

Externalities of Financial Fraud: Competitor Reaction and Cross-Sectoral Impact of the Luckin Coffee Scandal

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Abstract: This study examines the impact of the Luckin Coffee financial fraud scandal on abnormal stock returns across related and unrelated industries. Using a Difference-in-Differences (DID) methodology, this study examines market reactions to two key events: the initial fraud allegations in the Muddy Waters report (January 31, 2020) and Luckin Coffee's admission of fraudulent activities (April 2, 2020). The food and beverage sector experienced a sharp 7.75% decline ($p < 0.05$) in abnormal returns during the first week following the fraud allegations, stabilizing over the next two months. Upon confirmation of the fraud, the retail food sector demonstrated a strong positive reaction, with returns increasing by 17.45% ($p < 0.01$) in the first week and continuing to rise in the following months. In contrast, the food and beverage sector saw only temporary gains, with no significant movement thereafter. Other sectors, such as technology and finance, displayed considerable volatility and delayed responses to the scandal. These findings highlight the externalities of financial fraud, illustrating its disruptive effect on market behavior across industries. The results underscore the need for more robust corporate governance, enhanced regulatory oversight, and targeted behavioral interventions to mitigate fraud risk and restore investor confidence.

Keywords: financial fraud, market reaction, investor behavior, abnormal returns.

1. Introduction

Corporate scandals, particularly those involving financial fraud, have historically had far-reaching consequences, affecting not only the companies directly implicated but also entire industries and the broader economy. High-profile cases such as the Enron scandal and the 2008 financial crisis have demonstrated how corporate misconduct can trigger widespread market disruptions, leading to substantial losses for investors, regulatory changes, and shifts in market behavior. Understanding the effects of these scandals is crucial for both policy-makers and market participants. The Luckin Coffee scandal, which emerged as one of the most prominent international cases of financial fraud in recent years, offers a unique opportunity to explore how such events can influence not only the company in question but also its competitors and firms across different industries. Given Luckin Coffee's significant role in China's rapidly expanding consumer market, this scandal, which unfolded in 2020, carries substantial international implications. It not only affects global investor sentiment but also raises concerns about the reliability of financial reporting practices in emerging markets. This study aims to investigate these broader effects, with a particular focus on the impact on stock performance

across both related and unrelated industries, offering insights into how financial misconduct influences market dynamics and investor behavior.

This paper addresses a critical question: To what extent did the Luckin Coffee scandal, particularly the Muddy Waters report and Luckin Coffee's subsequent admission of fraudulent activities, affect the abnormal returns of its competitors and firms across different, non-related industries? This question is particularly important because, despite the extensive literature on financial fraud focusing on the directly involved firm, there is an increasing need to understand the broader market implications of such events. Studies by Karpoff[1] and Van Driel[2] underscore the importance of examining the spillover effects of corporate fraud on different sectors. The interconnectedness of industries and markets implies that the fallout from a corporate scandal can extend beyond the firm itself, affecting investor confidence, market stability, and global economic growth. Therefore, this study's focus on abnormal returns, particularly in relation to competitors and closely related industries, alongside cross-industry effects, is timely in light of the increasing attention on financial misconduct and its consequences, making it highly relevant to the understanding of market behavior and regulation.

To address the research question, this study employs a Difference-in-Differences (DID) model, an approach well-suited for isolating the differential impact of the Luckin Coffee scandal across various industry groups by comparing pre- and post-event performance within and between these groups. This paper analyzes the market's response to two pivotal events: 1) the release of the Muddy Waters Research report on January 31, 2020, which accused Luckin Coffee of fabricating its sales figures, and, 2) Luckin Coffee's confirmation of fraudulent activities on April 2, 2020.

By examining both immediate and longer-term market responses through defined post-event windows (e.g., 1 week, 1 month, 2 months), this study aims to uncover how different sectors reacted to these events.

The study observed significant reactions to the Luckin Coffee scandal, with varying impacts across different industries:

- **Food-Related Sectors:** The food and beverage sector saw a 7.75% ($p < 0.05$) decline in the first week after the fraud allegations, stabilizing over the next two months. After the confirmation of fraud, retail food competitors gained 17.45% ($p < 0.01$) in the first week, with continued increases of 4.23% ($p < 0.01$) after one month and 1.99% ($p < 0.1$) after two months. Meanwhile, the food and beverage sector had temporary gains of 4.08% ($p < 0.05$) after one month, but no significant changes thereafter.
- **Technology, Finance, and Other Sectors:** The technology sector fell by 3.33% ($p < 0.1$) in the first week, rebounded by 2.38% ($p < 0.01$) after two months, but faced a lasting 5.16% ($p < 0.01$) decline following the fraud confirmation. The finance sector showed delayed declines of 4.68% ($p < 0.01$) within one month and 5.21% ($p < 0.01$) after two months. Other sectors exhibited varied responses: healthcare saw positive returns of 5.63% ($p < 0.01$) in the first week, manufacturing gained 3.18% ($p < 0.1$) initially, while energy utilities showed a delayed decline of 3.00% ($p < 0.01$) after two months.

This study contributes to the growing literature on financial fraud by examining the spillover effects of corporate scandals. The results emphasize how fraud can create significant market volatility not only within directly impacted industries but also across seemingly unrelated sectors, illustrating the externalities that arise from the interconnectedness of modern financial markets. The findings also shed light on investor behavior, revealing that while some industries face immediate losses, competitors potentially benefit as investors adjust their portfolios in response to shifting market dynamics. Additionally, this paper underscores the necessity for stronger regulatory frameworks

and improved financial reporting standards, especially in emerging markets, to help mitigate the negative externalities and broader economic disruptions caused by corporate and financial fraud.

The remainder of this paper is organized as follows: Section 2 reviews relevant literature on financial fraud and its impacts. Section 3 details the key events and analysis windows. Section 4 details the data collection and preparation, while Section 5 explains the methodology. Section 6 discusses the results, implications, and findings, and Section 7 concludes the paper.

2. Literature Review

The financial fraud literature reveals a complex interplay between corporate misconduct and market reactions, with the impact varying based on the fraud's nature and visibility. Van Driel[2] and Karpoff[1] highlight financial fraud's significance within corporate sectors, emphasizing how factors like investor behavior, regulatory oversight, and media coverage influence market responses to fraud. Bordalo et al.[3] and Gennaioli et al.[4] explore the psychological underpinnings of market reactions, suggesting that cognitive biases and risk perception play crucial roles in how markets process and respond to fraud-related news.

Peng et al.[5] and Li et al.[6] investigate the Luckin Coffee scandal's real-time impacts, illustrating sharp stock price declines and heightened volatility. Peng et al.[5] find that market responses to short-selling attacks can be delayed until official fraud revelations are made, highlighting the challenges short sellers face in effectively timing their strategies. Li et al.[6] further show that financial fraud can erode investor confidence and stall business development, which is crucial for understanding the broader economic effects caused by such events.

Theoretical frameworks addressing financial fraud have evolved over time. Akerlof's[7] seminal theory of adverse selection highlights how asymmetric information can lead to market inefficiencies, with quality uncertainty allowing lower-quality products to dominate. This dynamic directly applies to understanding financial fraud's effects on market trust. The CRIME framework[8] integrated corporate governance's role, illustrating how monitoring and incentive failures can lead to financial statement fraud, emphasizing the importance of strong internal controls. More recently, Bordalo et al.[3] introduce salience theory, focusing on the psychological aspects of decision-making and demonstrating how individuals prioritize prominent or emotionally striking information, influencing their risk assessments and financial decisions. This concept complements Gennaioli et al.'s[4] work on risk neglect during financial booms, where cognitive biases lead to the underestimation of potential crises. Synthesizing these theories chronologically reveals that both psychological and structural factors are essential for understanding the complex dynamics of financial fraud, providing a comprehensive framework for analyzing its causes and consequences.

Financial fraud's impact on firms and markets is profound, often resulting in severe reputational and financial consequences that ripple through entire industries. Fich and Shivdasani[9] emphasize the reputational damage outside directors suffer in the wake of financial fraud, which extends beyond the involved firm to affect interlocked companies, illustrating fraud-related fallout's broad reach. Similarly, Rezaee[8] discusses how financial statement fraud erodes investor confidence, leading to significant market instability, aligning with Dechow et al.'s[10] findings that earnings manipulation attracts regulatory scrutiny and results in sharp stock price declines and increased capital costs. Karpoff et al.[11] further reinforce this narrative by quantifying the financial penalties firms endure following fraud revelations, highlighting how reputational losses often exceed legal penalties in terms of financial impact. Moreover, Li et al.[6] and Feroz et al.[12] detail how specific fraud cases, like Luckin Coffee, can lead to catastrophic market outcomes, including delisting and operational paralysis. Collectively, these studies demonstrate that financial fraud triggers significant market reactions, from stock price declines to broader economic disruptions, with both immediate shocks and long-term consequences that reshape market dynamics.

In addition to market impacts, corporate governance and Corporate Social Responsibility (CSR) play a crucial role in deterring financial fraud and mitigating its effects. Dechow et al.[10] and Rezaee[8] highlight how weak governance structures, such as inadequate board oversight, facilitate fraudulent activities, while Fich and Shivdasani[9] show that such failures also amplify fraud's reputational damage. In contrast, CSR practices can act as a safeguard, with Liao et al.[13] and Tarjo et al.[14] finding that firms with strong CSR commitments are less prone to fraud and suffer less severe repercussions when fraud occurs. However, Tarjo et al.[14] emphasize that CSR's effectiveness in preventing fraud depends on genuine integration into corporate practices rather than superficial adherence. The balance between governance and CSR indicates that integrating both is essential for fostering a corporate culture resilient to fraudulent behavior.

The media plays a critical role in amplifying financial fraud's effects, especially in cases like the Luckin Coffee scandal, where the initial fraud report was leaked to the media before being officially confirmed. Hu et al.[15] and Harrison[16] demonstrate that media capabilities and online platforms influence consumer behavior and the rationalization of fraud. Peng et al.[5] and Li et al.[6] highlight industries' interconnectedness through scandals like Luckin Coffee's spillover effects, illustrating that while media plays a crucial role in shaping immediate reactions, lasting effects depend on industry-specific factors such as regulatory frameworks, market structure, and consumer behavior.

Financial fraud's socio-economic and psychological impacts extend beyond immediate market reactions, affecting trust, behavior, and economic stability. Button et al.[17] and Sarri'a et al. [18] provide evidence that fraud has profound psychological effects on victims, leading to financial hardship, mental health issues, and damaged social relationships, illustrating financial misconduct's human cost. Additionally, Zak and Knack[19] emphasize that diminished trust due to fraud can stifle economic growth by increasing transaction costs and reducing investment, a point also mentioned by Peng et al.[5].

3. Events and Analysis Windows

3.1. Key Events

This study investigates two events related to the Luckin Coffee scandal:

- Event 1: Muddy Waters Research Report (January 31, 2020) - Muddy Waters Research revealed an anonymous report, which accused Luckin Coffee of falsifying sales figures, marking the initial public revelation of potential financial misconduct and triggering immediate market reactions.
- Event 2: Luckin Coffee's Confirmation of Fraud (April 2, 2020) - Luckin Coffee formally admitted to fraudulent activities following prior allegations.

3.2. Analysis Windows

To thoroughly assess the market's response to these events, the following post-event windows are defined, each beginning the trading day immediately following the event:

- 1 Week Post-Event (5 Trading Days): This window captures the immediate market response within the first five trading days after the event, reflecting the initial investor sentiment and short-term volatility.
- 1 Month Post-Event (20 Trading Days): This window extends the observation period to 20 trading days, providing a broader perspective on the short-term adjustments as the market digests the initial shock.

- **2 Months Post-Event (40 Trading Days):** This window, applied to both events, allows for the analysis of medium-term effects, offering insights into how the market continues to adjust in the weeks following the event.
- **3 Months Post-Event (60 Trading Days, Event 2 Only):** This window, exclusively applied to Event 2, enables a deeper examination of the longer-term market response to Luckin Coffee's confirmation of fraud. It provides a detailed view of the sustained market adjustments over a three-month period.

The first event, the release of the Muddy Waters Research report, initiates the market's speculative response to allegations of financial irregularities. The second event, where Luckin Coffee confirms these fraudulent activities, is expected to induce further market adjustments as the allegations become incontrovertible facts.

The 3-month post-event window is applied only to Event 2 due to the proximity of Event 1, which occurred just three months earlier. Applying a 3-month window to Event 1 would result in an overlap with the start date of Event 2, potentially confounding the analysis of the market's distinct responses to each event.

4. Data

This study investigates two events related to the Luckin Coffee scandal:

4.1. Data Collection

Data for this study was gathered from CRSP (Center for Research in Security Prices) and Compustat. The CRSP dataset includes variables such as ticker symbols, share codes, exchange codes, SIC industry codes, company names, bid and ask prices, closing prices, trading volumes, and daily returns. The data covers the period from July 1, 2019, to July 31, 2020, encompassing the pre-event, event, and post-event periods for the analysis. To complement the stock return data, Compustat was used to acquire firm-level financial data. This dataset includes variables such as total assets, common equity, total liabilities, net income, revenue, and market value for the purpose of controls and fixed effects.

4.2. Data Preparation

After collecting the raw data, it underwent cleaning and preparation to ensure its suitability for analysis. The CRSP and Compustat datasets were merged using ticker symbols and dates to create a comprehensive dataset with stock returns and firm-level financial data. Where possible, missing values were imputed; data with irretrievably missing values was excluded from the analysis. After cleaning, data for 2370 different companies remained.

Several variables were rescaled to ensure consistency in magnitude across the dataset. The dependent variable, stock returns, was scaled by 1000. Control variables, including market return, market value, total assets, common equity, total liabilities, net income, and revenue, were similarly rescaled using appropriate factors.

4.3. Variable Descriptions

The dataset includes a variety of variables from CRSP, Compustat, and those created for the analysis. Below is a detailed description of the important variables:

- **CRSP Variables:**
 - **ticker:** The unique ticker symbol for each company.
 - **company name:** The company name.

- permno: The unique permanent number assigned to each company by CRSP.
- date: The trading date.
- exchange code: The exchange code indicating the exchange on which the stock is traded.
- industry code: The SIC code representing the industry classification.
- bid low: The lowest bid price of the stock on that date.
- ask high: The highest ask price of the stock on that date.
- price: The closing price of the stock.
- volume: The trading volume of the stock.
- return: The daily return of the stock.
- market return: The value-weighted return of the market.
- Compustat Variables:
 - total assets: The total assets of the company.
 - common equity: The common equity of the company.
 - total liabilities: The total liabilities of the company.
 - net income: The net income of the company.
 - revenue: The total revenue of the company.
 - market value: The market value of the company.

To provide an overview of the data, Table 1 presents summary statistics for the key variables used in the analysis.

Table 1: Summary Statistics for Key Variables.

Variable	N	Mean	SD	Min	Max
price	659911	55.94748	147.0786	0.0642	4395
volume	659911	1779647	6102881	100	5.34e+08
return	659911	0.0005997	0.0504706	-0.866667	5.85
market return	659911	0.0005879	0.0198938	-0.118168	0.091556
total assets	659911	19515.07	117407.1	1.151	2687379
common equity	659911	3778.757	14625.58	-11577	241409
total liabilities	659911	15479.47	105373	0.253	2426049
net income	659911	525.3766	2563.833	-10137	55256
revenue	659911	6151.248	22154.67	0.017	521426
market value	659911	12912.9	58410.75	2.3632	1540774

- Created Variables:
 - event1_date: The date of the first key event (Muddy Waters Research report on January 31, 2020).
 - event2_date: The date of the second key event (Luckin Coffee's confirmation of fraud on April 2, 2020).
 - one_week_after_event1, one_month_after_event1, two_months_after_event1: Binary variables indicating whether the date is within 1 week, 1 month, 2 months, or 3 months after Event 1.
 - one_week_after_event2, one_month_after_event2, two_months_after_event2, three_months_after_event2: Binary variables indicating whether the date is within 1 week, 1 month, 2 months, or 3 months after Event 2.

4.4. Industry Grouping Variables

To better understand the impact of the events on different market sectors and gain insights into investor behavior and market dynamics, companies were grouped into specific industry categories based on their respective SIC codes. The classification of companies into industry groups was obtained using the SIC Industry Description database from NAICS.com (NAICS Association, 2024). Table 2 provides details on the industry group variables, their corresponding SIC codes, and the number of unique companies in each group.

Table 2: Industry Grouping Variables and Corresponding SIC Codes.

Group Name	Variable	SIC Code(s)	# Companies
Financial Services	group_finance	6798, 6020, etc.	363
Technology and Telecommunications	group_technology	7372, 3663, etc.	215
Healthcare and Pharmaceuticals	group_healthcare	2834, 8731, etc.	180
Consumer Goods and Retail	group_retail_food	5812, 5411, etc.	76
Industrial and Manufacturing	group_manufacturing	3674, 3550, etc.	146
Energy and Utilities	group_energy_utilities	1311, 4911, etc.	148
Food and Beverages	group_food_beverages	2082, 2095, etc.	23
Miscellaneous and Remaining	group_misc_remaining	9999, remaining	1312
Total Unique Companies			2370

4.5. Interaction Terms

The model includes several interaction terms to capture the differential impact of the scandal across various industry sectors and time windows. For example, $\text{one_week_after_event1} \times \text{group_technology}$

5. Model Specification

To analyze the impact of the Luckin Coffee scandal on various stock performance metrics, this study employs a Difference-in-Differences (DID) model with fixed effects. The model is designed to capture both the direct effect of the event and the differential impact across industry groups. The general model equation is specified as follows:

$$DV_{it} = \beta_0 + \beta_1 \text{one week after event1}_{it} + \beta_2 \text{group retail food}_{it} + \beta_3 (\text{one week after event1}_{it} \times \text{group retail food}_{it}) + \gamma X_{it} + \alpha_i + \delta_{\text{industry}} + \delta_{\text{exchange}} + \epsilon_{it} \quad (1)$$

general model

where:

- DV_{it} : The dependent variable is the scaled daily return of the company's stock (ret return scaled). By including the overall market return (market return) as a control variable, the model effectively measures the abnormal return, isolating the specific impact of the Luckin Coffee scandal from broader market fluctuations.
- β_0 : The intercept term, representing the baseline level of the dependent variable.
- $\text{one week after event1}_{it}$: A binary independent variable indicating whether the observation falls within the first week after the release of the Muddy Waters Research report (Event 1). Similar variables are defined for one month (one month after event1), two months (two months after event1), etc.

- group retail food_i: A binary independent variable representing whether a company belongs to the group retail food sector. The other industry groups are similarly defined:
 - group finance: Financial Services
 - group technology: Technology and Telecommunications
 - group healthcare: Healthcare and Pharmaceuticals
 - group manufacturing: Industrial and Manufacturing
 - group energy utilities: Energy and Utilities
 - group food beverages: Food and Beverages
 - group misc remaining: Miscellaneous and Remaining industries
- one week after event $1_{it} \times$ group retail food_i: The interaction term used to assess the differential impact of the scandal on the group retail food compared to other groups, specifically during the first week after Event 1. Other interaction terms follow the same pattern for different industry groups and time windows (e.g., one week after event $1_{it} \times$ group food beverages).
- γX_{it} : Represents a vector of control variables, which include:
 - market return: The value-weighted market return.
 - market value: The market value of the company.
 - total assets: The total assets of the company.
 - common equity: The total common equity held by shareholders.
 - net income: The net income of the company.
 - revenue: The total revenue of the company.
 - total liabilities: The sum of all financial obligations of the company.
 - bid ask: A measure of liquidity, calculated as the difference between the highest ask price and the lowest bid price.
- α_i : Company fixed effects, controlling for unobserved heterogeneity across companies, such as time-invariant characteristics that might influence the dependent variable.
- δ_{industry} : Industry fixed effects, controlling for industry-specific factors that may affect the dependent variables, ensuring the model accounts for differences between industries that could impact stock performance.
- δ_{exchange} : Exchange fixed effects, controlling for exchange-specific factors by incorporating a separate intercept for each stock exchange (NYSE, NASDAQ, AMEX), accounting for differences across exchanges that could influence stock prices, returns, and other market behavior.
- ϵ_{it} : The error term captures all other unobserved factors that may affect the dependent variables.

The DID model is well-suited for this study, as it isolates the causal impact of the Luckin Coffee scandal on various industry groups by comparing abnormal returns between treated and control groups before and after the event. This approach controls for time-invariant differences and common trends, identifying the scandal's specific impact on each sector. The DID model's widespread use in examining exogenous shocks, such as policy changes or corporate events, makes it appropriate for this investigation. The inclusion of company and industry fixed effects also controls for potential confounding factors, enabling a more accurate estimation of the treatment effect.

6. Results and Discussion

This section contains the results and discussion of this study. The first part investigates the initial market response to the Muddy Waters Research report (Event 1) on January 31, 2020, which accused Luckin Coffee of financial fraud. The second part evaluates the market's reaction to the confirmation of these allegations by Luckin Coffee on April 2, 2020 (Event 2).

For clarity and conciseness, the main text focuses on the most significant and relevant findings.

6.1. Event 1

Table 3 presents the six most significant results observed across the 1-week, 1-month, and 2-month post-event windows following the release of the Muddy Waters report.

Table 3: Event 1: Significant Abnormal Returns

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
one week after event1 × group technology	-3.333* (-1.921)							
two months after event1 × group technology		2.377*** (-0.670)						
one week after event1 × group healthcare			5.631*** (-1.991)					
two months after event1 × group healthcare				5.226*** (-0.695)				
one week after event1 × group manufacturing					3.177* (-1.811)			
two months after event1 × group energy utilities						-3.000*** (-0.800)		
one week after event1 × group food beverages							-7.746** (-3.549)	
two months after event1 × group misc remaining								-1.690*** (-1.064)
after event1 1week	0.098 (-0.555)		-0.613 (-0.553)		-0.481 (-0.559)		-0.002 (-0.538)	
after event1 2months		-2.362*** (-0.195)		-2.566*** (-0.194)		-1.993*** (-0.192)		-1.259*** (-0.272)
group healthcare			-1.012 (-1.128)		-1.461 (-1.130)			
group manufacturing				0.034 (-0.341)				
group food beverages							-0.365 (-0.643)	
market return	1.166*** (-0.003)	1.163*** (-0.003)	1.166*** (-0.003)	1.163*** (-0.003)	1.166*** (-0.003)	1.163*** (-0.003)	1.166*** (-0.003)	1.163*** (-0.003)
market value	1.894 (-2.289)	1.897 (-2.289)	1.845 (-2.290)	1.853 (-2.290)	1.907 (-2.290)	1.923 (-2.289)	1.925 (-2.290)	1.886 (-2.289)
total assets	0.605 (-0.594)	0.610 (-0.594)	0.606 (-0.594)	0.610 (-0.594)	0.605 (-0.594)	0.607 (-0.594)	0.607 (-0.594)	0.605 (-0.594)
common equity	-0.725 (-0.625)	-0.730 (-0.625)	-0.726 (-0.625)	-0.729 (-0.625)	-0.725 (-0.626)	-0.727 (-0.625)	-0.727 (-0.626)	-0.725 (-0.625)
total liabilities	-0.604 (-0.597)	-0.609 (-0.597)	-0.605 (-0.597)	-0.608 (-0.597)	-0.604 (-0.597)	-0.606 (-0.597)	-0.605 (-0.597)	-0.604 (-0.597)
net income	4.328 (-55.523)	4.214 (-55.517)	4.724 (-55.525)	4.509 (-55.517)	3.767 (-55.601)	3.578 (-55.517)	4.057 (-55.525)	4.503 (-55.517)
revenue	-1.055 (-3.673)	-1.076 (-3.673)	-1.072 (-3.673)	-1.091 (-3.673)	-1.044 (-3.673)	-1.081 (-3.673)	-1.184 (-3.678)	-1.063 (-3.673)
constant	-0.077 (-0.058)	0.136** (-0.061)	0.000 (-0.104)	0.247** (-0.106)	-0.081 (-0.067)	0.136** (-0.061)	-0.069 (-0.060)	0.136** (-0.061)
Company Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exchange Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	659,910	659,910	659,910	659,910	659,910	659,910	659,910	659,910
R-squared	0.211	0.212	0.212	0.212	0.211	0.212	0.211	0.212

Significance levels: * p < 0.1, ** p < 0.05, *** p < 0.01

Fixed effects for exchange, state, and industry are included.

The technology sector experienced a sharp decline in the 1-week post-event window, with a significant negative coefficient (one week after event1 × group technology = -3.333, p < 0.1). This sharp decline likely indicates heightened investor sensitivity to corporate governance issues within high-growth sectors, such as technology. This reaction likely arose from concerns that the financial transparency and regulation failures highlighted by the Luckin Coffee scandal might signal broader systemic risks within the sector. However, by the 2-month mark, the technology sector had rebounded significantly (two months after event1 × group technology = 2.377, p < 0.01), indicating a recovery as initial panic subsided. This recovery in abnormal returns suggests the initial overreaction was corrected, with the market recognizing that broader risks to the sector were less severe than initially feared. The technology sector's specific dynamics will be explored in more detail later, along with those of the finance and food-related industries.

In contrast, the healthcare sector demonstrated resilience, with significant positive abnormal returns both immediately and two months after the event (one week after event1 × group healthcare

= 5.631, $p < 0.01$; two months after event1 $\times$ group healthcare = 5.226, $p < 0.01$). This sector's defensive characteristics likely attracted investors during the uncertainty, as healthcare stocks are often seen as stable and less cyclical. The healthcare sector's ongoing positive performance implies sustained investor confidence, which may be attributed to its perceived resilience against the broader market risks stemming from the scandal.

The manufacturing sector initially responded positively (one week after event1 $\times$ group manufacturing = 3.177, $p < 0.1$). However, the lack of significant results beyond this period suggests the initial positive abnormal return was a slight overreaction, corrected as the market reassessed. A delayed and marginally significant negative reaction was observed in the energy utilities sector at the 2-month mark (two months after event1 $\times$ group energy utilities = -3.000, $p < 0.01$). This suggests that investors may have reassessed the sector's vulnerability to uncertainties and regulatory risks highlighted by the scandal, although the statistical significance is relatively weak. However, the negative coefficient, while indicative of a potential sector-specific impact, should be interpreted cautiously, as it may not fully reflect a distinct deviation from overall market trends.

The food and beverages sector, closely tied to Luckin Coffee's core business, experienced the most significant immediate impact (one week after event1 $\times$ group food beverages = - 7.746, $p < 0.05$). The sharp decline reflects fears of contagion and potential spillover, where investors anticipated broader implications for related companies. The absence of significant findings in later periods suggests these initial fears may have been mitigated as more information became available.

Interestingly, the miscellaneous and remaining industries group showed a significant negative result at the 2-month interval (two months after event1 $\times$ group misc remaining = -1.690, $p < 0.01$). This delayed reaction might reflect a broader market adjustment, where even sectors not directly linked to Luckin Coffee came under scrutiny. This indicates the market's response was not confined to directly related industries but extended to a more general reassessment of international risk.

Table 4: Event 1: Finance and Technology Sector Abnormal Returns

Variables	(1)	(2)	(3)	(4)	(5)	(6)
one week after event1 $\times$ group finance	-0.612 (1.495)					
one month after event1 $\times$ group finance		0.152 (-0.732)				
two months after event1 $\times$ group finance			0.676 (-0.522)			
one week after event1 $\times$ group technology				3.333* (-1.921)	--	
one month after event1 $\times$ group technology					1.280 (-0.941)	
two months after event1 $\times$ group technology						2.377*** (-0.670)
one week after event1	-0.089 (0.576)			0.098 (0.555)		
one month after event1		-0.747*** (0.282)			-0.831*** (0.271)	
two months after event1			-2.264*** (0.202)			-2.362*** (0.195)
market return	1.166*** (-0.003)	1.166*** (-0.003)	1.163*** (-0.003)	1.166*** (-0.003)	1.166*** (-0.003)	1.163*** (-0.003)
market value	1.893 (2.289)	1.895 (2.289)	1.902 (2.289)	1.894 (2.289)	1.894 (2.289)	1.897 (2.289)
total assets	0.606 (-0.594)	0.606 (-0.594)	0.607 (-0.594)	0.605 (-0.594)	0.607 (-0.594)	0.610 (-0.594)
common equity	-0.725 (-0.625)	-0.726 (-0.625)	-0.727 (-0.625)	-0.725 (-0.625)	-0.726 (-0.626)	-0.730 (-0.625)
total liabilities	-0.604 (-0.597)	-0.604 (-0.597)	-0.606 (-0.597)	-0.604 (-0.597)	-0.605 (-0.597)	-0.609 (-0.597)
net income	4.346 (55.524)	4.301 (55.523)	4.113 (55.518)	4.328 (55.523)	4.330 (55.523)	4.214 (55.517)

Table 4: (continued).

revenue	-1.056 (-3.673)	-1.058 (-3.673)	-1.073 (-3.673)	-1.055 (-3.673)	-1.059 (-3.673)	-1.076 (-3.673)
constant	-0.077 (-0.058)	0.045 (-0.059)	0.136** (-0.061)	0.077 (-0.058)	-0.045 (-0.059)	0.136** (-0.061)
Company Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Exchange Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	659,910	659,910	659,910	659,910	659,910	659,910
R-squared	0.211	0.212	0.212	0.211	0.212	0.212

Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Fixed effects for exchange, state, and industry are included.

The finance sector's response to the initial report of the Luckin Coffee scandal is notable for its lack of significant movement across all observed timeframes. The coefficients associated with the finance sector during the 1-week, 1-month, and 2-month post-event periods suggest that this sector did not experience substantial shifts in abnormal returns in response to the report. This outcome may seem surprising, given the finance sector's critical role in the economy and its typical sensitivity to broader market shocks. However, the absence of significant abnormal returns suggests investors did not see the scandal as directly relevant to financial institutions, which were perceived as insulated from the specific risks affecting Luckin Coffee.

Additionally, financial institutions may have been perceived as less directly affected by the scandal due to their diverse operations and established mechanisms to mitigate sector-specific risks. The market's perception of the allegations as speculative rather than confirmed may have led investors to adopt a wait-and-see approach, resulting in the sector's stability during the early post-event periods.

In contrast, the technology sector demonstrated a more dynamic response to the scandal. The significant negative reaction in the 1-week post-event window (one week after event1 $\times$ group technology = -3.333, $p < 0.1$) reflects the sector's vulnerability to shocks that undermine investor confidence. Technology stocks, often driven by high valuations and speculative growth expectations, are particularly susceptible to market sentiment, and the sharp decline in returns underscores this sensitivity.

However, by the 2-month mark, the technology sector experienced a significant positive rebound (two months after event1 $\times$ group technology = 2.377, $p < 0.01$), suggesting the initial market overreaction was corrected as investors reassessed the broader implications of the scandal. The sector's recovery underscores its resilience and the tendency to recalibrate after the initial panic.

The contrasting reactions of the finance and technology sectors underscore the differing levels of sensitivity displayed by various industries in response to corporate scandals. While the finance sector remained stable, indicating investors did not perceive the scandal as a systemic threat, the technology sector's volatility reflects its greater exposure to shifts in market sentiment.

Table 5 focuses on the food-related industries, analyzing how this sector, directly associated with Luckin Coffee's core business, reacted across different post-event windows.

Table 5: Event 1: Retail and Food & Beverages Sector Abnormal Returns

Variables	(1)	(2)	(3)	(4)	(5)	(6)
one week after event1 $\times$ group retail food	-1.538 (3.014)					
one month after event1 $\times$ group retail food		-1.155 (1.471)				
two months after event1 $\times$ group retail food			-0.951 (1.049)			
one week after event1 $\times$ group food beverages				-7.746** (3.549)		

Table 5: (continued).

one month after event1 × group food beverages				-0.997 (1.738)		
two months after event1 × group food beverages				0.901 (1.241)		
one week after event1		-0.13 (0.54)		-0.002 (0.538)		
one omnth after event1	-		-0.687*** (0.264)		-0.701*** (0.263)	
two months after event1	-			-2.133*** (0.189)		-2.184*** (0.189)
group food beverages sector				-0.365 (0.643)	-0.403 (0.647)	-0.541 (0.653)
market return	-	1.166*** (-0.003)	1.166*** (-0.003)	1.163*** (-0.003)	1.166*** (-0.003)	1.163*** (-0.003)
market value	-	1.894 (2.289)	1.895 (2.289)	1.902 (2.289)	1.925 (2.290)	1.934 (2.289)
total assets	-	0.606 (-0.594)	0.606 (-0.594)	0.609 (-0.594)	0.607 (-0.594)	0.611 (-0.594)
common equity	-	-0.725 (-0.625)	-0.726 (-0.625)	-0.728 (-0.625)	-0.727 (-0.626)	-0.730 (-0.625)
total liabilities	-	-0.604 (-0.597)	-0.604 (-0.597)	-0.607 (-0.597)	-0.605 (-0.597)	-0.609 (-0.597)
net income	-	4.341 (55.524)	4.294 (55.523)	4.094 (55.518)	4.057 (55.525)	3.789 (55.519)
revenue		-1.056 (-3.673)	-1.059 (-3.673)	-1.078 (-3.673)	-1.184 (-3.678)	-1.208 (-3.677)
constant		-0.077 (0.058)	0.045 (0.059)	0.136** (0.061)	-0.069 (0.060)	0.148** (0.061)
Company Fixed Effects		Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects		Yes	Yes	Yes	Yes	Yes
Exchange Fixed Effects		Yes	Yes	Yes	Yes	Yes
Observations		659,910	659,910	659,910	659,910	659,910
R-squared		0.211	0.212	0.212	0.211	0.212

Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Fixed effects for exchange, state, and industry are included.

The retail food sector showed a stable response to the initial report of the Luckin Coffee scandal, with no significant changes in abnormal stock returns observed across the 1-week, 1-month, and 2-month post-event periods. This stability suggests that investors did not view the scandal as a systemic threat to the retail food industry. The sector's resilience may be due to the perception that the scandal was confined to Luckin Coffee and isolated.

In contrast, the food and beverages sector, more directly tied to Luckin Coffee's business model, experienced a significant and immediate negative reaction. The 1-week post-event interaction term (one week after event1 × group food beverages = -7.746, $p < 0.05$) reveals a substantial decline, indicating a severe loss in investor confidence within this sector, a potential indication of investors anticipating spillover effects, which were not seen in the retail food sector. However, by the 1-month and 2-month post-event periods, the food and beverages sector showed a stabilization, with interaction terms of -0.997 ($p > 0.1$) and 0.901 ($p > 0.1$), respectively. These coefficients, although not statistically significant, suggest that the initial panic may have been contained and leading to a gradual recovery of confidence.

The divergent market reactions observed in the retail food and food and beverages sectors highlight the potential for investor perceptions to differ, even within closely related industries. While the food and beverages sector faced a significant immediate decline, mirroring the volatility seen in the technology sector (which also experienced an initial sharp drop), the retail food sector remained largely unaffected, similar to the finance sector. This divergence highlights the importance of direct exposure to the scandal in shaping investor behavior.

The market's response to the initial allegations of financial misconduct in the Luckin Coffee scandal was varied across sectors, reflecting differing levels of sensitivity to risks. While the technology and food and beverages sectors experienced sharp initial declines due to their perceived exposure to the scandal, other sectors like healthcare and manufacturing showed resilience, highlighting the importance of sector-specific factors in shaping investor behavior.

6.2. Event 2

Event 2 corresponds to Luckin Coffee's formal admission of fraudulent activities on April 2, 2020. This event solidified the initial allegations and had a more pronounced impact on the market. The analysis of Event 2 follows a structure similar to that of Event 1, focusing on the finance, technology, and food-related sectors.

Table 6 presents the analysis of the finance and technology sectors following the confirmation of fraud.

Table 6: Event 2: Finance and Technology Sector Abnormal Returns

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
one week after event2 × finance	-1.231 (-1.493)							
one month after event2 × finance		- 4.675*** (-0.731)						
two months after event2 × finance			- 5.213*** (-0.522)					
three months after event2 × finance				- 2.869*** (-0.441)				
one week after event2 × technology					- 5.161*** (-1.896)			
one month after event2 × technology						-0.563 (-0.927)		
two months after event2 × technology							-1.124* (-0.661)	
three months after event2 × technology								- 1.916*** (-0.558)
after event2 1 week	0.926 (-0.577)			1.186*** (-0.557)				
after event2 1 months		1.769*** (-0.282)			1.125*** (-0.273)			
two months after event2			3.297*** (-0.201)			2.624*** (-0.194)		
three months after event2				3.430*** (-0.170)			3.171*** (-0.164)	
market return	1.166*** (-0.003)	1.165*** (-0.003)	1.163*** (-0.003)	1.161*** (-0.003)	1.166*** (-0.003)	1.165*** (-0.003)	1.163*** (-0.003)	1.161*** (-0.003)
market value	1.894 (-2.289)	1.907 (-2.289)	1.932 (-2.289)	1.931 (-2.288)	1.893 (-2.289)	1.895 (-2.289)	1.901 (-2.289)	1.904 (-2.289)
total assets	0.606 (-0.594)	0.607 (-0.594)	0.607 (-0.594)	0.594 (-0.594)	0.606 (-0.594)	0.605 (-0.594)	0.604 (-0.594)	0.603 (-0.594)
common equity	-0.725 (-0.625)	-0.727 (-0.625)	-0.727 (-0.625)	-0.714 (-0.625)	-0.726 (-0.625)	-0.725 (-0.625)	-0.724 (-0.625)	-0.723 (-0.625)
total liabilities	-0.604 (-0.597)	-0.605 (-0.597)	-0.605 (-0.597)	-0.592 (-0.597)	-0.604 (-0.597)	-0.604 (-0.597)	-0.602 (-0.597)	-0.601 (-0.597)
net income	4.332 (-55.523)	4.135 (-55.521)	3.793 (-55.512)	3.771 (-55.506)	4.375 (-55.523)	4.343 (-55.523)	4.317 (-55.516)	4.359 (-55.508)
revenue	-1.057 (-3.673)	-1.072 (-3.673)	-1.101 (-3.672)	-1.099 (-3.672)	-1.049 (-3.673)	-1.055 (-3.673)	-1.055 (-3.673)	-1.045 (-3.672)
constant	-0.087 (-0.058)	-0.130** (-0.059)	- 0.326*** (-0.061)	- 0.514*** (-0.062)	-0.087 (-0.058)	-0.130** (-0.059)	- 0.326*** (-0.061)	- 0.514*** (-0.062)
Company Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 6: (continued).

Exchange Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	659,910	659,910	659,910	659,910	659,910	659,910	659,910	659,910
R-squared	0.211	0.212	0.212	0.212	0.212	0.212	0.212	0.212

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Fixed effects for exchange, state, and industry are included.

The finance sector's response to the confirmed fraud was characterized by a delayed yet increasingly severe reaction. Initially, within the first week, the sector did not exhibit significant changes, but the subsequent periods revealed a marked shift. At the 1-month mark, the finance sector saw a significant decline (one month after event2 $\times$ group finance = -4.675, $p < 0.01$), suggesting that investors began to internalize the broader implications of the scandal. This downward trend persisted into the 2-month period, with the sector experiencing a further decline (two months after event2 $\times$ group finance = -5.213, $p < 0.01$).

These significant negative movements indicate that investors in the finance sector became progressively more apprehensive about potential systemic risks and the consequences of increased regulatory scrutiny in the wake of the fraud's revelation. The persistence of these declines highlights a growing recognition that the effects of the fraud could extend beyond the immediate window and industry, potentially undermining confidence in financial practices and governance more broadly.

By the 3-month period, the finance sector showed signs of partial recovery, though it remained in negative territory (three months after event2 $\times$ group finance = -2.869, $p < 0.01$). This stabilization likely reflects the market's ability to absorb the shock over time, even as it remained cautious about potential longer-term repercussions.

In contrast, the technology sector exhibited an immediate and sharp negative reaction following the confirmation of fraud. The 1-week post-event period saw a significant drop in returns (one week after event2 $\times$ group technology = -5.161, $p < 0.01$). One explanation could be that the technology sector, driven by high growth expectations, was particularly vulnerable to the rapid erosion of trust resulting from the confirmed fraud, leading to a swift and severe sell-off.

Over the following months, the sector continued to experience negative returns, though the intensity of the reaction diminished. The 2-month period saw a smaller but still significant negative impact (two months after event2 $\times$ group technology = -1.124, $p < 0.1$), and this persisted into the 3-month period (three months after event2 $\times$ group technology = -1.916, $p < 0.01$). These results suggest that while the initial panic began to subside, the scandal left a lasting mark on investor sentiment, leading to a more cautious and prolonged reassessment of the sector's prospects.

Comparing the reactions of the technology and finance sectors between Event 1 and Event 2 reveals a clear divergence in investor behavior. The technology sector showed a swift decline in Event 1, followed by a notable recovery, reflecting its vulnerability to initial shocks and its capacity to bounce back as fears subsided. However, the sector faced a more prolonged decrease in Event 2, indicating a deeper erosion of confidence once the fraud was confirmed.

On the other hand, the finance sector remained stable throughout Event 1. This changed dramatically in Event 2, where the sector exhibited delayed yet increasingly severe declines. This comparison highlights the technology sector's immediate but fluctuating sensitivity to market sentiment, while the finance sector's delayed response in Event 2 indicates a more gradual but significant reassessment of risks.

Table 7 examines the food-related industries, focusing on how these sectors responded to the confirmed fraud given their direct association with Luckin Coffee.

Table 7: Event 2: Food-related Sectors Abnormal Returns

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
one week after event2 retail food	17.452*** (-3.033)							
one month after event2 retail food		4.225*** (-1.491)						
two months after event2 retail food			1.991* (-1.064)					
three months after event2 retail food				1.887** (-0.897)				
one week after event2 food beverages					4.549 (-3.603)			
one month after event2 food beverages						4.080** (-1.767)		
two months after event2 food beverages							1.447 (-1.259)	
three months after event2 food beverages								0.300 (-1.062)
one week after event2	0.192 (-0.541)				0.643 (-0.539)			
one month after event2		0.945*** (-0.265)				0.987*** (-0.264)		
two months after event2			2.465*** (-0.189)				2.495*** (-0.188)	
three months after event2				2.947*** (-0.160)				2.999*** (-0.159)
food beverages sector group					-0.499 (-0.643)	-0.634 (-0.646)	-0.577 (-0.652)	-0.475 (-0.658)
market return	1.166*** (-0.003)	1.165*** (-0.003)	1.163*** (-0.003)	1.161*** (-0.003)	1.166*** (-0.003)	1.165*** (-0.003)	1.163*** (-0.003)	1.161*** (-0.003)
market value	1.896 (-2.289)	1.898 (-2.289)	1.906 (-2.289)	1.915 (-2.289)	1.927 (-2.290)	1.931 (-2.290)	1.937 (-2.289)	1.944 (-2.289)
total assets	0.606 (-0.594)	0.605 (-0.594)	0.603 (-0.594)	0.600 (-0.594)	0.607 (-0.594)	0.607 (-0.594)	0.604 (-0.594)	0.601 (-0.594)
common equity	-0.726 (-0.625)	-0.725 (-0.625)	-0.722 (-0.625)	-0.720 (-0.625)	-0.727 (-0.626)	-0.727 (-0.625)	-0.724 (-0.625)	-0.721 (-0.625)
total liabilities	-0.604 (-0.597)	-0.603 (-0.597)	-0.601 (-0.597)	-0.598 (-0.597)	-0.605 (-0.597)	-0.605 (-0.597)	-0.602 (-0.597)	-0.599 (-0.597)
net income	4.281 (-55.522)	4.264 (-55.522)	4.185 (-55.516)	4.077 (-55.508)	4.021 (-55.525)	3.935 (-55.524)	3.885 (-55.517)	3.857 (-55.510)
revenue	-1.055 (-3.673)	-1.060 (-3.673)	-1.069 (-3.673)	-1.078 (-3.672)	-1.185 (-3.678)	-1.187 (-3.678)	-1.193 (-3.677)	-1.198 (-3.677)
constant	-0.087 (-0.058)	-0.130** (-0.059)	0.326*** (-0.061)	0.514*** (-0.062)	-0.075 (-0.060)	-0.115* (-0.061)	0.313*** (-0.063)	0.503*** (-0.064)
Company Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exchange Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	659,910	659,910	659,910	659,910	659,910	659,910	659,910	659,910
R-squared	0.212	0.212	0.212	0.212	0.211	0.212	0.212	0.212

Significance levels: * p < 0.1, ** p < 0.05, *** p < 0.01

Fixed effects for exchange, state, and industry are included.

The retail food sector demonstrated a remarkably strong and immediate positive reaction to the confirmed fraud. The significant coefficient in the first week (one week after event2 $\times$ group retail food = 17.452, $p < 0.01$) indicates a sharp increase in returns, suggesting that investors perceived the scandal as an opportunity rather than a threat. The consistent positive performance observed in the 1-month (one month after event2 $\times$ group retail food = 4.225, $p < 0.01$), 2-month (two months after event2 $\times$ group retail food = 1.991, $p < 0.1$), and 3-month (three months after event2 $\times$ group retail food = 1.887, $p < 0.05$) intervals suggests that this optimism was not fleeting. Instead, it reflects sustained investor confidence in the retail food sector's resilience, possibly driven by a belief in the sector's ability to capitalize on the situation, as investors may have viewed the sector as stable, with strong fundamentals that could withstand external shocks. This positive momentum over several months highlights its perceived robustness, suggesting that the market viewed it as well-positioned to benefit from any shifts in consumer behavior or market share redistribution resulting from the scandal.

In contrast, the food and beverages sector exhibited a more subdued and complex reaction to the confirmation of fraud. The sector's initial response was muted, with no significant change in the first week (one week after event2 $\times$ group food beverages = 4.549, $p > 0.1$), suggesting that investors did not see an immediate impact on the sector, possibly due to its direct but not sole reliance on consumer behavior and market conditions. However, by the 1-month period, the sector showed a significant positive response (one month after event2 $\times$ group food beverages = 4.080, $p < 0.05$), indicating that investors began to view the sector as having potential upside similar to retail food.

Interestingly, the positive sentiment in the food and beverages sector did not persist, unlike in the retail food sector. By the 2-month (two months after event2 $\times$ group food beverages = 1.447, $p > 0.1$) and 3-month (three months after event2 $\times$ group food beverages = 0.300, $p > 0.1$) periods, the returns had stabilized, showing no significant movement. The early gains may have reflected short-term speculation or repositioning within portfolios, but the lack of sustained growth implies that the market eventually reassessed the sector's prospects, leading to a more cautious stance.

Comparing these reactions with Event 1, the food and beverages sector displayed a shift in behavior. While it suffered immediate negative impacts in Event 1, the sector experienced a temporary positive response in Event 2. However, the lack of sustained positive momentum in Event 2 indicates that while the worst fears may have been allayed, lingering concerns about the sector's vulnerability persisted.

The retail food sector's consistent gains also contrast with the technology sector's prolonged decline, highlighting the perceived stability of retail food. On the other hand, the food and beverages sector's brief optimism followed by stabilization suggests a more nuanced response, similar to the more tempered recovery seen in the finance sector.

6.3. Discussion

The findings of this study contribute to the growing literature on the spillover effects of financial misconduct, confirming and extending previous research in several ways. Consistent with the work of Karpoff [18] and Van Driel [2], the results demonstrate that corporate fraud can have significant externalities, affecting not only the implicated firm but also related and unrelated industries. The observed variation in market reactions across sectors aligns with the insights from behavioral finance literature, particularly the work of Bordalo et al. [5] and Gennaioli et al. [14], which highlight the role of cognitive biases and risk perception in shaping investor behavior. The retail food sector's gains from the Luckin Coffee scandal support Akerlof [2] and Ali and Karni's [8] theories, which propose that high information asymmetry can allow firms to exploit consumer uncertainty.

Based on the study's findings, several policy recommendations can be made to mitigate the negative externalities of financial fraud and promote market stability. Regulatory authorities should prioritize developing and enforcing financial reporting standards, particularly in emerging markets, to improve corporate disclosure reliability and transparency. Policy-makers should consider implementing targeted investor education programs to help market participants better understand and navigate the risks associated with corporate misconduct. While the study provides valuable insights, it is important to acknowledge its limitations.

The findings may not be generalizable to other financial fraud cases or markets, as the specific context and characteristics of the Luckin Coffee scandal and the Chinese market may limit the external validity of the results. Second, despite the use of a robust DID model, there may be confounding factors or unobserved heterogeneity that influence the observed market reactions, which cannot be fully accounted for in the analysis. Future research could address these limitations by examining multiple fraud cases across different markets and employing alternative methodologies, such as event study analysis or synthetic control methods, to triangulate the findings. Additionally, qualitative studies exploring the perceptions and decision-making processes of investors and market

participants in the wake of financial misconduct could provide complementary insights into the underlying mechanisms driving the observed cross-sectoral impact.

In conclusion, this analysis focuses on industries most directly related to Luckin Coffee's core business, particularly the food-related sectors, which exhibited the most significant abnormal returns due to their market exposure to the scandal. These industries reveal how financial misconduct can disrupt firms with shared market conditions and operational risks. Although finance and technology sectors are not direct competitors, they offer valuable insights into broader market responses, demonstrating how scandals with governance and regulatory implications can impact unrelated sectors.

7. Conclusion

This study examined the Luckin Coffee scandal's impact on stock performance across different sectors, including competitors and unrelated industries. The methodology employed a Difference-in-Differences (DID) model to analyze abnormal returns of various industry groups in response to two key events: the Muddy Waters Research report release in January 2020 and Luckin Coffee's fraud confirmation in April 2020. By comparing stock performance within defined post-event windows (1 week, 1 month, 2 months), the study uncovered how different sectors reacted to the unfolding scandal.

The key findings include:

- 1) The food and beverage sector saw a sharp decline of 7.75% ($p < 0.05$) in abnormal returns during the first week after the fraud allegations, but this impact stabilized over the next two months. Following the confirmation of fraud, the retail food sector experienced a strong positive reaction, with returns rising 17.45% ($p < 0.01$) in the first week, continuing to increase by 4.23% ($p < 0.01$) after one month and 1.99% ($p < 0.1$) after two months. In contrast, the food and beverages sector saw temporary gains, with a 4.08% ($p < 0.05$) rise after one month, but no significant movement thereafter.
- 2) The technology sector exhibited significant volatility, dropping 3.33% ($p < 0.1$) in the first week, rebounding by 2.38% ($p < 0.01$) after two months, but facing a lasting decline of 5.16% ($p < 0.01$) after the fraud was confirmed. The finance sector showed delayed sensitivity, with a 4.68% ($p < 0.01$) decline within one month and a 5.21% ($p < 0.01$) decline after two months.

The results of this study offer valuable insights into investor behavior, specifically concerning how Luckin Coffee's competitors capitalized on the scandal. While the food and beverage sector saw immediate declines in abnormal returns, retail food competitors experienced significant gains as investors anticipated shifts in market share. This finding reveals the broader trend that investors actively seek opportunities rather than simply reacting to negative news. However, the results also show financial fraud's negative impact on sectors and markets, with volatility and long-term declines observed in industries like technology and finance.

Overall, the study highlights financial fraud's effects related and unrelated competitors. Fraud's capacity to trigger widespread volatility highlights global market's and economies' deep interconnectedness. Investor behavior, including reactive losses and strategic gains, emphasizes the importance of understanding and anticipating market reactions during periods after financial news.

References

- [1] Karpoff, J. M. (2021). *The future of financial fraud*. *Journal of Corporate Finance*, 66, 101694.
- [2] Van Driel, H. (2019). *Financial fraud, scandals, and regulation: A conceptual framework and literature review*. *Business History*.
- [3] Bordalo, P., Gennaioli, N., & Shleifer, A. (2012). *Salience theory of choice under risk*. *The Quarterly journal of economics*, 127(3), 1243-1285.

- [4] Gennaioli, N., Shleifer, A., & Vishny, R. (2015). Neglected risks: The psychology of financial crises. *American Economic Review*, 105(5), 310-314.
- [5] Peng, Z., Yang, Y., & Wu, R. (2022). The Luckin Coffee scandal and short selling attacks. *Journal of Behavioral and Experimental Finance*, 34, 100629.
- [6] Li, K., Liu, Y., Wang, J., & Zhu, Y. (2022). Influence of Financial Fraud Scandal on Listed Companies: Take Luckin Coffee as an Example. *Highlights in Business, Economics and Management*, 2, 38-50.
- [7] Akerlof, G. A. (1978). The market for "lemons": Quality uncertainty and the market mechanism. In *Uncertainty in economics* (pp. 235-251). Academic Press.
- [8] Rezaee, Z. (2005). Causes, consequences, and deterrence of financial statement fraud. *Critical perspectives on Accounting*, 16(3), 277-298.
- [9] Fich, E. M., & Shivdasani, A. (2007). Financial fraud, director reputation, and shareholder wealth. *Journal of financial Economics*, 86(2), 306-336.
- [10] Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1996). Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary accounting research*, 13(1), 1-36.
- [11] Karpoff, J. M., & Lott Jr, J. R. (1993). The reputational penalty firms bear from committing criminal fraud. *The Journal of Law and Economics*, 36(2), 757-802.
- [12] Feroz, E. H., Park, K., & Pastena, V. S. (1991). The financial and market effects of the SEC's accounting and auditing enforcement releases. *Journal of accounting research*, 29, 107-142.
- [13] Liao, L., Chen, G., & Zheng, D. (2019). Corporate social responsibility and financial fraud: evidence from China. *Accounting & Finance*, 59(5), 3133-3169.
- [14] Tarjo, T., Anggono, A., Yuliana, R., Prasetyono, P., Syarif, M., Wildan, M. A., & Kusufi, M. S. (2022). Corporate social responsibility, financial fraud, and firm's value in Indonesia and Malaysia. *Heliyon*, 8(12).
- [15] Hu, N., Liu, L., & Sambamurthy, V. (2011). Fraud detection in online consumer reviews. *Decision Support Systems*, 50(3), 614-626.
- [16] Harrison, A. (2018). The effects of media capabilities on the rationalization of online consumer fraud. *Journal of the Association for Information Systems*, 19(5), 1.
- [17] Button, M., Lewis, C., & Tapley, J. (2014). Not a victimless crime: The impact of fraud on individual victims and their families. *Security Journal*, 27, 36-54.
- [18] Sarri'a, E., Recio, P., Rico, A., D'iaz-Olalla, M., Sanz-Barbero, B., Ayala, A., & Zun-zunegui, M. V. (2019). Financial fraud, mental health, and quality of life: a study on the population of the city of Madrid, Spain. *International Journal of Environmental Research and Public Health*, 16(18), 3276.
- [19] Zak, P. J., & Knack, S. (2001). Trust and growth. *The economic journal*, 111(470), 295-321.