (13.165)</td>
<td>1.783 (0.185)</td>
<td>12.917</td>
</tr>
<tr>
<td></td>
<td>Free cash flow</td>
<td>0.592 (0.163)</td>
<td>0.265 (0.355)</td>
<td>0.327</td>
</tr>
<tr>
<td>Information Asymmetry</td>
<td>Big 8 auditor</td>
<td>0.022 (0.010)</td>
<td>0.394 (0.061)</td>
<td>-0.372***</td>
</tr>
</tbody>
</table>

Notes: *** p<0.01; ** p<0.05; * p<0.1
Table 3: Odds-ratio test for big 8 auditor (Test 1)

<table>
<thead>
<tr>
<th></th>
<th>Sued</th>
<th>Not Sued</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big 8 auditor</td>
<td>26</td>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td>Non-Big 8 auditor</td>
<td>40</td>
<td>222</td>
<td>262</td>
</tr>
<tr>
<td>Total</td>
<td>66</td>
<td>227</td>
<td>293</td>
</tr>
</tbody>
</table>

Odds ratio = 28.8600; z statistic = 6.496; p < 0.01

The results for comparison is summarized in Table 2. As expected, defendant companies have a significantly higher level of share turnover than non-defendant companies, supporting my earlier speculation that more frequently traded companies are more likely to be targeted. Also, the analysis results show that defendant companies are on average significantly greater than non-defendant companies. This may correspond to the situation that the fact that larger companies are easily targeted plays a more important role, and the deterrence effect of the legal strength of larger firms is outweighed. Table 3 summarize the relationship between being sued and higher a Big 8 auditor. Surprisingly, defendant companies are more likely to higher Big 8 auditors than non-defendant companies. This may be explained by the fact that companies that are more susceptible to litigations are fully aware of their legal risks, and therefore hire Big 8 auditors in order to improve transparency and avoid litigations.

The results of the multivariate regression are summarized in table 4. I conducted 3 sub-tests consecutively. Since basic firm characteristics (firm size and share turnover) best capture the companies’ susceptibility to lawsuits, I start my first regression with size and share turnover only, adding agency conflicts variables in my second regression, and further adding information asymmetry factor in my third regression. The results of the regression generally supports my observation in my univariate analysis: firm size, share turnover and
the hiring of Big 8 auditor are all positively correlated with the incidence of being sued in securities class action litigations.

Table 4: Logistic Regression on case filing (Test 1)

<table>
<thead>
<tr>
<th>Category</th>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(predicted signs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm Characteristics</td>
<td>Size</td>
<td>0.848**</td>
<td>0.816**</td>
<td>-0.253</td>
</tr>
<tr>
<td></td>
<td>(3.59)</td>
<td>(0.366)</td>
<td>(0.328)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turnover</td>
<td>0.778***</td>
<td>0.787***</td>
<td>0.683***</td>
</tr>
<tr>
<td></td>
<td>(0.096)</td>
<td>(0.101)</td>
<td>(0.089)</td>
<td></td>
</tr>
<tr>
<td>Agency Conflicts</td>
<td>Debt-equity ratio</td>
<td>-0.643</td>
<td>-0.390</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.625)</td>
<td>(0.551)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market-book ratio</td>
<td>0.050</td>
<td>0.030</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.057)</td>
<td>(0.050)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Free cash flow</td>
<td>1.430</td>
<td>-0.875</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.255)</td>
<td>(1.104)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Asymmetry</td>
<td>Big 8 auditor</td>
<td>0.388***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-)</td>
<td>(0.067)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N = 280
R squared = 0.1986

Notes: *** p<0.01; ** p<0.05; * p<0.1

4.3 Test 2: factors related to incidence of settlement

I also conduct Test 2 and examine factors that are related to incidence of settlement (denial of the motion to dismiss the case). Similar to Test 1, I start Test 2 with univariate comparison of the independent variables. Table 5 summarizes my analysis results for univariate comparisons, and Table 6 summarizes the analysis of correlation between incidence of settlement and the hiring of a big 8 auditors. Different from what suggested by the literature, most of the test results in my univariate comparisons are statistically insignificant. The two subsamples, companies with their case dismissed (winner companies) and companies with their case settled (loser companies) do not show statistical difference with regard to the six independent variables used.
Table 5: Univariate comparative test for independent variables (Test 2)

<table>
<thead>
<tr>
<th>Category</th>
<th>Variable</th>
<th>Dismissed (N=21)</th>
<th>Settled (N=26)</th>
<th>Difference (Ha: diff &gt; 0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Characteristics</td>
<td>Size</td>
<td>49.182</td>
<td>0.196</td>
<td>48.986</td>
</tr>
<tr>
<td></td>
<td>(48.133)</td>
<td></td>
<td>(0.125)</td>
<td>(43.144)</td>
</tr>
<tr>
<td></td>
<td>Turnover</td>
<td>0.300</td>
<td>0.272</td>
<td>0.027</td>
</tr>
<tr>
<td></td>
<td>(0.093)</td>
<td></td>
<td>(0.056)</td>
<td>(0.104)</td>
</tr>
<tr>
<td>Agency Conflicts</td>
<td>Debt-equity ratio</td>
<td>0.817</td>
<td>0.398</td>
<td>0.419*</td>
</tr>
<tr>
<td></td>
<td>(0.265)</td>
<td></td>
<td>(0.134)</td>
<td>(0.281)</td>
</tr>
<tr>
<td></td>
<td>Market-book ratio</td>
<td>1.720</td>
<td>2.037</td>
<td>-0.317</td>
</tr>
<tr>
<td></td>
<td>(0.312)</td>
<td></td>
<td>(0.320)</td>
<td>(0.454)</td>
</tr>
<tr>
<td></td>
<td>Free cash flow</td>
<td>0.251</td>
<td>0.248</td>
<td>0.004</td>
</tr>
<tr>
<td></td>
<td>(0.068)</td>
<td></td>
<td>(0.042)</td>
<td>(0.077)</td>
</tr>
<tr>
<td>Information Asymmetry</td>
<td>Big 8 auditor</td>
<td>0.571</td>
<td>0.423</td>
<td>0.148</td>
</tr>
<tr>
<td></td>
<td>(0.111)</td>
<td></td>
<td>(0.099)</td>
<td>(0.148)</td>
</tr>
</tbody>
</table>

Notes: *** p<0.01; ** p<0.05; * p<0.1

Table 6: Odds-ratio test for big 8 auditor (Test 2)

<table>
<thead>
<tr>
<th></th>
<th>Settled</th>
<th>Dismissed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big 8 auditor</td>
<td>11</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>Non-Big 8 auditor</td>
<td>15</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>21</td>
<td>47</td>
</tr>
</tbody>
</table>

Odds ratio = 0.550; z statistic =1.008; p = 0.314

Table 7: Logistic Regression on case settlement (Test 2)

<table>
<thead>
<tr>
<th>Category</th>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Characteristics</td>
<td>Size</td>
<td>-0.594</td>
<td>0.639</td>
<td>-0.563</td>
</tr>
<tr>
<td></td>
<td>(?/+?)</td>
<td>(0.509)</td>
<td>(0.513)</td>
<td>(0.520)</td>
</tr>
<tr>
<td></td>
<td>Turnover</td>
<td>-0.086</td>
<td>0.168</td>
<td>-0.194</td>
</tr>
<tr>
<td></td>
<td>(?)</td>
<td>(0.213)</td>
<td>(0.220)</td>
<td>(0.222)</td>
</tr>
<tr>
<td>Agency Conflicts</td>
<td>Debt-equity ratio</td>
<td>0.130</td>
<td>-0.123</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-)</td>
<td>(0.079)</td>
<td>(0.079)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market-book ratio</td>
<td>0.042</td>
<td>0.055</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-)</td>
<td>(0.054)</td>
<td>(0.056)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Free cash flow</td>
<td>0.473</td>
<td>0.242</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(+)</td>
<td>(0.333)</td>
<td>(3.341)</td>
<td></td>
</tr>
<tr>
<td>Information Asymmetry</td>
<td>Big 8 auditor</td>
<td>-0.151</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-)</td>
<td></td>
<td></td>
<td>(0.155)</td>
</tr>
</tbody>
</table>

N 47 47 47
R squared 0.0314 0.1037 0.1246

Notes: *** p<0.01; ** p<0.05; * p<0.1
Such results are further confirmed by my multivariate regression, shown in table 7, which lacks coefficients that are statistically significant. The large difference between the previous literature using samples of US public companies in general and my study using US-listed Chinese companies in particular indicates that: the US listed Chinese companies show characteristics that are qualitatively different from other public companies in the US with regard to incidence of settlement. Factors such as firm size, trading frequency, information asymmetry and agency conflict that can usually be used to predict the results of securities class action litigation against US listed public companies in general may not be applicable to US listed Chinese companies in particular.

4.4 Test 3: event study on revelation dates

In Test 3 I conduct an event study to measure statistical significance of the cumulative abnormal return of the companies around the revelation date. The event study is conducted for the entire sample of companies that are sued, and are conducted separately for winner companies (companies that had their motion to dismiss the case granted by the court) and loser companies (companies that had their motion to dismiss the case denied by the court).

<table>
<thead>
<tr>
<th>Sample</th>
<th>CAR</th>
<th>Z statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate Sample</td>
<td>-0.28</td>
<td>-42.12***</td>
</tr>
<tr>
<td>Winner Company Sample</td>
<td>-0.30</td>
<td>-35.61**</td>
</tr>
<tr>
<td>Loser Company Sample</td>
<td>-0.25</td>
<td>-33.48**</td>
</tr>
</tbody>
</table>
From the event study result, we observe that companies in all three samples show a consistent large negative price shock in response to the revelation of the fraud. This has been intensively noted in previous literature, regarding US public companies in general, as indication that the revelation of the fraud convey unfavorable information about the company to the market, and the price respond to reflect the new market belief of the valuation of the company. In our sample concerning US listed Chinese companies specifically, the response of these Chinese companies regarding revelation of fraud conforms to the general rule of US public companies.

4.5 Test 4: factors related to stock price change

Finally I conduct my Test 4 to study factors related to stock price change. Following the reasoning in test 3, I use CAR around the revelation date as a measure for stock price shock due to the event, because it accurately reflects the level of stock price reaction to the revelation of the fraud, after adjusted for any irrelevant fluctuations due to conditions of the market. I conduct a series of multivariate regressions with the six independent variables discussed before. The results of Test 4 is summarized in Table 9.

Most of the variables in my independent variable sets do not show significant correlation with the stock price shock on the revelation day. The only exception is the share turnover, which is consistently negatively correlated with CAR, at the 5% significance level, even after adding in new variables indicating agency conflict and information asymmetry. This substantiates my predictions before that more frequently traded companies attract more attention from the market, are more sensitive to the revelation of fraud information, and are therefore more likely to lead to a greater negative response to the revelation of a fraud.
Table 9: OLS regression on CAR (Test 4)

<table>
<thead>
<tr>
<th>Category</th>
<th>Variable</th>
<th>(predicted signs)</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Characteristics</td>
<td>Size</td>
<td>0.43</td>
<td>0.65</td>
<td>-0.51</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turnover (?)</td>
<td>-0.191**</td>
<td>-0.210**</td>
<td>-0.196**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turnover (-)</td>
<td>(0.076)</td>
<td>(0.081)</td>
<td>(0.082)</td>
<td></td>
</tr>
<tr>
<td>Agency Conflicts</td>
<td>Debt-equity ratio</td>
<td>0.015</td>
<td>0.014</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market-book ratio (+)</td>
<td>0.019</td>
<td>0.016</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market-book ratio (+)</td>
<td>(0.020)</td>
<td>(0.020)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Free cash flow</td>
<td>1.062</td>
<td>1.019</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Free cash flow (-)</td>
<td>(1.225)</td>
<td>(1.239)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Asymmetry</td>
<td>Big 8 auditor (+)</td>
<td>0.028</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.057)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N = 47
R squared = 0.1285 0.1566 0.1246

Notes: *** p<0.01; ** p<0.05; * p<0.1

5. Conclusions

Based on the literature studying securities class action litigations, my thesis focus on a specific sample of public companies: the US listed Chinese companies. The US listed Chinese companies subsample is chosen because of its particularity: its unusually high frequency of being named as defendant in securities class action lawsuits. Factors related to incidence of case filing, incidence of settlement, and price change on the day of fraud revelation are studied. Six potential factors are analyzed.

Firm size is found to be positively correlated with incidence of lawsuit, yet has little correlation with incidence of settlement or change in stock price. Share turnover is not only positively correlated with the incidence of lawsuit, but also negatively related to the change in stock price on revelation day. Factors indicating agency conflicts (debt-equity ratio, market-book ratio and free cash flow) do not show ability to make any predictions for this
sample of Chinese companies. The hiring of a big 8 auditor is positive correlate with the incidence of lawsuit.

This theses demonstrates the aspects in which US listed Chinese companies conforms to the general rules found in all US public companies, while also shows other aspects in which US listed Chinese companies show characteristic that are distinct from other US public companies in the securities class action litigation process.
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