INVESTOR PERCEPTION OF

HOLDING FOREIGN COMPANIES ACCOUNTABLE ACT

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Investor Perception of *Holding Foreign Companies Accountable Act*

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Abstract

Holding Foreign Companies Accountable Act, passed at the end of 2020, is determined to resolve the US-listed Chinese firms' non-compliance to the PCAOB's inspection on the audit working papers. This paper investigates how the investors respond to the passage of HFCAA as well as the subsequent enforcement. Through event study on daily stock returns of US-listed Chinese firms during major points in time related to the HFCAA, this paper shows that the market in general does not deliver a clear sign on Chinese firms upon the passage of HFCAA, beneficial or costly. In contrast, the commission identification has a significantly negative impact on the identified firm's stock price, while the 2022 PCAOB's announcement on complete access to Chinese firms' audit working papers even shows a significant bull sign on the market price of Chinese firms. What's more, a significantly higher detrended share turnover for Chinese firms post HFCAA suggests more investor differences of opinion. Based on listed firms in the US from 2010 to 2022 and a DID specification, the paper further unveils a positive effect of HFCAA on the stock price crash of Chinese firms, supporting Hong and Stein (2003)'s investor heterogeneity theory that higher investor heterogeneity leads to more stock price crashes. Additionally, triple difference results indicate that high-tech Chinese firms with low financial reporting quality show the lowest level of stock price crashes due to investor consensus. Investor heterogeneity theory, other than the agency theory, better explains the changes in stock price crashes upon HFCAA.

Keywords: HFCAA; Event study; Stock price crash; Investor heterogeneity theory

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1 Introduction

The U.S. has the world's largest equity markets, with the privilege of diverse shareholder base, high liquidity and prudent corporate governance. Beneficial as a US listing is, it requires firms to comply with the reporting and monitoring standards of the U.S., as well as subject to the Public Company Accounting Oversight Board (PCAOB)'s audit oversight regime. Ever since the "Reform and Opening Up" in China, many Chinese firms has been seeking to list in the U.S.. As of February 24, 2023, there are 283 Chinese firms with a US listing[1], traded in either one of NYSE, NASDAQ and AMEX exchanges or over-the-counter. However, due to the outstanding conflicts between the Chinese national statutes and the U.S. rules, US-listed firms with substantial assets or earnings within China, including Hong Kong and Macao, are restricted to provide the relevant audit documents to the PCAOB (Huang, 2021). According to the 2018 statement from the Securities and Exchange Commission (SEC) along with PCAOB (SEC, 2018), this non-compliance severely hammers the investor trust and the reliability of those firms' disclosed financial statements. It motivates the initial introduction of *Holding Foreign Companies Accountable Act* (HFCAA) in 2019. On December 18, 2020, the HFCAA became public law.

The *Sarbanes Oxley Act* (SOX 2002) specifies that U.S. and non-U.S. registered firms are on equal footing with respect to the PCAOB oversight, and shall turn over the audit working papers for PCAOB's inspection in order to reinforce investor protection and foster market integrity. As the amendment to the SOX, HFCAA provides specific guidance regarding the unresolved non-compliance that the listed firms, if not able to meet the requirements for three consecutive years, are forced to delist from the U.S. exchanges[2]. During the two-year negotiation between the US and Chinese authorities, from 2021 to 2022, SEC identified 162

[1] From the WIND database, accessed on Feb. 24, 2023.
[2] See Public Law 116-222.

Chinese firms identified as non-complaint with HFCAA[3]. Afterwards, on Dec. 15, 2022, the PCAOB finally announced that it has secured complete access to inspect audit working papers prepared by accounting firms located in China for the first time. This marks a breakthrough for Chinese firms to comply with the PCAOB oversight and to continue obtaining financing from the U.S. capital markets. From December 18, 2020 to December 15, 2022, the US-listed Chinese firms first experienced a sudden tightening of rules, followed by a ticking timer to delist in three years with enormous uncertainty, and finally a dismissal of alert. The passage of HFCAA and the enforcement may significantly affect the market performance of the US-listed Chinese firms.

This paper investigates how the investors in the U.S. capital markets respond to the passage of HFCAA as well as its subsequent enforcement. To reveal the impact of HFCAA, this paper firstly focuses on the first moment of stock price movement. I specifically examine the stock market reaction to major points in time related to the HFCAA, from the initial proposal to the most recent important announcement by PCAOB, to assess how the investors perceive the US-listed Chinese firms as investing venue, beneficial or costly.

The event study results do not seem to corroborate with the general media tone regarding HCFAA as bad news for Chinese firms' stock prices. Using event study based on market model and a three-day (-1, +1) event window, the US-listed Chinese firm sample does not show significant negative abnormal returns for the initial proposal of HFCAA, when the HFCAA passed the Senate or the House and even when it finally became law. In sharp contrast to the above events, the market shows a more significant bull sign to the PCAOB's announcement as of December 15, 2022 that resets the delisting clock. The three-day event window (-1, +1) for the PCAOB announcement to confirm compete access to audit working papers for Chinese firms witnessed a significant cumulative abnormal return (CAR %) of 4.280 (*t*: 4.170). It

[3] From the SEC website, accessed in Dec. 2022.

implies that the PCAOB's announcement strengthens investor confidence, thus positively affecting the stock returns of Chinese firms. The initial and final identification of Commission-identified Chinese firms using PCAOB-identified auditors do show significantly negative abnormal returns for the corresponding stocks, with -4.073 (*t*: -5.352) for the initial identification and -2.336 (*t*: -2.275) for the final identification. Since the final identification lags 15 working days after the initial identification, the market reaction is less strong both in level and in significance. This significantly negative market reaction towards the individual identification suggests that direct delisting threat poses downward pressure on the market perception. The market may not have fully absorbed the impact of HFCAA even before its official passage. Further definite changes in subsequent enforcements significantly affect the market perception as a whole.

The insignificant market reactions to the HFCAA passage imply that there may exist high degree of differences of opinion among investors concerning Chinese firms' delisting uncertainty. Therefore, the overall market perception (stock price movement in the first moment) is obscure. In order to understand the investor perception more thoroughly, I develop the stock price crash measures to pick up the moments of return distribution in higher order, i.e., the stock price movement in the second and third moments. Following Chen et al. (2001), I use NCSKEW to reflect the third moment in daily returns and DUVOL to reflect the second moment, the latter less subject to the impact of extreme days. Hong and Stein (2003)'s theoretical model on market crashes develops from the perspective of investor heterogeneity in belief. Due to differences of opinion among investors as well as short sale constraints, the market in nature reacts to positive news timelier than to negative news. Thereby, it leads to negative news accumulation and creates a negatively skewed return distribution. In addition, since the trading volume tends to reflect the degree of differences of opinion in the market, stocks with high trading volume are also likely to show negative skewness.

My sample shows similar results with Chen et al. (2001) that the NCSKEW and DUVOL are highly correlated, with a Spearman correlation of 0.831. What's more, both NCSKEW and DUVOL for individual stock have negative mean values for all the U.S. stocks as well as for the US-listed Chinese firms, which indicates that in general the individual stocks show positive skewness in stock return. As inferred by Hong and Stein (2003), the positive skewness in individual stocks stems from the managers' tendency to release negative news in a slower manner. Also following Chen et al. (2001), I construct detrended share turnover (*Dturn*)to measure the stocks' trading volume changes. Using a between-sample t test, I observe a significantly higher level of detrended share turnover for Chinese firms versus non-affected U.S. stocks in the post-HFCAA period (from 2021 to 2022Q3). In sharply contrast, the detrended share turnover for Chinese firms is significantly lower than the control group in the pre-HFCAA period (from 2010 to 2020). The evidence supports that higher degree of differences of opinion on delisting uncertainty exists for Chinese firms after the passage of HFCAA.

To further explore the differences of opinion among investors, I adopt a difference-in-differences analysis on stock price crashes of Chinese firms versus other unaffected U.S. stocks upon the passage of HFCAA. Since the PCAOB's announcement at the end of 2022 reset the delisting clock on Chinese firms, I take 2021Q1-2022Q3 as the post HFCAA period. For both NCSKEW and DUVOL, the coefficients of the interaction term between the post-HFCAA dummy *Post* and the Chinese firms dummy *Chinese*, which captures the treatment effect on Chinese firms, are significantly positive. It indicates that the rising degree of differences of opinion on Chinese firms after the HFCAA does lead to more stock price crashes. The economic magnitude is also significant. With the passage of HFCAA, *NCSKEW* (*DUVOL*) of Chinese firms listed in the US is on average 0.229 (0.203) more than *Non-Chinese Firms*, 0.242 (0.217) more than *Other Foreign Firms*, and 0.230 (0.203) more than *Domestic Firms*. The

results remain when using other foreign firms listed in the US, US domestic firms and matched US domestic firms respectively as control groups. I also do a parallel trend check to validate my DID results.

As for the underlying mechanism of the HFCAA impact, I propose two potential channels that may explain the effects of HFCAA on stock price crashes. One is from the financial reporting quality perspective, and the other is from the conflicts between Chinese and the U.S. jurisdictions.

One possible channel is on financial reporting quality. This channel posits that the long-time non-compliance renders tolerance to Chinese firms listed in the U.S. with disqualified financial reporting quality. Upon the passage of HFCAA, US-listed Chinese firms are faced with more stringent monitoring and the management may not be able to withhold bad information any longer, which will lead to more stock price crashes. It is consistent with the agency theory on stock price crashes (Rajgopal & Venkatachalam, 2011; Hutton et al., 2009; Jin & Myers, 2006). Besides, this scrutiny over financial frauds is the primary intention of the passage of SOX as well as the amendment of SOX, the HFCAA. Hutton et al. (2009) show the SOX has mitigating effect on the corporate earnings management, thereby dissipating the stock price crashes induced by poor financial reporting quality. It is plausible to anticipate the HFCAA has a similar impact.

The empirical results do not directly support the financial reporting quality channel, though. By extending the DID model on Chinese firms versus non-Chinese firms and the HFCAA passage, I perform a triple-difference test on firms with above-median absolute discretionary accruals (i.e., low financial reporting quality) versus firms with below-median absolute discretionary accruals (i.e., high financial reporting quality). It shows an insignificant coefficient of the triple interaction term, suggesting that the financial reporting quality difference does not explain the treatment effect of HFCAA.

Another possible channel is on national security concerns. The jurisdiction story focuses on the delisting threat that national security concerns are related to the non-compliance, thereby leading to firms delisting from the U.S. exchanges ultimately. DiDi's failed attempt to list in the US to some extent resonates with the jurisdiction story. Moreover, after a year of data-security investigation starting in 2021, China fined DiDi $1.2 Billion for cyber violation[4]. Chinese jurisdiction is highly sensitive with the data security and even plan to establish a new agency, National Data Bureau, to enhance data governance[5]. Besides, ever since the passage of HFCAA, there have been several big SOEs delisting from the US market. On Feb. 17, 2023, China Securities Regulatory Commission (CSRC) release official rules on Chinese firms' overseas listing, attempting to plug loopholes on possible national security threats. These all suggest that China do have national security concerns over US listing and the mandated audit working paper inspection, and that firms in sensitive industries are surely under more stringent regulations. On the contrary, firms in less sensitive industries are less subject to the national security concerns and may have more discretion to stay listed under HFCAA. Thus, investors may have larger degree of divergence in opinions on the outlook of the firms in less sensitive industries in the post HFCAA period (from 2021Q1 to 2022Q3). Back then, given the long-standing non-compliance since the first US listing of Chinese firms, it is highly uncertain if the Chinese authorities will ever compromise on the PCAOB's access to the audit working papers of US-listed Chinese firms.

The empirical results lend support to the national security concerns channel. I perform triple-difference test on the cross-sectional variation between high-tech firms and the non-high-tech firms on the treatment effect of HFCAA. I find some weak evidence supporting H5 that the positive effect of HFCAA on stock price crash is stronger for Chinese firms in non-high-

[4] Wall Street Journal, Didi Fined $1.2 Billion By Beijing For Cyber Violations, 22 July 2022.
[5] Wall Street Journal, China to Create New Top Regulator for Data Governance; Beijing's plan to streamline regulatory structure would bring all data-related issues under a single agency, 8 March 2023.

tech industries. It is noteworthy that the results in Table 9 differ significantly from those in Table 8, which rules out the possibility that *HighT* captures the same information as *HighR*.

Afterwards, I perform a subsample regression of the high-tech versus non-high-tech triple-difference model on financial reporting quality (high versus low). The results show the variation in high-tech versus non-high-tech industries from the treatment effect of HFCAA is only concentrated among Chinese firms with low financial reporting quality. More specifically, US-listed high-tech Chinese firms with low financial reporting quality show the lowest level of stock price crashes, among others. In other words, investors have the least differences of opinion over these firms' delisting uncertainty and even mostly agree that these firms have a dim future. High-tech Chinese firms with low financial reporting quality are not only under more stringent rules, but also less likely to actually conform to the in-effect rules. This evidence on financial reporting quality also supports the investor heterogeneity theory in explaining the HFCAA impact on stock price crashes, against the more popular agency theory on stock price crash.

For robustness check, I also do a PSM-DID analysis to address the possible selection bias in the firm characteristics of Chinese firms. PSM-DID results support that the passage of HFCAA leads to more stock price crashes of US-listed Chinese firms, compared with other US listed firms with similar firm characteristics. I also adopt a more recent time period from 2016 to 2022 and it shows the results still hold when considering a short and recent time period.

This paper contributes to the study of this new statute, HFCAA, the effects of which are under-researched. The passage of HFCAA is expected to be crucial for resolving the enduring non-compliance of the Chinese firms for nearly two decades. The impacts are especially profound and long-lasting for the US-listed Chinese firms, thus making it an interesting topic to address. In addition, since the Chinese firms are the only treated group, given that all the

other firms listed in the U.S. have managed to comply with the rules over the years, it would be good context to reveal the causal effects of the new statute on the stock price crashes.

This paper also contributes to the stock price crashes study from the perspective of investor heterogeneity in beliefs (Hong & Stein, 2003), while the prior studies primarily concentrate on the bad news hoarding from management based on the agency theory. This paper extends the Hong and Stein (2003)'s model and related empirical study (Chen et al., 2001) on the investor heterogeneity theory, which only address the existence of investor heterogeneity but do not elaborate on where it dominates. I manage to show investor heterogeneity theory better explains the stock price crash of Chinese firms with the passage of HFCAA in both the national security concerns channel and the financial reporting quality channel. The more popular agency theory in the literature does not offer explanation in this context.

The rest of this paper is as follows. *Literature Review and Hypothesis Development* presents a thorough survey of related literature and develops research hypotheses for empirical tests. Data, variables and model specification are shown in *Methodology*. Empirical results are presented and explained in *Empirical Results*. Finally, I conclude with *Conclusion*.

2 Literature Review & Hypothesis Development

2.1 Event Study

With the passage of HFCAA, the media unanimously regard it as bad news for Chinese firms with a US listing, and continuously report Chinese firms' stock prices plunge and market capitalization shrinkage. Capital market does efficiently incorporate information and market price movement reflects the content of information, especially the investor's perception on the new information (Malkiel, 1989). Moreover, market prices are forward-looking and may reflect the corrective actions from the regulators (Bond & Goldstein, 2015; Bond et al., 2010). Empirical researchers adopt an event study approach to measure the impact of an economic event on firm performance (MacKinlay, 1997). Thus, to reveal the impact of HFCAA, I first use an event study approach to analyse the first-moment stock price movement of Chinese firms listed in the US.

The starting point is in 2019, when the initial proposal of HFCAA is referred to the Committee on Banking, Housing, and Urban Affairs on March 28, 2019. Accelerated by the big scandal of Luckin's financial fraud in 2020, the HCFAA quickly passed Senate as of May 20, 2020 and then passed House without objection as of December 2, 2020. Finally, on December 18, 2020, HFCAA became Public Law with the sign-off by the then President, Donald Trump. HFCAA requires the audit working papers of all foreign firms listed in the US shall be subject to the PCAOB's inspection. Since by then the only authority that restricts the PCAOB's inspection is China, including Hong Kong and Macao, the HFCAA's main target is on the US-listed Chinese firms. It mandates that all foreign firms are forced to delist if they are identified as non-compliance for 3 consecutive years. According to Huang (2021), the long-standing non-compliance is due to restrictions from China State Secrets Law and the authorities' fruitless negotiation. It remains challenging for the Chinese jurisdiction to settle the issue within the three-year countdown.

US-listed Chinese firms are faced with a severe delisting threat upon the passage of HFCAA. For one thing, Luckin's financial fraud, along with the non-compliance with the PCAOB's inspection on the audit working papers, may render Chinese firms a bad reputation in financial reporting quality. For the other, the US-Sino relation is getting intensely unfriendly[6], thus leading to an even lower possibility in achieving a successful negotiation during the three-year countdown. The future of US-listed Chinese firms is likely to be a dim one. Therefore, I would predict the abnormal returns on the passage of HFCAA for US-listed Chinese firms to be negative.

The subsequent enforcement of HFCAA is in a step-by-step pace. From December 18, 2020, the SEC starts to identify the non-compliance firms on a rolling basis. During the two-year negotiation (2021-2022) between the US and Chinese authorities, 162 Chinese firms were identified by the SEC as non-complaint with HFCAA[7]. More specifically, the SEC updates on its website when it initially identifies a firm and after 15 working days, the firm is conclusively identified if no objection. According to the HFCAA, these Commission-identified firms are now strictly under the three-year delisting countdown. It would be plausible to anticipate negative abnormal returns for the Commission-identified firms on the initial and final identification. Nevertheless, on Dec. 15, 2022, PCAOB announced that it has secured complete access to inspect audit working papers prepared by accounting firms located in China for the first time. This marks a breakthrough for the Chinese firms to comply with the PCAOB oversight and to continue obtaining financing from the U.S. capital markets. The PCAOB's announcement at the end of 2022 is a reverse event to the HFCAA passage and the previous SEC identification. Thus, I would predict the abnormal returns for Chinese firms listed in the US on the PCAOB announcement to be positive.

[6] For example, HFCAA also addresses that companies shall disclose information on management from the Communist Party, which is more political-driven instead of mere investor protection in view of financial reporting quality.

[7] From the SEC website, accessed in Dec. 2022.

Hereby, I propose Hypotheses 1-3 as follows.

H1: The cumulative abnormal return of the US-listed Chinese firms on the passage of HFCAA is negative.

H2: The cumulative abnormal return of Chinese firms upon the SEC identification as non-compliance is negative.

H3: The cumulative abnormal return of the US-listed Chinese firms on the PCAOB's 2022 announcement is positive.

2.2 Stock Price Crash

Compared with first-moment stock price movement in the form of stock return, stock price crash is a more informative measure of negative asymmetries of market returns, reflecting higher moments of price movement than the returns (Habib et al., 2018; Chen et al., 2001). There has been abundant work on the determinants of stock price crashes. One important class of theories builds on the rational models with incomplete information aggregation. As is illustrated in Romer (1993)'s model, the investors are fully rational but initially imperfectly informed on the precision of each other's' information. Thus, the shocks in the trading process may reveal information, at which time prices can change sharply. Another strand of theoretical literature indicates the volatility feedback theory (Campbell & Hentschel, 1992; French et al., 1987; Pindyck, 1984). It posits that when news arrives and the market volatility goes up, the market volatility commands additional risk premium. In this regard, the additional risk premium may offset the positive effect of good news, while the negative effect of bad news is amplified, thus inducing a market-wide negative skewness in return.

Extending from previous models, the investor heterogeneity theory (Hong & Stein, 2003) hinges on the differences of opinions among investors to develop theoretical model to explain the stock price crashes. The heterogeneity in investors' beliefs, along with the short-sales constraints, generates negative skewness of returns, even without dramatic news. Different

from the theories above, the agency theory incorporates the agency issue inside the firms, indicating that managers tend to withhold bad information. When the accumulation has passed a threshold, the sudden release of information will lead to a large stock price crash (Jin & Myers, 2006).

This bad news hoarding view from the agency theory is the most popular view among empirical studies, while the other three theories have limited empirical evidence. Empirical studies support the agency theory by showing that accounting accruals (Kim & Zhang, 2014, 2016; Hutton et al., 2009), CEO characteristics (Chen et al., 2021; Al Mamun et al., 2020; Andreou et al., 2017; Kim et al., 2016), takeover protection (Bhargava et al., 2017), institutional investor stability (Callen & Fang, 2013), religion (Callen & Fang, 2015), economic policy uncertainty (Luo & Zhang, 2020; Jin et al., 2019), CSR (Kim et al., 2014), etc., are associated with the stock price crashes by affecting the management's bad news hoarding.

Since the passage of HFCAA casts both delisting threat and financial reporting quality concerns on the US-listed Chinese firms, the stock price crashes may be better explained by integrating the above theories, especially the investor heterogeneity theory and the agency theory.

As for the jurisdiction story, there are many uncertainties regarding how the Chinese jurisdiction will respond to the HFCAA within the three-year delisting countdown and what the firms themselves will do, which may lead to more diverse investor beliefs over the price movement of the US-listed Chinese firms. Hong and Stein (2003) regard the disparity of beliefs as the key determinant of stock price crashes. However, Hong and Stein's theory and a related empirical work (Chen et al., 2001) only address the existence of the investor heterogeneity and do not elaborate on the degree of the heterogeneity in beliefs among the investors. This paper conjectures that the US-listed Chinese firms, with more diverse investor beliefs compared with other US-listed firms after the passage of HFCAA, shall generate more stock price crashes, by

incorporating the optimism and euphoria from the behavioural perspective. For the more pessimistic kind of investors, this delisting threat is highly significant and may induce the investors to overestimate the price movement of US-listed Chinese firms; for the more optimistic kind, once there are still some chances that the Chinese firms will not delist, they would underestimate the price movement. In this regard, the passage of HFCAA will increase the investor heterogeneity for the Chinese firms only, thus leading to more stock price crashes compared with other US-listed firms.

The financial reporting quality story can be explained by the agency theory from Jin and Myers (2006), that stock price crashes arise from managers' bad news hoarding and firms with poor financial reporting quality tend to withhold more bad news. This is aligned with a strand of empirical literature documenting that financial reporting quality is negatively related to stock price crashes (Kim & Zhang, 2014, 2016; Rajgopal & Venkatachalam, 2011; Hutton et al., 2009). Since the HFCAA poses stringent requirements on the financial reporting quality of the US-listed Chinese firms, it is plausible to anticipate that the additional monitoring and inspection from the PCAOB would increase the likelihood of bad information leakage, thereby inducing more stock price crashes.

Both above stories predict a positive effect of the HFCAA on the stock price crashes. Hereby I propose Hypothesis 4.

H4: The passage of HFCAA leads to more stock price crashes of US-listed Chinese firms, compared with other US-listed firms.

The delisting threat itself is not equal among the US-listed Chinese firms. Reflecting from the DiDi's failed attempt to list abroad and China' continuous emphasis on data governance, Chinese firms with sensitive data and technology are most restricted by the Chinese authorities to obtain financing from foreign capital markets. Even if China is willing to settle the statute conflicts, it would be less likely to compromise on firms with more national

security concerns (Huang, 2021). In this technology-dominated era, high-tech industries are susceptible to more national security concerns, whereas non-high-tech industries are less sensitive. While firms in non-high-tech industries are less subject to the national security concerns, these firms may have more discretion to stay listed under HFCAA. In this regard, investors may have larger degree of divergence in opinion on the outlook of the firms in less sensitive industries in the post HFCAA period (from 2021Q1 to 2022Q3), thus making the positive effect of HFCAA more pronounced.

Hereby I propose Hypothesis 5.

H5: The positive effect of HFCAA on stock price crash is more pronounced for Chinese firms in non-high-tech industries.

Similarly, the financial reporting concerns are not equal among the US-listed Chinese firms as well. The litigation on the notorious financial scandal of Luckin in 2020 revealed revenue fabrication for more than $300 million (SEC, 2020). It suggests the non-compliance and avoidance of the PCAOB inspection renders tolerance to the firms with poor financial reporting quality. There are also Chinese firms with competent financial reporting quality. Another US-listed Chinese firm, BeiGene has already changed the principal auditor from the previous mainland-based one to the current Boston-based accounting firm that the PCAOB can inspect[8]. It somehow exerts the message that the firms with competent financial reporting quality are less likely to withhold bad information that may surface during auditor shift or comprehensive compliance to the PCAOB rules. On the contrary, firms with disqualified financial reporting quality are more inclined to bad news hoarding and leakage upon the passage of HFCAA.

Hereby I propose Hypothesis 6.

[8] Wall Street Journal, Chinese Firms Attempt To Avoid U.S. Delisting, 6 April 2020.

H6: The positive effect of HFCAA on stock price crash is more pronounced for Chinese firms with poorer financial reporting quality.

3 Methodology

3.1 Event Study

I collect from the website of the U.S. Congress on the exact timeline of the HFCAA passage. First, I start with the initial proposal of HFCAA to the Committee on Banking, Housing, and Urban Affairs on March 28, 2019. Then I consider the Passed Senate time point as of May 20, 2020, that the HCFAA passed Senate with an amendment by Unanimous Consent. I also consider the Passed House point as of December 2, 2020 when the House agreed to the HFCAA without objection. Finally, I focus on the Became Law point, that the HFCAA became Public Law No. 116-222 on December 18, 2020, with the sign-off by the President. I also collect from the SEC website on the list of Commission-identified firms with the conclusive identification dates. With 15 working days' rollback, I also test on the initial identification dates when the firms are initially identified by the SEC and posted publicly on the SEC website. I obtain from the PCAOB website on the exact date of its announcement to complete access to Chinese firms' audit working paper. PCAOB announced that it has secured complete access to inspect audit working papers prepared by accounting firms located in China for the first time on December 15, 2022.

I adopt a standard event study approach to test the above events. Daily returns of stocks for all NYSE, NASDAQ and AMEX firms and market returns are obtained from CRSP. To estimate normal returns, I use market model and an estimation window of 100 days with a gap of 30 days before the event. Since the time intervals between the above events are all over half a year, the estimation window would not overlap with any event window. The event window is a three-day window from one day before the event to one day after the event, accounting for possible leakage of information beforehand.

Abnormal return (AR) of stock *i* at time *t* is the difference between the stock's realized return at time *t* and the estimate of its normal return at time *t* without the event. Cumulative abnormal return (CAR) is the sum of AR during the event window. I use a t-test to show if the CAR is significantly different from 0, i.e., if there is significantly positive (negative) CAR for the stock on the event.

3.2 Stock Price Crash

3.2.1 Data

I adopt a sample period of 2010-2022, which avoids the turbulence during the Financial Crisis of 2008, and ends in the most recent fiscal year as of 2022. I collect from CRSP the data on daily stock returns and trading volumes for all NYSE, NASDAQ, and AMEX firms and use CRSP/Compustat Merged (CCM) to match with quarterly financial data from Compustat. The CCM universe makes the full sample of US-listed firms.

As for the foreign firms listed in the U.S. capital markets, I obtain the firms filing Form 20-F from the SEC website EDGAR. The SEC requires all foreign private issuers with listed equity shares on U.S. exchanges to file Form 20-F on an annual basis. Thus, I take the list of firms filing Form 20-F as the sample for foreign firms with a US listing. As for the subsample of Chinese firms, I obtain the tickers of US-listed Chinese firms from the comprehensive list of Chinese firms with a US listing from CNRDS database. To make the matching more accurate, I manually check the company names after matching on the tickers. Panel A of Table 1 shows Chinese firms' distribution by industry as well as by the year with an initial US listing.

[Insert Table 1 Here]

For the regression sample, I exclude utility firms (SIC 4900–4949) and financial firms (SIC 6000–6999). In sum, the full sample of US-listed firms from 2010 to 2022 is 125,974

firm-quarter observations, with 7,818 firm-quarter observations in the foreign firm subsample (Chinese firms included) and 2,701 firm-quarter observations for Chinese firms.

The measures of stock price crashes follow the *NCSKEW* and *DUVOL* in Chen et al. (2001), which is derived from Hong and Stein (2003)'s model on heterogeneity in investors' beliefs, with the former capturing the negative asymmetry of the return distribution and the latter the down-to-up volatility measure of the crash likelihood. Chen et al. (2001)'s calculation adopts a six-month horizon is acknowledged to be arbitrary. In order to match with quarterly financial data and ultimately to generate more observations, this paper chooses a quarterly horizon for measuring stock price crashes.

Specifically, *NCSKEW* and *DUVOL* are calculated as below.

For any stock *i* over any one-quarter period *t*, *NCSKEW* is:

$$NCSKEW_{it} = -(n(n-1)^{\frac{3}{2}}\sum R_{it}^3)/((n-1)(n-2)(\sum R_{it}^2)^{3/2})$$

where R_{it} denotes the stock *i*'s daily returns during period *t*, and *n* is the number of observations during the period. It reflects the negative skewness in distribution of daily stock returns, capturing the second moment and third moment of stock price movement.

For any stock *i* over any one-quarter period *t*, by separating the days with returns below the period mean ("down" days) from those with returns above the period mean ("up" days) and computing the standard deviation within the subsamples, *DUVOL* is:

$$DUVOL_{it} = \log\{(n_u - 1)\sum_{DOWN} R_{it}^2 /(n_d - 1)\sum_{UP} R_{it}^2\}$$

where n_u and n_d denote the number of up and down days. It reflects the "down-to-up volatility", capturing only the second moment of stock price movement. *DUVOL* is also less affected by extreme days.

I also control for variables that prior literature has addressed important in explaining stock price crash. As Chen et al. (2001) emphasize, detrended share turnover at time *t-1*

(Dturn_{it-1}), stock price crash at time *t-1* (NCSKEW_{it-1} or DUVOL_{it-1}), standard deviations of firm-specific daily returns at time *t-1* ($Sigma_{it-1}$), firm-specific average daily returns at time *t-1* ($Return_{it-1}$), and firm size at time *t-1* ($Size_{it-1}$),) are useful in explaining stock price crash at time *t* (NCSKEW_{it} or DUVOL_{it}). I also control for market-to-book ratio (MB_{it-1}), leverage ratio ($Leverage_{it-1}$), and return on assets (ROA_{it-1}), as well as the three-year moving average of absolute discretionary accruals ($Movacc_{it-1}$).

I winsorize major variables at 1st and 99th percentile to leave out the extreme values. Panel B of Table 1 presents descriptive statistics for major variables used in the multivariate regression, while Table 2 shows the bivariate correlation matrix with both Pearson and Spearman correlation coefficients. *NCSKEW* (mean: -0.249; median: -0.171) and *DUVOL* (mean: -0.237; median: -0.210), both negative in the mean and median, show similar value level with Chen et al. (2001). They are also significantly correlated, with a Pearson correlation coefficient of 0.85 and a Spearman correlation coefficient of 0.831. It supports Chen et al. (2001)'s conjecture that *NCSKEW* and *DUVOL* capture similar information in terms of stock price crash.

[Insert Table 2 Here]

3.2.2 Model Specification

To test for the Hypothesis 4, I propose a DID specification based on Kim and Zhang (2016)'s regression and choice of control variables.

$$CRASH_{it} = \alpha_0 + \alpha_1 POST * Chinese + \alpha_2 POST + \alpha_3 Chinese + \sum \alpha_i CONTROLs + Firm\ FE + Year - Quarter\ FE + \varepsilon_{it}$$

Where $CRASH_{it}$ is either the *NCSKEW* or the *DUVOL* for firm *i* at time *t*; *POST* is one if after the year of 2020, and zero before 2020; *Chinese* is one if the firm is a US-listed Chinese

firms, and zero otherwise; *CONTROLs* refers to the set of control variables with one quarter lag behind the dependent variable $CRASH_{it}$.

To test for the Hypotheses 5 and 6, I propose a triple difference model by extending the above DID specification.

$$CRASH_{it} = \beta_0 + \beta_1 H_{it} + \beta_2 POST * Treat + \beta_3 POST * H_{it} + \beta_4 H_{it} * Treat + \beta_5 POST * Treat * H_{it} + \sum \beta_i CONTROLs + Industry\ FE + \varepsilon_{it}$$

Where H_{it} is the variable that indicates the cross-sectional subsamples. I adopt industry fixed effect in the triple difference specification to keep the coefficient of interest (β_5), i.e., the coefficient of the three-way interaction term. The specification with firm fixed effect and year-quarter fixed effect easily absorbs the coefficients of dummy variables and interaction terms.

To test for H5, H_{it} refers to High_tech_{it}, that equals one if the firm lies in the high-tech industries with more sensitive data and technology, and zero otherwise. To test for H6, H_{it} refers to High_RQ_{it}, that takes the value of one if the firm has less than median absolute discretionary accruals in the year, or in other words, with above median financial reporting quality, and zero otherwise.

4 Empirical Results

4.1 Event Study on HFCAA

Table 3 reports cumulative abnormal returns (CARs) of US-listed Chinese firms within 3-day event window (-1, +1) on the important time points to the passage of HFCAA and the 2022 PCAOB's announcement on the complete access to Chinese firms' audit working papers. I also provide unaffected benchmarks using control groups of other foreign firms as well as a matched sample of US domestic firms.

[Insert Table 3 Here]

There are two important observations in Table 3. The first observation is on the four important time points to the passage of HFCAA: *Initial Proposal*, *Passed Senate*, *Passed House*, and *Became Law*. Most of the events related to the HFCAA passage show an insignificant CAR of Chinese firms in the 3-day window (-1, +1), except that *Initial Proposal* even shows a significantly positive CAR. The evidence is against the prediction in H1 that CARs of Chinese firms on the HFCAA passage should be negative. As for the slightly positive CAR for *Initial Proposal*, it implies market views the proposal of HFCAA as of governance benefits to the Chinese firms in the first place. However, when it progresses, the market reaction to the HFCAA passage on Chinese firms becomes obscure, showing insignificant CARs for *Passed Senate*, *Passed House*, and *Became Law*. It implies that the market is not in consensus on the future of Chinese firms with the passage of HFCAA. The investors may have differences of opinions on the value of Chinese firms, thereby resulting in insignificant CARs.

The second observation is on the 2022 PCAOB's announcement on having complete access to Chinese firms' audit working papers. This event shows a significantly positive CAR of Chinese firms in the 3-day window (-1, +1), with a magnitude of 4.280%. The percentage of observations with negative CARs is only 37.88%. It supports H3 that the PCAOB's announcement is in general good news to Chinese firms and CAR should be positive. When I

benchmark with both other foreign firms and the matched US domestic firms on the market reaction to the 2022 PCAOB announcement, I find a clear bull sign from the market on Chinese firms. While Chinese firms show a significant and positive CAR, the two control groups are with insignificant CARs. Other foreign firms have 48.71% of its observations with negative CARs, matched domestic firms 50.13%.

Table 4 reports the CARs of Commission-identified Chinese firms within 3-day event window (-1, +1) on the initial and final identification. I also provide a benchmark using a matched sample of US domestic firms. The results support H2 that the SEC identification is bad news to the identified firm and the identification effect is negative, for both the initial identification and the final one. The CAR on initial identification (-4.037%) is on average more significant and larger in magnitude, compared with that on final identification (-2.336%). In contrast, the benchmark sample of matched domestic firms show insignificant CARs. This significantly negative market reaction towards the individual identification suggests that direct delisting threat poses downward pressure on the market perception. Moreover, the market may not have fully absorbed the impact of HFCAA even before its official passage. Further definite changes in subsequent enforcements significantly affect the market perception as a whole.

[Insert Table 4 Here]

From the event study results, I find the market reaction to HFCAA passage is obscure. It is possible that HFCAA gives rise to differences of opinion among investors, thus causing overall market perception obscure.

4.2 Differences of Opinion and the HFCAA passage

The insignificant market reactions to the HFCAA passage and enforcement suggest that there may exist high degree of differences of opinion among investors so that the overall market perception (stock price movement in the first moment) is obscure. In order to understand the

investor perception more thoroughly, I develop tests to investigate how the degree of differences of opinion among investors changes with the passage of HFCAA.

Firstly, I examine how the detrended share turnover changes with the passage of HFCAA. Table 5 presents t test results on the sample mean of detrended share turnover (*Dturn*) for US-listed Chinese firms versus non-Chinese firms before and after the HFCAA passage. As Chen et al. (2001) show, the detrended share turnover proxies for differences of opinion among investors. Thus, a t test on the between-sample mean of detrended share turnover may reflect the differences in the average degree of investor heterogeneity in the market.

[Insert Table 5 Here]

The results support that US-listed Chinese firms experience a significantly higher level of investor heterogeneity in belief with the passage of HFCAA. In the pre-HFCAA period, from 2010 to 2020, the mean of *Dturn* in the Chinese firms sample is 0.047, which is significantly lower than the mean of *Dturn* (0.164) in the non-Chinese firms sample. The mean difference is -0.116 (*t*: -2.109). In the post-HFCAA period, from 2021 to 2022, the mean difference of *Dturn* between the Chinese firms versus non-Chinese firms changes the direction of sign, turning to significantly positive of 0.437 (*t*: 1.613). That is to say, before HFCAA, investors have less differences of opinion over Chinese firms than non-Chinese firms; after HFCAA, the pattern reverses that investors start to have more differences of opinion over Chinese firms than non-Chinese firms. Another observation in the time series is that the mean values of *Dturn* for both Chinese firms and non-Chinese firms turn negative in the post-HFCAA period. It suggests a general decrease in stock turnover, thus leading to a negative average detrended share turnover. The t test on the pre versus post HFCAA mean difference shows the decrease in detrended turnover in Chinese firms is not significant, while the decrease in detrended turnover in non-Chinese firms is highly significant. Combined, I would anticipate

if without HFCAA, the average detrended turnover for Chinese firms shall decrease along with other US-listed firms and remain less in value than other US-listed firms.

Secondly, using measures on stock price crash, which pick up the stock price movement in the second and third moments, I develop a difference-in-differences specification on stock price crashes of Chinese firms versus the other unaffected U.S. stocks upon the passage of HFCAA to further explore the differences of opinion among investors.

[Insert Table 6 Here]

Panel A of Table 6 tabulates the baseline DID regressions on the HFCAA's treatment effect on the stock price crash of US-listed Chinese firms, using non-Chinese firms, US domestic firms, and other foreign firms listed in the US as control groups, respectively. *Non-Chinese Firms* in columns (1) and (4) means all non-Chinese firms listed in the US, including both the US domestic firms *Domestic Firms* in columns (2) and (5) and other foreign firms with a US listing *Other Foreign Firms* in columns (3) and (6). The coefficient of interest is that of interaction term *Post*Chinese*, which refers to the treatment effect of HFCAA on Chinese firms. The coefficients of *Post* and *Chinese* are absorbed due to the firm fixed effect and the year-quarter fixed effect in the regressions. The empirical results show a significantly positive coefficient for the interaction term for all columns. That is to say, for measures on stock price crash, both *NCSKEW* and *DUVOL*, the HFCAA's treatment effect on Chinese firms is significantly positive. The economic significance is with the passage of HFCAA, *NCSKEW* (*DUVOL*) of Chinese firms listed in the US is on average 0.229 (0.203) more than *Non-Chinese Firms*, 0.242 (0.217) more than *Other Foreign Firms*, and 0.230 (0.203) more than *Domestic Firms*.

Panel B of Table 6 shows the different specifications of DID based on Chinese firms and other foreign firms as benchmark. I adopt the DID regressions with industry fixed effect in columns (1) and (4), in order to keep the coefficients of *Post* and *Chinese*. In columns (2) and

(5), the DID regressions with year-quarter fixed effect absorb the coefficient of *Post*, while in columns (3) and (6), the DID regressions with firm fixed effect absorb the coefficient of *Chinese*. For almost all columns, the coefficients of the interaction term *Post*Chinese* are significantly positive, consistent with the findings in Panel A of Table 6. Another important observation is in columns (2) and (5), that the significantly negative coefficients of *Chinese* are consistent with the previous evidence from the detrended turnover that in the pre HFCAA period, on average Chinese firms show lower stock price crash than non-Chinese firms.

[Insert Table 7 Here]

Table 7 presents the parallel trend check on the DID specification by identifying the pre-HFCAA treatment effect. I define *Pre-1*, *Pre-2* and *Pre-3* respectively as one year before the HFCAA in effect (2020), two year before the HFCAA in effect (2019) and three years before the HFCAA in effect (2018). The coefficients on *Pre-1* Chinese*, *Pre-2* Chinese*, and on *Pre-3* Chinese* are all insignificant, while the coefficients on *Post*Chinese* are significantly positive, supporting the parallel trend assumption.

The empirical evidence thus far supports H4 that the HFCAA leads to more stock price crashes of US-listed Chinese firms. Combined with the evidence that Chinese firms have a significantly higher mean value in detrended share turnover than non-Chinese firms in the post HFCAA period, the empirical findings are in line with Hong and Stein (2003)'s investor heterogeneity model. It is possible that rising differences of opinion among investors on Chinese firms with the passage of HFCAA underlies the increase in stock price crash. It does not rule out the popular agency theory that stock price crash comes from poor financial reporting quality and withholding of bad news, though.

4.3 Cross-sectional Analysis

In order to disentangle the two possible channels, as described in detail in in *Literature Review and Hypothesis Development*, I introduce a triple-difference model by extending the DID

specification to show the treatment effect of HFCAA in a cross-section of firms. To test Hypothesis 5, I follow the Puri and Zarutskie (2012)'s SIC classification to identify firms that are in the "Computer", "Biotech/Medical", "Electronics", and "Telecom" industries as firms in the high-tech industries (*HighT* = 1). The rest of the sample belongs to the non-high-tech industries (*HighT* = 0). To test Hypothesis 6, I use a dummy variable that annually divide the firms into high versus low financial reporting quality based on the firm's absolute value of discretionary accrual. I define *HignR* as one if the firm's absolute discretionary accrual (*Absacc*) is below the median value in the year, zero otherwise.

[Insert Table 8 Here]

Table 8 reports the triple difference results on high financial reporting quality versus low financial reporting quality. *TripleR* denotes the triple interaction term of *Post*Chinese*HighR*, the coefficient of which reflects the additional impact of the HFCAA passage on firms with high financial reporting quality, benchmarked on firms with low financial reporting quality. The results show insignificant coefficient for *TripleR* in all the columns. It means that there is no evidence supporting H6 that firms with high financial reporting quality have lower stock price crashes than those with low financial reporting quality in the post HFCAA period. In other words, firms with different level of financial reporting quality do not show significant difference in the stock price crash with the HFCAA passage.

[Insert Table 9 Here]

Table 9 reports the triple difference results on high-tech firms versus non-high-tech firms. *TripleT* denotes the triple interaction term of *Post*Chinese*HighT*, the coefficient of which reflects the additional impact of the HFCAA passage on firms in high-tech industries, benchmarked on firms in non-high-tech industries. The results consistently show a negative coefficient for *TripleT*, for both measures on stock price crash (*NCSKEW* and *DUVOL*), and using different control groups. However, only in column (6) the coefficient of *TripleT* shows

statistical significance in the 10% confidence interval. In this regard, I only find some weak evidence supporting H5 that the positive effect of HFCAA on stock price crash is stronger for Chinese firms in non-high-tech industries. Furthermore, the results in Table 9 differ significantly from those in Table 8, which rules out the possibility that *HighT* captures the same information as *HighR*. This is particularly noteworthy given that firms in high-tech industries are also more likely to have lower financial reporting quality.

[Insert Table 10 Here]

Table 10 extends further the triple difference analysis on high-tech firms versus non-high-tech firms, by introducing a sub-sample analysis based on financial reporting quality. Panels A and B use Non-Chinese firms and other foreign firms as benchmarks respectively. Columns (1) and (3) are based on the subsample with high financial reporting quality (*HighR* = 1), whereas columns (2) and (4) are on subsample with low financial reporting quality (*HighR* = 0). *TripleT* is the triple interaction term with *HighT*, showing the additional impact of the HFCAA passage on firms in high-tech industries benchmarked on firms in non-high-tech industries.

In both panels, columns (2) and (4) show a significantly negative coefficient for *TripleT*, while columns (1) and (3) show insignificant coefficient. Thus, the variation in high-tech versus non-high-tech industries from the treatment effect of HFCAA is only concentrated among Chinese firms with low financial reporting quality. That is to say, Chinese firms in high-tech industries as well as with low financial reporting quality show the lowest level of stock price crashes, among others. This evidence can be explained under the Hong and Stein (2003)'s investor heterogeneity theory as well. High-tech Chinese firms with low financial reporting quality are not only under more stringent rules, but also less likely to actually conform to the in-effect rules. In this regard, investors have the least differences of opinion over these firms and even mostly agree that these firms have a dim future.

Thus far, the cross-sectional analysis implies both the national security concerns channel and the financial reporting quality channel matter. The evidence can be better explained using the investor heterogeneity theory, instead of the agency theory on stock price crash.

4.4 Robustness Check

There may exist selection bias in the firm characteristics of Chinese firms and propensity score matching, to some extent, may alleviate the issue. To address the possible selection bias, a PSM-DID test is introduced to corroborate the main inference. Matching is only done between Chinese firms and US domestic firms, because other foreign firms as control group is quite limited in observations. I use *Size*, *ROA* and *Growth* as fundamental firm characteristics to predict propensity scores. The matching is based on a Caliper width of 0.03. What's more, besides the 2010-2022 time range, I also adopt a more recent time period from 2016 to 2022 to show if the results hold when considering a short and recent time period.

[Insert Table 11 Here]

Table 11 shows the t-test on the sample mean of Chinese firms listed in the US and the matched US domestic firms. Panel A presents the full sample matching, from 2010 to 2022. Panel B presents the matching in a more recent time period, from 2016 to 2022. The results show the matched U.S. domestic firms are quite comparable to Chinese firms.

[Insert Table 12 Here]

Table 12 reports the PSM-DID results using the matched samples in different time ranges. For both time ranges, the results are consistent with the main inference. The coefficients for the interaction term *Post*Chinese* are significantly positive, and are also in similar magnitude with those in Table 6. In sum, PSM-DID results support the main inference that the passage of HFCAA leads to more stock price crashes of US-listed Chinese firms, compared with other US listed firms with similar firm characteristics.

5 Conclusion

The HFCAA statute, passed at the end of 2020, is determined to resolve the US-listed Chinese firms' non-compliance to the PCAOB's inspection on the audit working papers. To investigates how the investors respond to the passage of HFCAA as well as its subsequent enforcement, this paper firstly uses an event study approach to examine the stock market reaction to major points in time related to the HFCAA and the later enforcement. However, the event study results show that the market in general does not deliver a clear sign on Chinese firms upon the passage of HFCAA, beneficial or costly, but rather suggest there may exist high degree of differences of opinion among investors. In contrast, the commission identification has a significantly negative impact on the identified firm's stock price, while the 2022 PCAOB's announcement on complete access to Chinese firms' audit working papers even shows a significant bull sign on the market prices of Chinese firms.

To explore more on the investor heterogeneity over Chinese firms' delisting uncertainty arising from the HFCAA passage and reveal the underlying mechanism, I further examine the detrended share turnover and the stock price crash of Chinese firms. A significantly higher detrended share turnover for Chinese firms post HFCAA suggests more investor differences of opinion. Based on a DID model with non-Chinese firms listed in the US as control groups, the paper further unveils a positive effect of HFCAA on the stock price crash of Chinese firms, which supports Hong and Stein (2003)'s investor heterogeneity theory that higher investor heterogeneity leads to more stock price crashes. Furthermore, triple difference results support that national security concerns channel matters in the HFCAA treatment effect. More specifically, high-tech Chinese firms with low financial reporting quality show the lowest level of stock price crashes, among others. High-tech Chinese firms with low financial reporting quality are not only under more stringent rules, but also less likely to actually conform to the in-effect rules. In this regard, investors have the least differences of opinion over these firms

and even mostly agree that these firms have a dim future. In summary, the findings in this paper are in line with the investor heterogeneity theory, against the more popular agency theory. The results remain using PSM-DID analysis as well as using a more recent time period.

This paper contributes to the study of this new statute, HFCAA, the effects of which are under-researched. With Chinese firms as the only treated group, it would be good context to reveal the causal effects of the new statute on the stock price crashes. This paper also contributes to the stock price crashes study from the perspective of investor heterogeneity in beliefs (Hong & Stein, 2003), while the prior studies primarily concentrate on the bad news hoarding from management based on the agency theory. Prior literature only addresses the existence of investor heterogeneity but do not elaborate on where it dominates. I manage to show investor heterogeneity theory better explains the stock price crash of Chinese firms with the passage of HFCAA in both the national security concerns channel and the financial reporting quality channel. The more popular agency theory in the literature does not offer explanation in this context.

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Appendix 1: Variable Definition

Variables	Definition	Source
NCSKEW	First measure on stock price crash, following Chen et al. (2001). It measures for "negative coefficient of skewness" with a three-month horizon, which captures the second moment and third moment of daily returns of stocks. NCSKEWF denotes the NCSKEW in one quarter forward.	CRSP
DUVOL	Second measure on stock price crash, following Chen et al. (2001). It measures for "down-to-up volatility" with a three-month horizon, which does not reflect the third moment of daily returns and is less likely to be affected by extreme days. DUVOL F denotes the DUVOL in one quarter forward.	CRSP
Chinese	Dummy variable that equals one if the firm is identified as a Chinese firm listed in the U.S., and zero otherwise. CNRDS maintains a list of Chinese firms with foreign listing.	Chinese Research Data Services Platform (CNRDS)
Foreign	Dummy variable that equals one if the firm is a foreign firm listed in the U.S. (or if the firm files 20-F form to the SEC), and zero otherwise. The SEC requires all foreign private issuers to file 20-F on an annual basis. I extract the 20-F filing list from the EDGAR and use the firm CIK to match to CRSP *permno* as well as Compustat *gvkey*.	EDGAR
Post	Dummy variable that equals one if the calendar year is after 2020, and zero otherwise. It shows the post-HFCAA period, since the passage of HFCAA is on Dec. 18, 2020.	
Return	Average daily returns on a quarterly basis	CRSP
Sigma	Standard deviations of firms' daily returns on a quarterly basis	CRSP
ROA	Quarterly net income over total assets	Compustat
Size	Natural logarithm of total assets	Compustat
MB	Market-to-book ratio	Compustat & CRSP
Leverage	Financial leverage	Compustat
Absacc	Absolute value of discretionary accruals, where the discretionary accruals are estimated by the modified Jones model.	Compustat
Movacc	The three-year moving average of absolute value of discretionary accruals	Compustat
Dturn	Detrended share turnover by subtracting from the average quarterly share turnover a moving average of its value over the prior year	CRSP
Growth	Quarterly growth rate of revenue.	Compustat
HighR	Dummy variable that equals one if Absacc is below the sample median, and zero otherwise. It denotes firms with higher reporting quality.	Compustat
HighT	Dummy variable that equals one if the firm is in the "Computer", "Biotech/Medical", "Electronics", and "Telecom" industries which follows Puri and Zarutskie (2012)'s detailed SIC classification, and zero otherwise.	Compustat

Table 1: Sample Description

Panel A: Chinese firms' distribution by industries and by the year of an initial US listing. It only shows Chinese firms sample with no missing variables in *NCSKEW* and *DUVOL*, thus the total number may be smaller than the full sample number of Chinese firms with a US listing.

Industry	Number of Firms
Agriculture, Forestry and Fishing	2
Mining & Construction	3
Manufacturing	79
Transportation, Communications, Electric, Gas and Sanitary service	19
Trade	30
Finance, Insurance and Real Estate	30
Services	143
Non-Operating Establishments	2
Total	308

The Year of an Initial US Listing	Number of Firms
1992	1
1993	1
1994	2
1997	3
2000	9
2001	2
2002	1
2003	2
2004	8
2005	7
2005	1
2006	10
2007	24
2008	10
2008	1
2009	16
2010	40
2011	10
2012	4
2013	7
2014	16
2015	6
2016	11
2017	15
2018	30
2019	25
2020	25

2021	21
Total	308

Panel B: Descriptive Statistics. The sample period is from 2010 to 2022Q3 for major variables. All variables are described in Appendix 1.

VarName	Obs	Mean	SD	Min	Median	Max
NCSKEWF	118,940	-0.249	1.335	-5.099	-0.171	3.898
DUVOLF	118,940	-0.237	0.887	-2.894	-0.210	1.950
Return	118,940	0.000	0.004	-0.012	0.001	0.016
Sigma	118,940	0.032	0.020	0.008	0.027	0.123
ROA	118,940	-0.020	0.084	-0.466	0.006	0.108
Size	118,940	6.496	2.162	1.960	6.488	11.738
MB	118,940	16.516	17.417	0.254	10.807	99.815
Leverage	118,940	0.243	0.231	0.000	0.203	1.092
Absacc	118,940	0.024	0.029	0.000	0.014	0.143
Movacc	118,940	-0.001	0.020	-0.143	-0.001	0.143
Dturn	118,940	-0.061	2.043	-11.251	-0.057	10.423
HighR	118,940	0.501	0.500	0.000	1.000	1.000
HighT	118,940	0.613	0.487	0.000	1.000	1.000
Chinese	118,940	0.020	0.139	0.000	0.000	1.000

Table 2: Correlation Matrix

Below the diagonal line presents the Pearson coefficient, above the Spearman coefficient. All variables are described in Appendix 1. *, ** and *** denote significance at the 10, 5, and 1% level, respectively.

	NCSKEWF	DUVOLF	Return	Sigma	ROA	Size	MB	Leverage	Movacc	Dturn
NCSKEWF	1	0.831***	0.065***	-0.186***	0.101***	0.178***	0.062***	0.026***	-0.002	-0.001
DUVOLF	0.850***	1	0.056***	-0.125***	0.012***	0.095***	0.056***	0.012***	0.004	-0.025***
Return	0.043***	0.049***	1	-0.059***	0.099***	0.035***	-0.070***	0.002	-0.011***	0.037***
Sigma	-0.165***	-0.139***	0.069***	1	-0.492***	-0.516***	-0.070***	-0.059***	-0.006**	0.159***
ROA	0.091***	0.043***	0.073***	-0.453***	1	0.408***	0.061***	0.010***	0.105***	0.035***
Size	0.149***	0.102***	0.006**	-0.457***	0.447***	1	-0.212***	0.422***	-0.039***	0.019***
MB	0.033***	0.039***	-0.066***	0.021***	-0.224***	-0.210***	1	-0.323***	0.023***	-0.002
Leverage	-0.000	-0.003	-0.008***	0.026***	0.010***	0.313***	-0.175***	1	-0.020***	0.028***
Movacc	-0.003	0.002	-0.008***	-0.004	0.081***	-0.040***	0.029***	-0.021***	1	0.014***
Dturn	-0.008***	-0.027***	0.169***	0.260***	-0.003	0.026***	-0.019***	0.039***	0.000	1

Table 3: Cumulative abnormal returns (CARs) for 3-day window (-1, +1) on the HFCAA passage and enforcement

This tables presents CARs in the event windows on the HFCAA passage and enforcement for three different types of stocks: Chinese firms listed in the U.S., other foreign firms listed in the U.S. and a matched sample of U.S. domestic listed firms based on propensity scores. Normal returns are estimated using the market model based on an estimation window of 100 days with a gap of 30 days before the event. CAR is the sample average cumulative abnormal return for the 3-day window (-1, +1). *Initial Proposal* refers to the initial proposal of HFCAA to the Committee on Banking, Housing, and Urban Affairs on March 28, 2019. *Passed Senate* refers to that the HCFAA passed Senate with an amendment by Unanimous Consent as of May 20, 2020. *Passed House* refers to that the House agreed to the HFCAA without objection on December 2, 2020. *Became Law* refers to that the HFCAA became Public Law No. 116-222 on December 18, 2020, with the sign-off by the President. *Complete Access* refers to that PCAOB announced that it has secured complete access to inspect audit working papers prepared by accounting firms located in China for the first time on Dec. 15, 2022. Percentage positive CAR shows the percentage of positive CARs in the portfolio. T test provides the cross-sectional t test results.
*, ** and *** denote significance at the 10, 5, and 1% level, respectively.

Event	Chinese firms					Other foreign firms				Matched domestic firms			
	Expected sign	CAR % (-1, +1)	Percentage negative CAR	*t*	Obs.	CAR % (-1, +1)	Percentage positive CAR	*t*	Obs.	CAR % (-1, +1)	Percentage positive CAR	*t*	Obs.
Initial Proposal	-	1.401	45.71	2.747***	420	-0.650	52.59	-1.948*	675	0.234	45.83	0.370	408
Passed Senate	-	0.801	56.12	0.967	474	2.957	48.33	1.877*	660	3.272	40.48	3.171***	462
Passed House	-	-2.079	59.45	-1.651	513	1.851	41.85	4.063***	681	-0.009	50.73	-0.012	477
Became Law	-	1.092	55.43	1.642	516	-0.863	60.96	-1.961*	684	1.477	50.00	2.063**	480
Complete Access	+	4.280	37.88	4.170***	396	-0.171	48.71	-0.311	618	-0.080	50.13	-0.157	375

Table 4: Cumulative abnormal returns (CARs) for 3-day window (-1, +1) on Commission-identified Chinese firms.

This table presents CARs in the event windows on the initial and final identification of issuers using PCAOB-identified auditors for two different types of stocks: commission-identified Chinese firms and a matched sample of U.S. domestic listed firms based on propensity scores. The SEC maintains a list of Commission-identified issuers and updates it on a rolling basis. The final identification is 15 working days after the initial identification date. Normal returns are estimated using the market model based on an estimation window of 100 days with a gap of 30 days before the event. CAR is the sample average cumulative abnormal return for the 3-day window (-1, +1). Percentage positive CAR shows the percentage of positive CARs in the portfolio. T test provides the cross-sectional t test results.
*, ** and *** denote significance at the 10, 5, and 1% level, respectively.

Event	Chinese firms					Matched domestic firms			
	Expected sign	CAR % (-1, +1)	Percentage negative CAR	*t*	Obs.	CAR % (-1, +1)	Percentage negative CAR	*t*	Obs.
Initial identification	-	-4.037	63.29	-5.352***	414	-0.479	49.19	-0.731	309
Final identification	-	-2.336	57.42	-2.275**	411	0.049	48.08	0.084	312

Table 5: Between-sample t test on the sample mean of detrended share turnover

This table presents the results of the t-test on the sample mean of detrended share turnover (*Dturn*), a proxy for differences of opinion among investors (Chen et al., 2001), for the pre and post HFCAA periods as well as for two different types of stocks: the Chinese firms listed in the U.S. versus the Other U.S. listed firms. *, ** and *** denote significance at the 10, 5, and 1% level, respectively.

Dturn	Chinese firms		Other U.S. listed firms		Mean-diff (1) – (0)	*t*
	Mean (Chinese = 1)	Observation	Mean (Chinese = 0)	Observation		
Pre HFCAA	0.047	2,154	0.164	103,381	-0.116	-2.109**
Post HFCAA	-0.137	279	-0.574	15,341	0.437	1.613*
Mean-diff (Post) – (Pre)	-0.184		-0.738			
t	-0.602		-30.369***			

Table 6: Difference-in-differences analysis on the passage of HFCAA and stock price crash risk.

Panel A: the baseline results

This panel reports the results of difference-in-differences regression on the HFCAA's treatment effect on the stock price crash of Chinese firms with a U.S. listing. Columns (1) and (4) show the regressions based on Chinese firms along with all non-Chinese firms listed in the U.S., including both the U.S. domestic firms and other foreign firms with a U.S. listing. Columns (2) and (5) are based on Chinese firms and other foreign firms only, while the columns (3) and (6) are based on Chinese firms and the U.S. domestic firms. The dependent variables are two measures on stock price crash, *NCSKEW* and *DUVOL*. *Post* denotes the post HFCAA period. Since the official passage of HFCAA is in the latter half of the last month of 2020, I take 2021 as the first year the HFCAA comes into effect. *Chinese* denotes the Chinese firms with a U.S. listing. All variables are described in Appendix 1. Standard errors are clustered in the firm level. *, ** and *** denote significance at the 10, 5, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Non-Chinese Firms	Other Foreign Firms	Domestic Firms	Non-Chinese Firms	Other Foreign Firms	Domestic Firms
	NCSKEWF	NCSKEWF	NCSKEWF	DUVOLF	DUVOLF	DUVOLF
Post*Chinese	0.229**	0.242**	0.230**	0.203***	0.217***	0.203***
	(2.079)	(2.036)	(2.080)	(3.788)	(3.254)	(3.793)
NCSKEW	-0.018***	-0.041**	-0.018***			
	(-4.749)	(-2.398)	(-4.476)			
DUVOL				-0.010**	-0.038**	-0.009**
				(-2.355)	(-2.004)	(-2.120)
Return	30.864***	27.705***	31.326***	25.381***	24.573***	25.650***
	(25.182)	(5.772)	(25.112)	(26.385)	(6.120)	(26.227)
Sigma	-7.826***	-5.644***	-7.851***	-5.512***	-5.635***	-5.489***
	(-19.270)	(-3.773)	(-18.958)	(-21.425)	(-5.568)	(-20.969)
ROA	-0.679***	-0.090	-0.694***	-0.705***	-0.323	-0.707***
	(-7.340)	(-0.210)	(-7.420)	(-11.844)	(-1.200)	(-11.754)
Size	0.330***	0.221***	0.333***	0.267***	0.231***	0.267***
	(27.061)	(5.363)	(26.762)	(31.977)	(8.282)	(31.458)
MB	0.013***	0.010***	0.013***	0.010***	0.012***	0.010***
	(24.271)	(2.979)	(24.173)	(29.023)	(4.674)	(28.896)
Leverage	-0.219***	-0.212	-0.216***	-0.100***	-0.235**	-0.094***
	(-5.485)	(-1.582)	(-5.302)	(-3.794)	(-2.289)	(-3.498)

Movacc	0.060	-0.584	0.057	0.324**	0.321	0.303**
	(0.261)	(-0.797)	(0.241)	(2.209)	(0.616)	(2.019)
Dturn	0.003	-0.003	0.003	0.000	-0.001	0.001
	(1.374)	(-0.330)	(1.325)	(0.328)	(-0.284)	(0.379)
_cons	-2.355***	-1.893***	-2.352***	-1.983***	-1.895***	-1.970***
	(-28.264)	(-6.000)	(-27.978)	(-34.545)	(-8.825)	(-34.097)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
N	118,665	6,716	114,294	118,665	6,716	114,294
Adj. R^2	0.065	0.110	0.065	0.119	0.147	0.119

Panel B: different model specifications of DID based on Chinese firms and other foreign firms

This panel reports the results from variations in model specification of difference-in-differences regression on the HFCAA's treatment effect on the stock price crash of Chinese firms with a U.S. listing. Columns (1) and (4) show the DID regressions with industry fixed effect only. Columns (2) and (5) show the DID regressions with year-quarter fixed effect. Columns (3) and (6) show the DID regressions with firm fixed effect. The dependent variables are two measures on stock price crash, *NCSKEW* and *DUVOL*. *Post* denotes the post HFCAA period. Since the official passage of HFCAA is in the latter half of the last month of 2020, I take 2021 as the first year the HFCAA comes into effect. *Chinese* denotes the Chinese firms with a U.S. listing. All variables are described in Appendix 1. Standard errors are clustered in the firm level. *, ** and *** denote significance at the 10, 5, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	NCSKEWF	NCSKEWF	NCSKEWF	DUVOLF	DUVOLF	DUVOLF
Post*Chinese	0.108	0.134	0.257**	0.173***	0.171***	0.243***
	(1.226)	(1.598)	(2.192)	(3.299)	(3.247)	(3.691)
Chinese	-0.093	-0.120***		-0.032	-0.066***	
	(-1.591)	(-3.039)		(-0.960)	(-2.636)	
Post	0.052		-0.039	0.152***		0.081*
	(1.132)		(-0.711)	(4.217)		(1.924)
NCSKEW	-0.000	0.017	-0.046***			
	(-0.000)	(1.021)	(-2.757)			
DUVOL				-0.001	0.010	-0.038**
				(-0.062)	(0.539)	(-1.990)
Return	20.709***	28.917***	20.448***	19.310***	20.297***	22.421***

	(5.084)	(6.327)	(4.947)	(5.308)	(5.280)	(6.257)
Sigma	-6.440***	-7.324***	-5.254***	-5.950***	-4.504***	-6.885***
	(-5.148)	(-6.234)	(-3.798)	(-6.951)	(-5.364)	(-7.424)
ROA	0.236	0.087	-0.041	-0.316	-0.305	-0.330
	(0.593)	(0.223)	(-0.094)	(-1.384)	(-1.350)	(-1.225)
Size	0.074***	0.075***	0.209***	0.033***	0.037***	0.225***
	(6.818)	(9.041)	(4.987)	(4.895)	(6.810)	(7.969)
MB	0.002	0.002	0.010***	0.000	-0.000	0.012***
	(0.984)	(1.161)	(2.839)	(0.380)	(-0.117)	(4.457)
Leverage	-0.125	-0.116	-0.252**	-0.102*	-0.086*	-0.292***
	(-1.631)	(-1.552)	(-2.062)	(-1.935)	(-1.696)	(-3.038)
Movacc	0.235	0.084	-0.398	0.923*	0.590	0.556
	(0.357)	(0.129)	(-0.549)	(1.905)	(1.243)	(1.069)
Dturn	-0.001	0.002	-0.003	-0.004	-0.003	-0.002
	(-0.114)	(0.299)	(-0.396)	(-0.906)	(-0.561)	(-0.379)
_cons	-0.649***	-0.615***	-1.799***	-0.320***	-0.364***	-1.804***
	(-6.112)	(-6.865)	(-5.657)	(-4.522)	(-5.922)	(-8.371)
Firm FE	No	No	YES	No	No	YES
Year-Quarter FE	No	YES	No	No	YES	No
Industry FE	YES	No	No	YES	No	No
N	6,730	6,732	6,716	6,730	6,732	6,716
Adj. R^2	0.081	0.095	0.095	0.050	0.134	0.063

Table 7: Parallel trend check on the passage of HFCAA and the stock price crash of Chinese firms

This table reports the parallel trend check on the DID analysis. Columns (1) and (3) are based on Chinese firms and the U.S. domestic firms only, while the columns (2) and (4) are based on Chinese firms and other foreign firms. The dependent variables are two measures on stock price crash, *NCSKEW* and *DUVOL*. *Post* denotes the post HFCAA period. Since the official passage of HFCAA is in the latter half of the last month of 2020, I take 2021 as the first year the HFCAA comes into effect. *Pre-1* denotes the calendar year of 2020, one year before the HFCAA in effect. *Pre-2* denotes the calendar year of 2019, two year before the HFCAA in effect. *Pre-3* denotes the calendar year of 2018, three year before the HFCAA in effect. *Chinese* denotes the Chinese firms with a U.S. listing. All variables are described in Appendix 1. Standard errors are clustered in the firm level. *, ** and *** denote significance at the 10, 5, and 1% level, respectively.

	(1) Domestic Firms	(2) Other Foreign Firms	(3) Domestic Firms	(4) Other Foreign Firms
	NCSKEWF	NCSKEWF	DUVOLF	DUVOLF
Post* Chinese	0.322***	0.401***	0.207***	0.256***
	(2.752)	(2.782)	(3.242)	(2.927)
Pre-1* Chinese	-0.209	-0.174	-0.021	-0.007
	(-1.384)	(-0.982)	(-0.227)	(-0.061)
Pre-2* Chinese	-0.001	-0.117	0.011	-0.017
	(-0.008)	(-0.648)	(0.105)	(-0.137)
Pre-3* Chinese	0.136	0.102	0.011	-0.045
	(1.298)	(0.823)	(0.165)	(-0.541)
NCSKEW	-0.018***	-0.042**		
	(-4.479)	(-2.432)		
DUVOL			-0.009**	-0.038**
			(-2.120)	(-2.001)
Return	31.333***	27.883***	25.650***	24.602***
	(25.116)	(5.802)	(26.224)	(6.114)
Sigma	-7.862***	-5.727***	-5.489***	-5.625***
	(-18.982)	(-3.852)	(-20.963)	(-5.554)
ROA	-0.694***	-0.117	-0.707***	-0.344
	(-7.410)	(-0.272)	(-11.746)	(-1.263)
Size	0.332***	0.220***	0.267***	0.234***

	(26.750)	(5.467)	(31.450)	(8.381)
MB	0.013***	0.011***	0.010***	0.012***
	(24.189)	(3.054)	(28.898)	(4.674)
Leverage	-0.216***	-0.214	-0.094***	-0.236**
	(-5.301)	(-1.620)	(-3.497)	(-2.298)
Movacc	0.057	-0.556	0.302**	0.336
	(0.242)	(-0.759)	(2.018)	(0.645)
Dturn	0.003	-0.002	0.001	-0.001
	(1.369)	(-0.238)	(0.384)	(-0.281)
_cons	-2.350***	-1.884***	-1.970***	-1.911***
	(-27.958)	(-6.095)	(-34.083)	(-8.924)
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
N	114,294	6,716	114,294	6,716
Adj. R^2	0.065	0.110	0.119	0.147

Table 8: Triple difference analysis: high financial reporting quality versus low financial reporting quality

This table reports the triple difference analysis on the treatment effect of the HFCAA passage and its cross-sectional variation with regard to financial reporting quality. Columns (1) and (4) are based on Chinese firms along with all non-Chinese firms listed in the U.S.. Columns (2) and (5) are based on Chinese firms and the U.S. domestic firms only, while the columns (3) and (6) are based on Chinese firms and other foreign firms. The dependent variables are two measures on stock price crash, *NCSKEW* and *DUVOL*. *HighR* indicates if the firm is with higher financial reporting quality. *TripleR* denotes the triple interaction term of *Post*Chinese*HighR*. All variables are described in Appendix 1. Standard errors are clustered in the firm level and in the year-quarter level. *, ** and *** denote significance at the 10, 5, and 1% level, respectively.

	(1) Non-Chinese Firms NCSKEWF	(2) Domestic Firms NCSKEWF	(3) Other Foreign Firms NCSKEWF	(4) Non-Chinese Firms DUVOLF	(5) Domestic Firms DUVOLF	(6) Other Foreign Firms DUVOLF
TripleR	0.056	0.060	-0.021	0.054	0.063	-0.137
	(0.330)	(0.350)	(-0.101)	(0.513)	(0.589)	(-1.092)
Chinese	-0.168***	-0.171***	-0.115*	-0.043	-0.042	-0.041
	(-4.456)	(-4.497)	(-1.901)	(-1.308)	(-1.277)	(-0.982)
HighR	0.001	0.003	-0.054	0.010	0.012	-0.032
	(0.125)	(0.251)	(-1.572)	(1.070)	(1.245)	(-1.181)
Post	0.096**	0.099**	0.016	0.187**	0.192**	0.076
	(2.084)	(2.145)	(0.184)	(2.486)	(2.592)	(0.644)
Post*Chinese	0.103	0.100	0.124	0.140***	0.135***	0.240**
	(1.532)	(1.493)	(1.265)	(2.948)	(2.850)	(2.628)
Chinese*HighR	-0.002	-0.001	0.053	-0.001	-0.002	0.019
	(-0.027)	(-0.020)	(0.707)	(-0.016)	(-0.031)	(0.321)
Post*HighR	-0.008	-0.012	0.075	-0.017	-0.024	0.158**
	(-0.516)	(-0.690)	(0.785)	(-0.828)	(-1.143)	(2.252)
NCSKEW	0.024***	0.025***	-0.001			
	(4.735)	(4.685)	(-0.032)			
DUVOL				0.035***	0.036***	-0.001
				(4.151)	(4.134)	(-0.063)
Return	20.733***	20.949***	20.535***	20.107***	20.242***	19.144***
	(8.703)	(8.794)	(4.230)	(5.854)	(5.880)	(3.904)

Sigma	-8.492***	-8.505***	-6.447***	-6.491***	-6.471***	-5.932***
	(-14.416)	(-14.281)	(-5.140)	(-8.213)	(-8.236)	(-4.484)
ROA	-0.148	-0.163	0.234	-0.544***	-0.538***	-0.316
	(-1.461)	(-1.578)	(0.534)	(-6.650)	(-6.574)	(-1.220)
Size	0.069***	0.070***	0.075***	0.026***	0.026***	0.034***
	(13.366)	(12.877)	(7.364)	(5.487)	(5.195)	(4.553)
MB	0.004***	0.004***	0.002	0.002***	0.003***	0.000
	(12.346)	(12.148)	(0.994)	(6.806)	(6.970)	(0.358)
Leverage	-0.134***	-0.138***	-0.123	-0.059*	-0.057*	-0.101*
	(-4.634)	(-4.640)	(-1.521)	(-1.789)	(-1.708)	(-1.764)
Movacc	0.017	-0.025	0.282	0.324*	0.271	0.950
	(0.077)	(-0.112)	(0.420)	(1.937)	(1.592)	(1.662)
Dturn	0.011***	0.011***	-0.001	0.002	0.002	-0.004
	(4.052)	(3.919)	(-0.107)	(0.617)	(0.689)	(-0.854)
_cons	-0.499***	-0.504***	-0.634***	-0.275***	-0.275***	-0.311***
	(-11.596)	(-11.419)	(-6.968)	(-4.805)	(-4.816)	(-3.086)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Std Cluster	Firm; Year-Quarter	Firm; Year-Quarter	Firm; Year-Quarter	Firm; Year-Quarter	Firm; Year-Quarter	Firm; Year-Quarter
N	118,940	114,557	6,730	118,940	114,557	6,730
Adj. R^2	0.043	0.043	0.081	0.036	0.036	0.050

Table 9: Triple difference analysis: high-tech firms versus non-high-tech firms

This table reports the triple difference analysis on the treatment effect of the HFCAA passage and its cross-sectional variation from whether the firm is in high-tech industry. Columns (1) and (4) are based on Chinese firms along with all non-Chinese firms listed in the U.S.. Columns (2) and (5) are based on Chinese firms and the U.S. domestic firms only, while the columns (3) and (6) are based on Chinese firms and other foreign firms. The dependent variables are two measures on stock price crash, *NCSKEW* and *DUVOL*. *HighT* indicates if the firm is high-tech industry. *TripleT* denotes the triple interaction term of *Post*Chinese*HighT*. All variables are described in Appendix 1. Standard errors are clustered in the firm and year-quarter levels. *, ** and *** denote significance at the 10, 5, and 1% level, respectively.

	(1) Non-Chinese Firms NCSKEWF	(2) Domestic Firms NCSKEWF	(3) Other Foreign Firms NCSKEWF	(4) Non-Chinese Firms DUVOLF	(5) Domestic Firms DUVOLF	(6) Other Foreign Firms DUVOLF
TripleT	-0.163	-0.160	-0.344	-0.104	-0.101	**-0.278***
	(-0.755)	(-0.743)	(-1.455)	(-0.793)	(-0.766)	**(-1.922)**
Chinese	-0.224***	-0.223***	-0.386***	-0.049	-0.047	-0.173***
	(-4.555)	(-4.502)	(-6.377)	(-1.166)	(-1.104)	(-3.865)
HighT	0.145	0.143	0.000	0.023	0.023	0.000
	(0.991)	(0.981)	(0.000)	(0.241)	(0.239)	(0.000)
Post	0.072	0.075	-0.042	0.116	0.119	-0.003
	(1.162)	(1.186)	(-0.611)	(1.232)	(1.264)	(-0.030)
Post*Chinese	0.220	0.218	0.330**	0.229***	0.226**	0.364***
	(1.606)	(1.586)	(2.379)	(2.703)	(2.637)	(4.483)
Chinese*HighT	0.095*	0.090	0.383***	0.007	0.004	0.187***
	(1.704)	(1.612)	(4.326)	(0.203)	(0.115)	(3.173)
Post*HighT	0.030	0.028	0.134*	0.098***	0.095***	0.221**
	(0.846)	(0.775)	(1.770)	(2.967)	(2.739)	(2.519)
NCSKEW	0.024***	0.025***	-0.003			
	(4.732)	(4.679)	(-0.189)			
DUVOL				0.036***	0.036***	-0.003
				(4.231)	(4.206)	(-0.122)
Return	20.769***	20.980***	20.449***	20.325***	20.450***	19.329***
	(8.701)	(8.789)	(4.192)	(5.929)	(5.947)	(3.875)

Sigma	-8.501***	-8.514***	-6.486***	-6.526***	-6.506***	-5.994***
	(-14.458)	(-14.316)	(-5.329)	(-8.282)	(-8.301)	(-4.582)
ROA	-0.149	-0.163	0.213	-0.542***	-0.535***	-0.313
	(-1.468)	(-1.583)	(0.491)	(-6.608)	(-6.533)	(-1.211)
Size	0.069***	0.070***	0.074***	0.026***	0.026***	0.033***
	(13.344)	(12.847)	(7.764)	(5.502)	(5.211)	(4.635)
MB	0.004***	0.004***	0.002	0.002***	0.002***	0.000
	(12.349)	(12.144)	(1.018)	(6.751)	(6.908)	(0.349)
Leverage	-0.135***	-0.138***	-0.138*	-0.058*	-0.056	-0.105*
	(-4.639)	(-4.647)	(-1.747)	(-1.752)	(-1.675)	(-1.831)
Movacc	0.015	-0.026	0.176	0.327*	0.273	0.920
	(0.068)	(-0.119)	(0.262)	(1.940)	(1.594)	(1.524)
Dturn	0.011***	0.011***	-0.001	0.002	0.003	-0.004
	(4.049)	(3.911)	(-0.117)	(0.692)	(0.760)	(-0.822)
_cons	-0.586***	-0.589***	-0.622***	-0.283***	-0.282***	-0.305***
	(-5.890)	(-5.862)	(-6.995)	(-3.406)	(-3.408)	(-3.045)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Std Cluster	Firm; Year-Quarter	Firm; Year-Quarter	Firm; Year-Quarter	Firm; Year-Quarter	Firm; Year-Quarter	Firm; Year-Quarter
N	118,940	114,557	6,730	118,940	114,557	6,730
Adj. R^2	0.043	0.043	0.083	0.036	0.036	0.051

Table 10: Triple difference analysis on high-tech firms versus non-high-tech firms: sub-sample variation from financial reporting quality

This table reports the subsample results from financial reporting quality on the triple difference analysis on the treatment effect of the HFCAA passage and its cross-sectional variation from whether the firm is in high-tech industry. Panels A and B use Non-Chinese firms and other foreign firms as benchmarks respectively. The subsample partition is based on *HighR*, with HighR equals to one as high reporting quality, HighR equals to zero as low reporting quality. Columns (1) and (3) show the subsample regression from firms with high financial reporting quality, while columns (2) and (4) show the subsample regression from firms with low financial reporting quality. The dependent variables are two measures on stock price crash, *NCSKEW* and *DUVOL*. *HighT* indicates if the firm is high-tech industry. *TripleT* denotes the triple interaction term of *Post*Chinese*HighT*. All variables are described in Appendix 1. Standard errors are clustered in the firm and year-quarter levels. *, ** and *** denote significance at the 10, 5, and 1% level, respectively.

Panel A: Non-Chinese Firms as Benchmark

	(1) High Reporting Quality NCSKEWF	(2) Low Reporting Quality NCSKEWF	(3) High Reporting Quality DUVOLF	(4) Low Reporting Quality DUVOLF
TripleT	0.069	**-0.303***	0.147	**-0.255****
	(0.165)	**(-1.843)**	(0.572)	**(-2.346)**
Chinese	-0.171**	-0.268***	-0.029	-0.066
	(-2.470)	(-4.294)	(-0.460)	(-1.194)
Post	0.133	0.276*	0.120	0.298***
	(0.688)	(1.909)	(0.811)	(3.681)
Post*Chinese	-0.024	0.187**	-0.036	0.045
	(-0.288)	(2.463)	(-0.627)	(0.732)
Chinese*HighT	-0.004	0.058	0.063*	0.126***
	(-0.120)	(1.366)	(1.994)	(3.125)
Post*HighT	0.023***	0.025***		
	(3.778)	(3.724)		
NCSKEW			0.034***	0.037***
			(3.762)	(3.597)
DUVOL	19.857***	21.458***	20.893***	20.063***
	(7.522)	(8.056)	(5.936)	(5.548)
Return	-8.670***	-8.373***	-6.803***	-6.329***
	(-12.871)	(-11.786)	(-8.185)	(-6.933)
Sigma	-0.294**	-0.130	-0.797***	-0.458***
	(-2.116)	(-0.937)	(-6.718)	(-5.186)
ROA	0.063***	0.075***	0.024***	0.029***
	(11.285)	(12.746)	(4.948)	(5.344)
Size	0.005***	0.004***	0.003***	0.002***
	(10.706)	(9.505)	(5.638)	(6.094)
MB	-0.119***	-0.148***	-0.054	-0.059*
	(-3.043)	(-4.349)	(-1.319)	(-1.922)
Leverage	-0.051	0.055	0.057	0.388*
	(-0.118)	(0.209)	(0.171)	(1.990)
Movacc	0.011**	0.011**	0.002	0.002
	(2.639)	(2.599)	(0.588)	(0.637)
Dturn	0.348**	-0.295***	0.117	-0.186***

	(2.436)	(-4.259)	(1.198)	(-7.341)
_cons	0.087	0.058	0.131	0.104
	(1.442)	(0.831)	(1.379)	(1.086)
Industry FE	Yes	Yes	Yes	Yes
Std Cluster	Firm; Year-Quarter	Firm; Year-Quarter	Firm; Year-Quarter	Firm; Year-Quarter
N	59,554	59,383	59,554	59,383
Adj. R^2	0.037	0.046	0.033	0.038

Panel B : Other Foreign Firms as Benchmark

	(1) High Reporting Quality NCSKEWF	(2) Low Reporting Quality NCSKEWF	(3) High Reporting Quality DUVOLF	(4) Low Reporting Quality DUVOLF
TripleT	-0.291	**-0.340***	-0.167	**-0.295****
	(-0.583)	**(-1.833)**	(-0.596)	**(-2.056)**
Chinese	-0.443***	-0.361***	-0.260**	-0.122
	(-3.820)	(-4.883)	(-2.634)	(-1.577)
Post	-0.106	-0.009	-0.013	-0.003
	(-1.209)	(-0.084)	(-0.146)	(-0.023)
Post*Chinese	0.333	0.324**	0.307**	0.406***
	(1.369)	(2.235)	(2.172)	(3.600)
Chinese*HighT	0.380***	0.398***	0.232**	0.161*
	(2.735)	(3.490)	(2.129)	(1.756)
Post*HighT	0.272*	0.035	0.353***	0.112
	(1.907)	(0.349)	(3.930)	(0.978)
NCSKEW	-0.005	-0.002		
	(-0.170)	(-0.086)		
DUVOL			0.011	-0.016
			(0.353)	(-0.528)
Return	21.266***	19.491***	26.583***	13.595**
	(3.311)	(3.055)	(4.474)	(2.039)
Sigma	-5.996***	-6.573***	-5.636***	-6.053***
	(-2.994)	(-4.637)	(-3.342)	(-4.442)
ROA	-0.175	0.379	-0.394	-0.285
	(-0.248)	(0.761)	(-0.912)	(-0.978)
Size	0.069***	0.077***	0.028***	0.034***
	(5.214)	(5.406)	(2.728)	(3.462)
MB	0.001	0.002	0.001	-0.000
	(0.600)	(0.898)	(0.660)	(-0.103)
Leverage	-0.205**	-0.085	-0.036	-0.165*
	(-2.098)	(-0.812)	(-0.520)	(-1.963)
Movacc	0.889	-0.085	0.999	0.901
	(0.674)	(-0.104)	(0.842)	(1.345)
Dturn	0.004	-0.004	0.004	-0.008
	(0.246)	(-0.459)	(0.467)	(-1.185)
_cons	-0.578***	-0.647***	-0.284**	-0.297**
	(-4.127)	(-5.711)	(-2.456)	(-2.666)
Industry FE	Yes	Yes	Yes	Yes

Std Cluster	Firm; Year-Quarter	Firm; Year-Quarter	Firm; Year-Quarter	Firm; Year-Quarter
N	3,056	3,666	3,056	3,666
Adj. R^2	0.080	0.086	0.053	0.054

Table 11: Propensity score matching for Chinese firms and U.S. domestic firms

This table reports the t-test on the sample mean of Chinese firms listed in the U.S. versus PSM-matched U.S. domestic firms. Panel A shows the full sample matching, which is from 2010 – 2022. Panel B focuses on a more recent time range, from 2016 to 2022. All variables are described in Appendix 1. *, ** and *** denote significance at the 10, 5, and 1% level, respectively.

Panel A: Full sample (2010 - 2022)

	Matched Domestic Firms		Chinese Firms			
	Obs.	Mean	Obs.	Mean	Mean-diff	*t*
Size	2,125	5.945	2,164	6.111	-0.166*	-2.673
ROA	2,125	-0.015	2,164	-0.011	-0.005	-2.091
Growth	2,125	8.706	2,164	9.400	-0.694	-0.500

Panel B: Recent time (2016 - 2022)

	Matched Domestic Firms		Chinese Firms			
	Obs.	Mean	Obs.	Mean	Mean-diff	*t*
Size	932	6.207	943	6.363	-0.155	-1.503
ROA	932	-0.029	943	-0.023	-0.006	-1.435
Growth	932	10.617	943	10.938	-0.321	-0.130

Table 12: PSM-DID analysis on the passage of HFCAA and stock price crash

This table reports the results of PSM-DID regression on the HFCAA's treatment effect on the stock price crash of Chinese firms with a U.S. listing. Columns (1) and (2) show the regressions based on PSM-matched sample from 2010 to 2022. Columns (3) and (4) show the regressions based on PSM-matched sample from 2016 to 2022. The dependent variables are two measures on stock price crash, *NCSKEW* and *DUVOL*. *Post* denotes the post HFCAA period. Since the official passage of HFCAA is in the latter half of the last month of 2020, I take 2021 as the first year the HFCAA comes into effect. *Chinese* denotes the Chinese firms with a U.S. listing. All variables are described in Appendix 1. Standard errors are clustered in the firm level. *, ** and *** denote significance at the 10, 5, and 1% level, respectively.

	(1)	(2)	(3)	(4)
	2010 - 2022		2016 - 2022	
	NCSKEWF	DUVOLF	NCSKEWF	DUVOLF
Post*Chinese	0.336*	0.368***	0.223	0.272*
	(1.762)	(3.078)	(0.945)	(1.671)
NCSKEW	-0.021		-0.044	
	(-0.784)		(-1.102)	
DUVOL		-0.016		0.008
		(-0.537)		(0.168)
Return	39.877***	36.026***	57.710***	47.255***
	(5.754)	(6.562)	(5.075)	(5.922)
Sigma	-9.334***	-7.238***	-9.049***	-7.906***
	(-4.328)	(-5.218)	(-2.917)	(-3.549)
ROA	0.067	-0.032	0.080	0.200
	(0.109)	(-0.085)	(0.085)	(0.337)
Size	0.212***	0.196***	0.251**	0.320***
	(4.165)	(5.927)	(2.100)	(3.789)
MB	0.013***	0.012***	0.015*	0.017***
	(3.246)	(4.463)	(1.827)	(3.900)
Leverage	-0.010	-0.084	0.517	0.508*
	(-0.045)	(-0.556)	(1.384)	(1.935)
Movacc	0.058	0.379	-0.580	0.615
	(0.052)	(0.552)	(-0.331)	(0.509)
Dturn	-0.001	0.000	-0.008	0.003
	(-0.102)	(0.008)	(-0.530)	(0.319)
_cons	-1.576***	-1.392***	-2.072***	-2.368***
	(-4.936)	(-6.914)	(-2.861)	(-4.663)
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
N	3,189	3,189	1,218	1,218
Adj. R^2	0.109	0.140	0.125	0.144