

Li, Dongdong; Shi, Fan; Wang, Kemin

Article

China-US trade dispute investigations and corporate earnings management strategy

China Journal of Accounting Research

Provided in Cooperation with:

Sun Yat-sen University

Suggested Citation: Li, Dongdong; Shi, Fan; Wang, Kemin (2020) : China-US trade dispute investigations and corporate earnings management strategy, China Journal of Accounting Research, ISSN 1755-3091, Elsevier, Amsterdam, Vol. 13, Iss. 4, pp. 339-359, <https://doi.org/10.1016/j.cjar.2020.09.002>

This Version is available at:

<https://hdl.handle.net/10419/241824>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by-nc-nd/4.0/>

HOSTED BY



ELSEVIER

Contents lists available at ScienceDirect

China Journal of Accounting Research

journal homepage: www.elsevier.com/locate/cjar

China-US trade dispute investigations and corporate earnings management strategy



Dongdong Li^a, Fan Shi^{b,*}, Kemin Wang^b

^a School of Accounting, Zhongnan University of Economics and Law, China

^b School of Management, Fudan University, China

ARTICLE INFO

Article history:

Received 14 June 2020

Accepted 25 September 2020

Available online 31 October 2020

Keywords:

China-US trade disputes

Earnings management

Market valuation

ABSTRACT

This paper studies Chinese firms' earnings management strategy in response to the trade dispute investigations initiated by the U.S. from 2001 to 2018. This topic is important given the increasingly severe international trade environment and the significant influence of macro economy on financial reporting. We find that firms affected by the U.S.-initiated trade dispute investigations engage in more upward earnings management. Additionally, the result is more pronounced in firms with a more negative market reaction around the announcement of the investigations. Cross-sectional tests provide evidence that the positive relation is stronger among firms whose U.S. operating revenue and management ownership is high, firms in provinces with weak investor protection, and firms that performed well one year after initiation of the investigations. Moreover, investors react positively to the earnings management by the affected firms. Our results are robust to a variety of sensitivity checks. Overall, our findings suggest that companies will manage their earnings upward to mitigate the negative impacts of the U.S.-initiated trade dispute investigations.

© 2020 Sun Yat-sen University. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Since China's accession to the WTO in 2001, the bilateral trade volume between China and the United States increased 6.87 times from \$80.485 billion in 2001 to \$633.519 billion in 2018¹. Currently, the United States is China's largest trading country except the European Union. With the increasing trading volume between China and the United States, trade disputes are also escalating. In fact, the United States initiated

* Corresponding author at: School of Management, Fudan University, 670 Guoshun Road, Shanghai 200433, China.

E-mail addresses: 17110690036@fudan.edu.cn (F. Shi), wangkm@fudan.edu.cn (K. Wang).

¹ Data source: National Bureau of Statistics of the People's Republic of China (<http://data.stats.gov.cn/ks.htm?cn=C01>).

the most trade investigations and sanctions against China between 2001 and 2018². These trade dispute investigations lead to huge negative impacts on Chinese enterprises. For example, Fig. 1 plots the cumulative abnormal return (CAR) around the dates when firms are involved in the U.S.-initiated trade dispute investigations, which suggests that the CAR of the affected firms plummet significantly. Firms may take various actions in response to the investigations. In this paper we focus on earnings management and directly test whether and how firms manipulate earnings to mitigate the negative impacts of the investigations.

Lots of studies have been conducted on the firm's earnings management motivations which mainly include capital market motivations, political cost motivations, and contractual motivations. Specifically, capital market motivations include stock issues (Aharony et al., 1993; Teoh et al., 1998a; Healy and Wahlen, 1999; Lu and Wei, 2006; Wang and Liu, 2012), corporate mergers and acquisitions (Deangelo, 1988; Erickson and Wang, 1999), and catering to analysts' earnings forecasts (Burgstahler and Dichev, 1997; Dhaliwal et al., 2004). Political cost motivations include tax avoidance (Boynton et al., 1992), antidumping investigations (Magnan et al., 1999), and evasion of government capture (Chen et al., 2018). Contractual motivations include management compensation contracts (Watts and Zimmerman, 1978; Healy, 1985; Li et al., 2007; Wang and Wang, 2007) and debt contracts (DeFond and Jambalvo, 1994; Sweeney, 1994). Besides the above three motivations, studies also find that firms manipulate earnings to take advantage of exogenous negative shocks. For example, in response to salient negative exogenous shocks such as natural disasters, firms tend to take a "big bath" to manage downward earnings to enhance profits in future periods in order to "refill the cookie jar" (Kirschenheiter and Melumad, 2002; Cheng et al., 2018).

Since the U.S.-initiated trade dispute investigation is one type of exogenous negative shocks to firms, it is possible that the affected firms may also take the opportunity to take a "big bath" in the current period in order to report higher future earnings. Cheng et al., (2018) points that natural disaster represents a significant negative shock for which the economic magnitude is hard for investors to quantify, providing a great opportunity for managing cookie jar reserve. However, trade dispute investigations may not be an appropriate opportunity to managing cookie jar reverse since investors can easily quantify the worst situation through the final duties. Though trade dispute investigations place significant burdens such as spending enormous amounts of time and money to defend themselves on the affected firms, they can make operational adjustments such as selling products to domestic markets to reduce loss. Therefore, these investigations may not be a sufficiently bad news like natural disasters and affected firms may prefer to smooth earnings, rather than take a "big bath" (Kirschenheiter and Melumad, 2002). Additionally, implicit in firms' use of "big bath" as a form of earnings management is managers' belief that the benefit of reporting higher future earnings is greater than the cost of reporting lower current earnings. Due to the high costs of reporting current loss in China, we argue that firms are also unlikely to take a "big bath" when they are faced with the trade dispute investigations. In China's special institutional context, reporting significant losses can lead to severe consequences for firms, such as reduced reputation, special treatment or even delisting, and higher financing costs (Lu, 1999; Wang et al., 2005; Wu et al., 2007). In addition, firms are also subject to lower regulatory risk when managing their earnings upward in China's premature capital market. We thus hypothesize that by trading off the benefits and costs of upward earnings management in China, firms affected by the U.S.-initiated trade dispute investigations are more likely to engage in upward earnings management rather than "big bath".

To examine the relation between trade dispute investigations and affected firms' earnings management strategy, we use a large sample of 33,088 firm-year observations over the period of 2001 to 2018. The affected sample comprises firm-years from industries that have been affected by the U.S.-initiated trade dispute investigations, and the remained firm-years constitute the unaffected sample. We first examine the impact of investigations on the earnings management of affected Chinese firms. Consistent with our hypothesis, we find firms in the industries involved in the U.S.-initiated trade dispute investigations conduct more upward earnings management in the initiated year of investigations than the unaffected firms.

We then perform the following cross-sectional analysis. First, we conjecture that firms which suffer more from the investigations should have more incentives to manipulate earnings. We use the market reactions

² According to the data of China Trade Remedies Information Platform (<http://cacs.mofcom.gov.cn/cacscms/view/notice/ckys#>), US initiated 266 trade investigations including anti-dumping, countervailing and safeguards against China between 2001 and 2018, and it ranked top 1 among all the countries that initiated trade investigations to China.

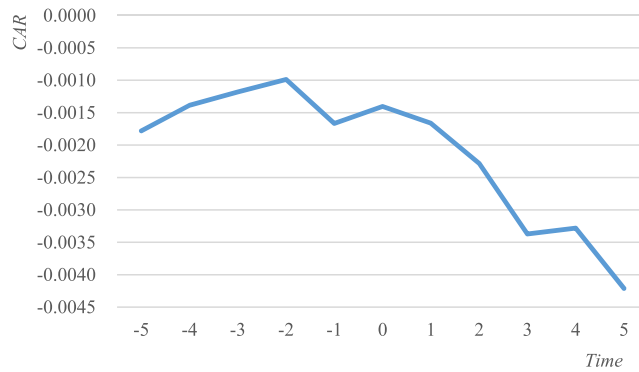


Fig. 1. Cumulative abnormal return around U.S.-initiated trade dispute investigations. Notes: This figure shows the cumulative abnormal return of Chinese firms which are involved in U.S.-initiated trade dispute investigations. The Y-axis is the cumulative abnormal return, and the X-axis is the relative day around the dates of the investigations.

around the announcement of the investigations as a proxy for the extent to which firms are negatively affected by the investigations. We indeed find that the main effect is stronger in affected firms with a more negative market reaction. Second, firms that have closer business connections with U.S. should be affected more by the investigations. We compute the percentage of U.S. revenue for each firm and find that affected firms engage in more earnings management if they have high percentages of U.S. revenues. Third, firms with higher management ownership may care more about the stock prices and thus should have more incentive to manage earnings upward. Fourth, we argue that the regulatory risk of earnings management is lower for firms in provinces with weak investor protection. Therefore, firms in those provinces may have lower regulatory costs of manipulating earnings, which leads to stronger incentive to manage earnings upward in the presence of trade dispute investigations. Fifth, we propose that the extent of upward earnings management depends on firms' expectation of eventual investigation results. For firms that can better counter the potential trade effect, they are more likely to manage earnings upward. We use the return on assets (ROA) one year after investigations to measure firms' expectation, and indeed find that the relation is more pronounced in affected firms that performed well one year after the initiation. Again, the results are consistent with our conjecture.

We further examine the real economic consequence of earnings management following trade dispute investigations for the affected firms. We find that the short-term market reactions of annual reports of firms with more upward earnings management are more positive, which suggests that the negative impact of trade dispute investigations is indeed alleviated by firms' upward earnings management.

Finally, we perform several supplemental tests to support our primary results. To rule out the alternative explanation that affected firms' earnings management behaviors may be caused by foreign buyers increasing their order to avoid the potential increase of tariff, we include the level of accounts receivable as a control variable into the main regression model. And in order to exclude the influence of other time-dimensional significant events and firm-level characteristics on the findings of the study, we use a series of methods such as placebo test for robustness test. Our findings are robust to all the above tests.

This study provides a number of important contributions to the literature. Firstly, we enrich the research on corporate earnings management strategy. The previous studies analyzed the motivations of corporate earnings management mainly around capital market pressures, political costs and contractual arrangements. In particular, it has been found in the literature that in the face of negative exogenous shocks such as natural disasters, firms strategically manage earnings downward (Cheng et al., 2018), i.e. by taking a "big bath" to cleanse the firm's current profits (Kirschenheiter and Melumad, 2002). Unlike developed markets, in China's special institutional context, firms' losses can have a serious negative impact on their operating environment, and in order to avoid such a shock, firms usually engage in upward earnings management (Lu, 1999; Wu et al., 2007). In addition, China's capital market regulatory system is still at the stage of continuous improvement, and firms' upward earnings management costs are even lower. Based on this, we investigate the impact of negative exogenous shocks on the upward earnings management of Chinese firms to provide evidence for the study of earnings management motivations and strategies based on emerging markets.

Secondly, we contribute to the study of the economic consequence of trade disputes. There have been more studies on the economic consequence of trade disputes to analyze their impact on macroeconomic development (David et al., 2013), and the firm level is also mainly concerned with the impact of trade disputes on firms' production operations and financial behavior (Liu and Ma, 2016; Crowley et al., 2018) and less concerned with the impact on firms' information disclosure strategy (Klevak et al., 2019). Considering that earnings information is crucial for investors to interpret firms' business status and development prospects, this paper takes the perspective of firms' earnings management and comprehensively analyzes the impact of trade dispute investigations on affected firms' earnings management strategies, providing evidence for the economic consequence of trade disputes from the perspective of information disclosure manipulation.

The last but not the least, the findings in this paper have some practical implications. By studying the impact of trade dispute investigations on firms' earnings management strategies, we suggest that regulators should strengthen the regulation of firms' information disclosure under the environment that trade dispute investigations become more and more frequently, and also suggest that market investors should cautiously interpret the operating performance of firms affected by trade dispute investigations.

The rest of this paper is organized as follows. Section 2 provides the background and develops our hypotheses. Section 3 describes the sample selection and research design. The empirical results and analysis are presented in Section 4. Section 5 performs additional analyses. Section 6 concludes.

2. Background and hypothesis development

2.1. Background

With the increasing trading volume between China and the United States since China's accession to the WTO, trade disputes are also escalating, especially during the past few years. Take anti-dumping investigations as an example, investigations are generally initiated after receiving a complaint from producers of a homogeneous product in the U.S. alleging that foreign exporters are dumping a like product in the U.S. The U.S. Department of Commerce is responsible for investigating antidumping allegations, and the process begins with a decision about whether or not the evidence provided in the complaint warrants an investigation. The decision must be made within 20 days of receiving the complaint. Importantly, the complaint filed by the U.S. producers must provide detailed information about the alleged dumping, including evidence of dumping and injury and a causal link between this two so that this information is available to the U.S. Department of Commerce to infer the initiation decision.

When the U.S. Department of Commerce decides to investigate a complaint, it publishes a notice indicating that it is opening an investigation and should give a preliminary determination **within two months**. An investigation into an allegation that foreign companies are dumping products involves two critical determinations, one is whether foreign goods are in fact being sold below fair market value, and another is whether the domestic producers of the goods have been injured by the alleged dumping. Once the preliminary determination is affirmative, it can apply provisional measures such as provisional anti-dumping duty based on estimated margin of dumping. And then it will go into further investigation to give a final determination **within one year**. If the final determination is affirmative, it will publish a determination on imposing anti-dumping duties and detail the amount of the duties. Fig. 2 shows the flow of anti-dumping investigations.

2.2. Hypothesis development

Ball and Brown (1968) points that of all the information about an individual firm which becomes available during a year, one-half or more is captured in that year's income number. Considering that earnings information plays such an important role, earnings management occurs when manager uses the flexibility inherent in accounting standards to manage the firm's reported accounting earnings to influence some economic outcome to the firm's (or manager's) benefit (Schipper, 1989). Healy and Wahlen (1999) concludes that the widespread use of accounting information by investors and security analysts to help value stocks can create an incentive for managers to manipulate earnings in an attempt to influence short-term stock price performance. And lots of studies provide empirical evidence for the capital market motivations, they have examined whether

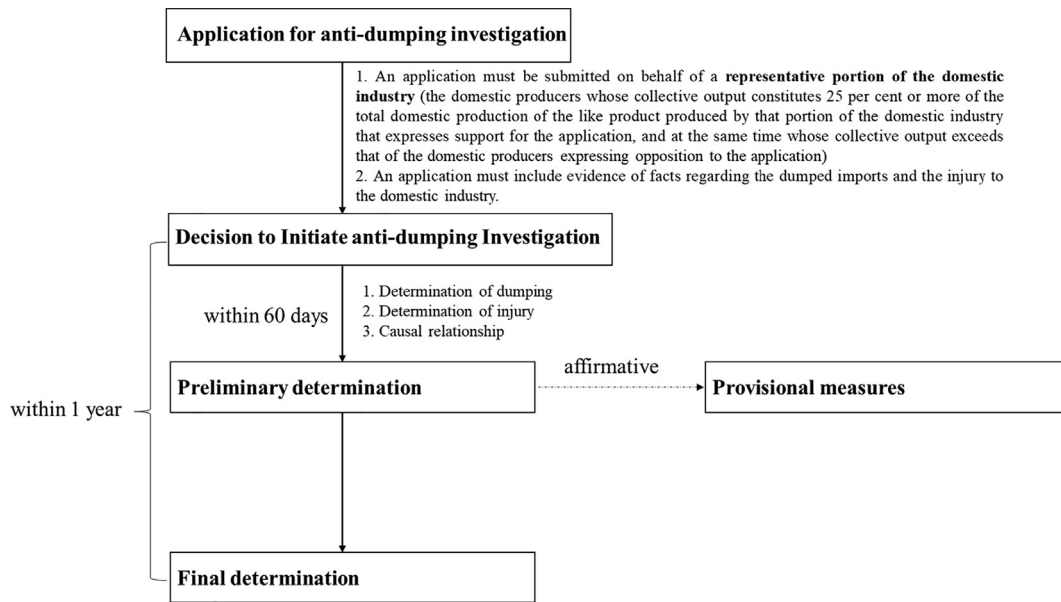


Fig. 2. Flow of anti-dumping investigations.

managers “overstate” earnings in periods prior to equity offers. The findings suggest that firms manage earnings upward prior to initial public offers (Aharony et al., 1993; Teoh et al., 1998a), seasoned equity offers (Teoh et al., 1998b), and stock-financed acquisitions (Erickson and Wang, 1999). Teoh et al. (1998a) and Aharony et al. (1993) find that firms with income-increasing abnormal accruals in the year of a seasoned equity offer have significant subsequent stock underperformance. Teoh et al. (1998b) find a similar pattern for initial public offers. These findings, therefore, suggest that upward earnings management prior to equity issues does prop up share prices.

Additionally, previous studies also suggest that managers have incentives to manipulate firms’ reported financial performance to bolster their compensation (Bergstresser and Philippon, 2006; Burns and Kedia, 2006; Efendi, Srivastava, and Swanson, 2007) or gain through stock sales (Beneish and Vargus, 2002). These findings imply that managers can earn a personal benefit from managing earnings to inflate the stock price. Since the U.S.-initiated trade dispute investigations can decrease the stock prices of Chinese firms affected by the investigations (Wu et al., 2015), which will hurt managers’ personal benefits affiliated to stock price, and upward earnings management can inflate the stock price to mitigate the negative effect of investigations. Therefore, we could expect a positive relation between U.S.-initiated trade dispute investigations and Chinese firms’ upward earnings management. Based on this discussion, we propose our first hypothesis as follows:

H1. Firms affected by the U.S.-initiated trade dispute investigations engage in more upward earnings management than unaffected firms.

Wu et al. (2015) applies the event study method to evaluate the negative effect of U.S.-initiated trade dispute investigations on CAR and finds that Chinese listed firms which are affected by trade dispute investigations do experience a large drop in stock price. Given that upward earnings management can help firms to mitigate the negative influence of trade dispute investigations on market valuation, we predict that firms which experience a larger drop of stock prices have stronger incentive to conduct upward earnings management. To provide evidence on this issue, we test the following hypothesis stated in alternative form:

H2. The relation between trade dispute investigations and upward earnings management is more pronounced for firms with more negative market reactions.

For the firms’ main business composition, we propose that firms which have closer business connections with U.S. should be affected more by the trade dispute investigations, thus they may be more eager to offset the negative effect brought by U.S.-initiated trade dispute investigations. To provide evidence on this issue, we test the following hypothesis stated in alternative form:

H3. The relation between trade dispute investigations and upward earnings management is more pronounced for firms with higher percentages of U.S. revenues.

Lots of previous research imply that managers can earn a personal benefit from managing earnings upward to inflate the stock price (Beneish and Vargus, 2002). Bergstresser and Philippon (2006) finds that the use of discretionary accruals to manipulate reported earnings is more pronounced at firms where the CEO's potential total compensation is more closely tied to the value of stock and option holdings, suggesting that managers manipulate firms' reported financial performance to bolster their compensation. Therefore, we predict that firms whose executives own more shares have stronger incentives to conduct upward earnings management. To provide evidence on this issue, we test the following hypothesis stated in alternative form:

H4. The relation between trade dispute investigations and upward earnings management is more pronounced for firms with higher level of management ownership.

Although earnings management conveys benefits to firms, firms cannot manipulate earnings with impunity. Prior research has shown that strong investor protection limits insiders' ability to acquire private benefits, which reduces their incentives to mask firm performance (Leuz et al., 2003). Therefore, we conjecture that

Table 1
Sample distribution by year.

Year	<i>TD</i> = 1	<i>TD</i> = 0	Total	Percentage of <i>TD</i> = 1 (%)
2001	48	885	933	5.14
2002	111	905	1016	10.93
2003	194	888	1082	17.93
2004	168	979	1147	14.65
2005	97	1143	1240	7.82
2006	96	1142	1238	7.75
2007	122	1201	1323	9.22
2008	168	1263	1431	11.74
2009	310	1180	1490	20.81
2010	63	1576	1639	3.84
2011	261	1732	1993	13.10
2012	376	1853	2229	16.87
2013	271	2104	2375	11.41
2014	314	2110	2424	12.95
2015	243	2297	2540	9.57
2016	502	2214	2716	18.48
2017	688	2265	2953	23.30
2018	825	2494	3319	24.86
Total	4857	28,231	33,088	14.68

This table reports sample distribution by year. Affected firms (*TD* = 1) are firms whose industry involved in U.S.-initiated trade dispute investigations in the current year. Percentage of *TD* = 1 is calculated as the observations of *TD* = 1 scaled by total observations in that year.

Table 2
Descriptive statistics.

Variable	N	Mean	Median	Standard deviation
<i>DA_MJONES</i>	33,088	0.0054	0.0041	0.0897
<i>DA_INTAN</i>	33,088	0.0057	0.0043	0.0891
<i>TD</i>	33,088	0.1468	0.0000	0.3539
<i>SIZE</i>	33,088	21.8327	21.6835	1.2764
<i>LEV</i>	33,088	0.4628	0.4597	0.2179
<i>ROA</i>	33,088	0.0307	0.0328	0.0679
<i>MTB</i>	33,088	3.7615	2.6896	3.8096
<i>LOSS</i>	33,088	0.1121	0.0000	0.3155
<i>DUAL</i>	33,088	0.2023	0.0000	0.4017
<i>TOPTEN</i>	33,088	57.7060	58.8400	15.2529
<i>SOE</i>	33,088	0.4801	0.0000	0.4996

the effect of trade dispute investigations on upward earnings management should be stronger for firms located in provinces with weak investor protection. To provide evidence on this issue, we test the following hypothesis stated in alternative form:

H5. The relation between trade dispute investigations and upward earnings management is more pronounced for firms located in provinces with weak investor protection.

Lastly, we propose that firms' expectation of the eventual investigation results may affect firms' responsive earnings disclosure strategy. For firms that can better counter the potential trade effect, the cost of upward earnings management is less than firms that are more vulnerable to the potential trade dispute, therefore, they are more likely to manage earnings up to send a positive signal to the market. To provide evidence on this issue, we test the following hypothesis stated in alternative form:

H6. The relation between trade dispute investigations and upward earnings management is more pronounced for firms that performed well one year after the initiation.

3. Research design

3.1. Sample and data

Our sample covers firms traded on China's A-share market from 2001 to 2018. Following previous literature, we exclude firms in financial industries because their financial ratios are not comparable with other firms. We also eliminate firms with missing data. Our final sample contains 33,088 firm-year observations with 3395 firms.

Table 3
Influence of U.S.-initiated trade dispute investigations on upward earnings management.

	(1) <i>DA_MJONES</i>	(2) <i>DA_INTAN</i>
<i>TD</i>	0.0054*** (2.93)	0.0052*** (2.83)
<i>SIZE</i>	0.0131*** (8.46)	0.0133*** (8.63)
<i>LEV</i>	-0.0369*** (-5.82)	-0.0356*** (-5.65)
<i>ROA</i>	0.5338*** (31.26)	0.5271*** (30.97)
<i>MTB</i>	0.0002 (0.66)	0.0002 (0.63)
<i>LOSS</i>	-0.0003 (-0.14)	-0.0005 (-0.20)
<i>DUAL</i>	0.0023 (1.13)	0.0022 (1.08)
<i>TOPTEN</i>	0.0004*** (4.93)	0.0004*** (4.96)
<i>SOE</i>	-0.0014 (-0.44)	-0.0018 (-0.58)
Constant	-0.2920*** (-9.47)	-0.2956*** (-9.63)
Year FE	YES	YES
Firm FE	YES	YES
Observations	33,088	33,088
R-squared	0.3259	0.3235

This table examines the influence of U.S.-initiated trade dispute investigations on upward earnings management. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Table 4
Cross-sectional analyses: market reaction of U.S.-initiated trade dispute investigations.

	High CAR		Low CAR	
	(1) <i>DA_MJONES</i>	(2) <i>DA_INTAN</i>	(3) <i>DA_MJONES</i>	(4) <i>DA_INTAN</i>
<i>TD</i>	0.0028 (1.12)	0.0024 (0.96)	0.0053** (2.01)	0.0052** (2.02)
<i>SIZE</i>	0.0126*** (5.94)	0.0127*** (6.01)	0.0118*** (6.29)	0.0121*** (6.46)
<i>LEV</i>	-0.0448*** (-5.31)	-0.0424*** (-5.06)	-0.0289*** (-3.62)	-0.0289*** (-3.67)
<i>ROA</i>	0.5171*** (21.43)	0.5134*** (21.37)	0.5559*** (25.46)	0.5463*** (25.24)
<i>MTB</i>	-0.0001 (-0.32)	-0.0002 (-0.48)	0.0005 (1.21)	0.0005 (1.21)
<i>LOSS</i>	-0.0007 (-0.19)	-0.0004 (-0.12)	-0.0004 (-0.12)	-0.0008 (-0.25)
<i>DUAL</i>	0.0032 (1.14)	0.0027 (0.99)	0.0027 (0.93)	0.0029 (1.02)
<i>TOPTEN</i>	0.0004*** (3.83)	0.0004*** (3.73)	0.0004*** (3.82)	0.0004*** (4.00)
<i>SOE</i>	-0.0006 (-0.15)	-0.0012 (-0.29)	-0.0019 (-0.45)	-0.0020 (-0.48)
Constant	-0.2758*** (-6.50)	-0.2753*** (-6.56)	-0.2743*** (-7.11)	-0.2802*** (-7.31)
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Observations	16,455	16,455	16,449	16,449
R-squared	0.1617	0.1596	0.1952	0.1935

This table shows the results of subsample tests based on market reaction of U.S.-initiated trade dispute investigations. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

We hand collect all investigations including anti-dumping, countervailing and safeguard initiated by the United States against China during the period between 2001 and 2018 from China Trade Remedies Information (CTRI)³. Other information is obtained from CSMAR and WIND.

3.2. Variables

3.2.1. Measures of earnings management

We use two methods to calculate accrual-based earnings management. First, we use modified Jones model (Dechow et al., 1995) to obtain a measure of accrual-based earnings management. The modified Jones model is estimated for each industry-year group as follows:

$$\frac{TA_{i,t}}{ASSET_{i,t-1}} = \beta_1 \frac{1}{ASSET_{i,t-1}} + \beta_2 \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{ASSET_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{ASSET_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

where i indexes firms and t indexes fiscal years. Total accruals $TA_{i,t}$ are defined as net income minus operating cash flows for fiscal year t ; $ASSET_{i,t-1}$ is total assets at the end of year $t - 1$; $\Delta REV_{i,t}$ is the change in sales revenue from year $t - 1$ to year t ; $\Delta REC_{i,t}$ is the change in accounts receivable from year $t - 1$ to year t ; and $PPE_{i,t}$ is the gross value of property, plant and equipment at the end of year t . The residual from this model is discretionary accruals (DA_MJONES), and the higher discretionary accruals indicates more upward earnings management.

³ <http://cacs.mofcom.gov.cn/cacscms/view/notice/ckys#>

Second, we use intangible assets-adjusted discretionary accruals model (Lu, 1999) for robustness. The model is as follows:

$$\frac{TA_{i,t}}{ASSET_{i,t-1}} = \beta_1 \frac{1}{ASSET_{i,t-1}} + \beta_2 \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{ASSET_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{ASSET_{i,t-1}} + \beta_4 \frac{IA_{i,t}}{ASSET_{i,t-1}} + \varepsilon_{i,t} \quad (2)$$

where $IA_{i,t}$ is intangible assets at the end of year t and other variables are the same as model (1). The residual is intangible assets-adjusted discretionary accruals (DA_INTAN), and the higher value indicates more upward earnings management.

3.2.2. Measure of affected by the U.S.-initiated trade dispute investigations

China Trade Remedies Information website lists details of the trade dispute investigation information including investigation date, investigation product and the affected industry. Dummy variable of whether firms are affected by the trade dispute investigations (TD) equals 1 if the industry of the firm is involved in the U.S.-initiated trade dispute investigations in the current year, and 0 otherwise.

3.2.3. Control variables

Following the existing literatures (Kothari et al., 2005; Bergstresser and Philippon, 2006), we include various firm-level variables to control for confounding factors that may affect earnings management. We control for firm size ($SIZE$), firm leverage (LEV), return on assets (ROA), market-to-book ratio (MTB), a dummy variable for loss firms ($LOSS$), whether CEO also serves as board chairman ($DUAL$), top ten shareholders' ownership ($TOPTEN$) and an indicator for firms owned by the state (SOE). Detailed definitions of these main variables are reported in Appendix A.

Table 5
Cross-sectional analyses: U.S. operating revenue.

	High U.S. operating revenue		Low U.S. operating revenue	
	(1) DA_MJONES	(2) DA_INTAN	(3) DA_MJONES	(4) DA_INTAN
TD	0.0077*** (2.79)	0.0074*** (2.70)	0.0040 (1.54)	0.0037 (1.43)
$SIZE$	0.0122*** (3.90)	0.0123*** (3.97)	0.0149*** (7.77)	0.0152*** (8.00)
LEV	-0.0145 (-1.17)	-0.0154 (-1.27)	-0.0479*** (-6.30)	-0.0460*** (-6.06)
ROA	0.6021*** (20.08)	0.5979*** (20.04)	0.5098*** (24.62)	0.5017*** (24.36)
MTB	0.0003 (0.51)	0.0002 (0.43)	0.0001 (0.47)	0.0001 (0.45)
$LOSS$	0.0005 (0.12)	0.0005 (0.13)	0.0017 (0.57)	0.0015 (0.48)
$DUAL$	0.0059* (1.95)	0.0063** (2.09)	0.0009 (0.33)	0.0004 (0.16)
$TOPTEN$	0.0004*** (2.65)	0.0004*** (2.63)	0.0003*** (3.47)	0.0003*** (3.47)
SOE	0.0038 (0.50)	0.0022 (0.30)	-0.0028 (-0.73)	-0.0033 (-0.86)
Constant	-0.2875*** (-4.48)	-0.2877*** (-4.55)	-0.3211*** (-8.35)	-0.3269*** (-8.58)
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Observations	11,651	11,651	21,437	21,437
R-squared	0.3947	0.3933	0.3365	0.3338

This table shows the results of subsample tests based on U.S. operating revenue. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

3.3. Summary statistics

Table 1 reports the sample distribution by year. The results show that the average ratio of affected firm-year observations of U.S.-initiated trade dispute investigations is 14.68%. In addition, the ratio ranks the highest in 2018 with 24.68%, which is not surprising since a trade war broke out between China and the United States.

Table 2 presents descriptive statistics of the main variables used in regressions. We winsorize all continuous variables at the top and bottom 1% of their distributions to mitigate the influence of outliers. The mean of both discretionary accruals (DA_MJONES , DA_INTAN) are above zero, suggesting that the Chinese firms generally have a tendency of upward earnings management. The mean of TD is 0.1468, which means that 14.68% of firm-year observations are affected by the U.S.-initiated trade dispute investigations. Additionally, 11.21% of firm-year observations experience losses, and about 48% of firm-year observations are SOEs.

4. Empirical results

4.1. Influence of U.S.-initiated trade dispute investigations on upward earnings management

To test the H1, we estimate the following regression:

$$DA_{i,t} = \beta_0 + \beta_1 TD_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} + \beta_4 ROA_{i,t} + \beta_5 MTB_{i,t} + \beta_6 LOSS_{i,t} + \beta_7 DUAL_{i,t} + \beta_8 TOPTEN_{i,t} + \beta_9 SOE_{i,t} + YearFE + FirmFE + \varepsilon_{i,t} \quad (3)$$

Table 6
Cross-sectional analyses: management ownership.

	High management ownership		Low management ownership	
	(1) DA_MJONES	(2) DA_INTAN	(3) DA_MJONES	(4) DA_INTAN
TD	0.0063** (2.28)	0.0062** (2.24)	0.0043 (1.54)	0.0041 (1.47)
$SIZE$	0.0228*** (6.90)	0.0221*** (6.72)	0.0125*** (5.56)	0.0127*** (5.68)
LEV	-0.0411*** (-3.39)	-0.0393*** (-3.26)	-0.0434*** (-4.89)	-0.0420*** (-4.84)
ROA	0.5792*** (20.02)	0.5737*** (19.69)	0.5014*** (20.47)	0.4944*** (20.54)
MTB	-0.0003 (-0.50)	-0.0003 (-0.57)	0.0003 (0.97)	0.0003 (0.93)
$LOSS$	-0.0044 (-1.03)	-0.0047 (-1.11)	0.0020 (0.63)	0.0021 (0.64)
$DUAL$	0.0001 (0.05)	-0.0001 (-0.05)	0.0032 (0.95)	0.0033 (1.01)
$TOPTEN$	0.0005*** (3.87)	0.0006*** (4.01)	0.0002* (1.80)	0.0002* (1.75)
SOE	-0.0087 (-1.48)	-0.0088 (-1.52)	-0.0007 (-0.15)	-0.0011 (-0.24)
Constant	-0.4841*** (-7.28)	-0.4720*** (-7.11)	-0.2732*** (-6.06)	-0.2772*** (-6.17)
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Observations	16,009	16,009	15,998	15,998
R-squared	0.4102	0.4077	0.3209	0.3192

This table shows the results of subsample tests based on management ownership. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

where *DA* is discretionary accruals, including *DA_MJONES* and *DA_INTAN*. *TD* is an indicator variable equals to one if the industry of the firm is involved in the U.S. initiated trade dispute investigations in the current year and zero otherwise. We include firm-level control variables that are known to be related to earnings management, such as firm size (*SIZE*), leverage (*LEV*), return on assets (*ROA*), market-to-book ratio (*MTB*), loss indicator (*LOSS*), CEO duality (*DUAL*), top ten shareholders' ownership (*TOPTEN*) and SOE indicator (*SOE*). Besides, we include firm and year fixed effects to control for heterogeneity across firm and time. Standard errors are clustered by firm.

Table 3 presents the result from estimating model (3). In column (1), where dependent variable is *DA_MJONES*, the coefficient of *TD* is positive and significant at the 1% level; and in column (2), where the dependent variable is *DA_INTAN*, the coefficient of *TD* is positive and significant at the 1% level. These findings are consistent with the prediction in H1 that firms affected by the U.S.-initiated trade dispute investigations engage in more upward earnings management than unaffected firms.

4.2. Cross-sectional analysis of the impact of U.S.-initiated trade dispute investigations on upward earnings management

4.2.1. Market reaction of U.S.-initiated trade dispute investigations

To test H2, we use 5-day market-adjusted excess return (“*CAR*”) around the announcement date when there is a U.S.-initiated trade dispute investigation to measure market reaction and then split the sample into two groups by the median of *CAR* and compare the difference between these two groups. High *CAR* means that firms experience relatively small negative market impact. We drop 184 observations due to missing data of stock return and final sample consists of 32,904 firm-year observations, of which the High *CAR* group has 16,455 observations and the Low *CAR* group has 16,449 observations. Among firms that are affected by trade

Table 7
Cross-sectional analyses: regional investor protection.

	Weak investor protection		Strong investor protection	
	(1) <i>DA_MJONES</i>	(2) <i>DA_INTAN</i>	(3) <i>DA_MJONES</i>	(4) <i>DA_INTAN</i>
<i>TD</i>	0.0058** (2.02)	0.0058** (2.02)	0.0044 (1.45)	0.0042 (1.37)
<i>SIZE</i>	0.0193*** (8.06)	0.0193*** (8.09)	0.0158*** (5.61)	0.0157*** (5.56)
<i>LEV</i>	-0.0588*** (-6.19)	-0.0574*** (-6.06)	-0.0351*** (-3.10)	-0.0339*** (-3.01)
<i>ROA</i>	0.5170*** (19.60)	0.5111*** (19.48)	0.5547*** (15.97)	0.5494*** (15.94)
<i>MTB</i>	0.0006** (2.13)	0.0006** (2.01)	-0.0000 (-0.06)	0.0000 (0.03)
<i>LOSS</i>	0.0063* (1.92)	0.0063* (1.92)	-0.0036 (-0.81)	-0.0039 (-0.88)
<i>DUAL</i>	0.0037 (1.03)	0.0038 (1.04)	0.0023 (0.71)	0.0021 (0.64)
<i>TOPTEN</i>	0.0001 (0.85)	0.0001 (0.90)	0.0005*** (4.33)	0.0005*** (4.28)
<i>SOE</i>	0.0023 (0.48)	0.0016 (0.33)	-0.0079 (-1.16)	-0.0086 (-1.28)
Constant	-0.3968*** (-8.26)	-0.3983*** (-8.27)	-0.3597*** (-6.27)	-0.3559*** (-6.20)
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Observations	13,771	13,771	15,996	15,996
R-squared	0.3304	0.3273	0.3206	0.3193

This table shows the results of subsample tests based on regional investor protection. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

dispute investigations, 2286 observations are in the High *CAR* group and 2422 observations are in the Low *CAR* group. Table 4 shows the results.

In columns (1)–(2), where observations with relatively high *CAR* are estimated, the coefficients of *TD* are not significant. In columns (3)–(4), where observations with low *CAR* are estimated, the coefficients of *TD* are significantly positive at the 5% level. Table 4 suggests that the effect of U.S.-initiated trade dispute investigations on upward earnings management is more pronounced for firms with more negative market reactions, which is consistent with the prediction in H2.

4.2.2. U.S. operating revenue

To test H3, we split the sample into two groups by the median of percentage of U.S. operating revenue (*PCTUSREVENUE*), calculated as operating revenue from the U.S. scaled by total operating revenue and compare the difference between these two groups. The number of observations in High U.S. operating revenue group is 11,651, of which the number of observations in the investigated industries is 2468 and the number in the un-investigated industries is 9183. The number of observations in Low U.S. operating revenue group is 21,437, of which the number of observations in the investigated industries is 2389 and the number in the un-investigated industries is 19,048. The median of *PCTUSREVENUE* is 0, which means that most firms don't export to the U.S. We get U.S. operating revenue data from firms' annual report. In detail, firms may disclose their top five operating revenue by region, we identify operating revenue from the U.S. or overseas as U.S. operating revenue, for reason that only a small part of firms disclose sales from a specific country and the U.S. is the country that imports most from China from 2001 to 2008 among the countries that China exports to. Table 5 presents the results.

Table 8
Cross-sectional analyses: firms' expectation of eventual investigation.

	High expectation		Low expectation	
	(1) <i>DA_MJONES</i>	(2) <i>DA_INTAN</i>	(3) <i>DA_MJONES</i>	(4) <i>DA_INTAN</i>
<i>TD</i>	0.0077*** (2.66)	0.0075*** (2.61)	0.0037 (1.43)	0.0033 (1.31)
<i>SIZE</i>	0.0118*** (4.57)	0.0117*** (4.62)	0.0134*** (5.81)	0.0138*** (6.02)
<i>LEV</i>	-0.0406*** (-3.73)	-0.0368*** (-3.45)	-0.0375*** (-4.18)	-0.0378*** (-4.22)
<i>ROA</i>	0.5032*** (15.51)	0.4992*** (15.50)	0.5939*** (25.99)	0.5850*** (25.99)
<i>MTB</i>	-0.0000 (-0.09)	-0.0001 (-0.13)	0.0005 (1.36)	0.0005 (1.39)
<i>LOSS</i>	-0.0002 (-0.02)	-0.0006 (-0.10)	0.0038 (1.38)	0.0036 (1.31)
<i>DUAL</i>	0.0026 (0.82)	0.0024 (0.78)	0.0037 (1.25)	0.0036 (1.21)
<i>TOPTEN</i>	0.0005*** (4.10)	0.0005*** (4.18)	0.0003*** (2.64)	0.0003** (2.54)
<i>SOE</i>	0.0037 (0.63)	0.0032 (0.54)	-0.0029 (-0.68)	-0.0032 (-0.77)
Constant	-0.2729*** (-5.21)	-0.2724*** (-5.28)	-0.2879*** (-6.40)	-0.2954*** (-6.60)
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Observations	16,542	16,542	16,534	16,534
R-squared	0.4004	0.3987	0.3657	0.3630

This table shows the results of subsample tests based on firms' expectation of eventual investigation. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Columns (1)–(2) are results of High U.S. operating revenue group, the coefficients of *TD* are significantly positive at the 1% level. Columns (3)–(4) are results of Low U.S. operating revenue group, the coefficients of *TD* are not significant. Table 5 reveals that the effect of U.S.-initiated trade dispute investigations on upward earnings management is more pronounced for firms with high level of U.S. operating revenue, which is consistent with the prediction in H3.

4.2.3. Management ownership

Previous studies indicate that executives have incentives to distort their firms' reported financial performance to bolster gains through stock sales (Beneish and Vargus, 2002). The more shares executives owned, the more benefit they can gain through stock sales when stock price are high, therefore, they have more incentive to manage earnings upward to prop up stock price. We split the sample into two groups by the median of percentage of management ownership and compare the difference between these two groups. We drop 1081 observations due to missing data of management ownership and final sample consists of 32,007 firm-year observations, of which the High management ownership group has 16,009 observations and the Low management ownership group has 15,998 observations. Table 6 presents the results.

Table 9
Consequences.

	(1)	(2)
	<i>CAR</i>	<i>CAR</i>
<i>TD*MOREDA_MJONES</i>	0.0042* (1.86)	
<i>TD*MOREDA_INTAN</i>		0.0044* (1.96)
<i>MOREDA_MJONES</i>	−0.0008 (−0.93)	
<i>MOREDA_INTAN</i>		−0.0006 (−0.72)
<i>TD</i>	−0.0024 (−1.27)	−0.0025 (−1.32)
<i>SIZE</i>	−0.0055*** (−5.87)	−0.0055*** (−5.87)
<i>LEV</i>	0.0163*** (4.46)	0.0163*** (4.48)
<i>ROA</i>	0.0816*** (6.98)	0.0813*** (6.96)
<i>MTB</i>	−0.0006*** (−3.80)	−0.0006*** (−3.80)
<i>LOSS</i>	−0.0083*** (−4.26)	−0.0083*** (−4.25)
<i>DUAL</i>	0.0007 (0.52)	0.0007 (0.51)
<i>TOPTEN</i>	0.0001*** (2.87)	0.0001*** (2.86)
<i>SOE</i>	−0.0002 (−0.09)	−0.0002 (−0.09)
Constant	0.1037*** (5.54)	0.1039*** (5.55)
Year FE	YES	YES
Firm FE	YES	YES
Observations	32,877	32,877
R-squared	0.1408	0.1408

This table examines the short-term market reaction of investors to release of affected firm's annual report. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

In columns (1)–(2), where observations with high management ownership are estimated, the coefficients of *TD* are significantly positive at the 5% level. In columns (3)–(4), where observations with low management ownership are estimated, the coefficients of *TD* are not significant. Table 6 reveals that the effect of U.S.-initiated trade dispute investigations on upward earnings management is stronger for firms with high management ownership, which is consistent with the prediction in H4.

4.2.4. Regional investor protection

The existing literature has shown that strong investor protection could limit insiders' ability to acquire private benefits, which reduces their incentives to mask firm performance (Leuz et al., 2003). Therefore, the effect of trade dispute investigations on upward earnings management will be stronger for firms located in the provinces with weak investor protection. Specifically, we use the marketization index provided in Fan et al., (2016) to proxy investor protection, a higher index score suggests better investor protection (Wang et al., 2020). We split the sample into two groups by the median of marketization index and compare the difference between these two groups. We drop 3321 observations due to missing data of marketization index and the final sample consists of 29,767 firm-year observations, of which the observation of weak investor protection group is 15,996 and the observation of strong group is 13,771. Table 7 shows the results.

Columns (1)–(2) are results of firms located in provinces with weak investor protection, and the coefficients of *TD* are significantly positive at the 5% level. Columns (3)–(4) are results of firms located in provinces with strong investor protection, and the coefficients of *TD* are not significant. Table 7 suggests that the effect of trade dispute investigations on upward earnings management are stronger for firms located in the provinces where investor protection is weak, which is consistent with the prediction in H5.

Table 10
Rule out alternative explanation: foreign buyers increasing their order.

<i>VARIABLES</i>	(1) <i>DA_MJONES</i>	(2) <i>DA_INTAN</i>
<i>TD</i>	0.0054*** (2.94)	0.0052*** (2.84)
<i>SIZE</i>	0.0129*** (8.45)	0.0131*** (8.61)
<i>LEV</i>	−0.0363*** (−5.79)	−0.0350*** (−5.61)
<i>ROA</i>	0.5347*** (31.23)	0.5281*** (30.94)
<i>MTB</i>	0.0001 (0.52)	0.0001 (0.49)
<i>LOSS</i>	−0.0003 (−0.13)	−0.0004 (−0.19)
<i>DUAL</i>	0.0024 (1.16)	0.0023 (1.11)
<i>TOPTEN</i>	0.0004*** (4.97)	0.0004*** (4.99)
<i>SOE</i>	−0.0014 (−0.42)	−0.0018 (−0.56)
<i>ACCREC</i>	0.0002** (2.07)	0.0002** (2.14)
Constant	−0.2895*** (−9.45)	−0.2931*** (−9.62)
Year FE	YES	YES
Firm FE	YES	YES
Observations	33,084	33,084
R-squared	0.3264	0.3239

This table shows the results of controlling for accounts receivable. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

4.2.5. Firms’ expectation of the eventual investigation results

To test H6, we use firms’ next year’s performance (“*FIROA*”) to proxy firms’ expectation of eventual investigation results and split the sample into two groups by the median of *FIROA* and compare the test results between these two groups. High *FIROA* means that firms can better counter the potential investigation effect, in other words, firms that have higher expectation of eventual investigation results. We drop 12 observations due to missing data of next year’s ROA and the final sample consists of 33,076 firm-year observations, of which the High expectation group has 16,542 observations and the Low expectation group has 16,534 observations. Table 8 shows the results.

In columns (1)–(2), where observations with high expectation are estimated, the coefficients of *TD* are significantly positive at the 1% level. In columns (3)–(4), where observations with low expectation are estimated, the coefficients of *TD* are not significant. Table 8 reveals that the effect of U.S.-initiated trade dispute investigations on upward earnings management is more pronounced for firms with high expectation about the eventual investigation results, which is consistent with the prediction in H6.

4.3. Consequence analysis

We argue that firms engage in upward earnings management to improve the market valuation to mitigate the negative impact of trade dispute investigations. Then we examine the market reaction when firms release their annual reports. Following Wang et al. (2018), we estimate the following regression:

$$CAR[-3, 1]_{i,t} = \beta_0 + \beta_1 TD_{i,t} \times MOREDA_{i,t} + \beta_2 MOREDA_{i,t} + \beta_3 TD_{i,t} + ControlVariables + YearFE + FirmFE + \varepsilon_{i,t} \tag{4}$$

Table 11
Real effect of U.S.-initiated trade dispute investigations on firms’ performance.

	(1) <i>PCTUSREVENUE</i>
<i>TD</i>	-0.1469* (-1.78)
<i>SIZE</i>	-0.0061 (-0.09)
<i>LEV</i>	0.1889 (0.99)
<i>ROA</i>	-0.3389 (-0.88)
<i>MTB</i>	-0.0001 (-0.02)
<i>LOSS</i>	-0.1097 (-1.61)
<i>DUAL</i>	-0.0031 (-0.03)
<i>TOPTEN</i>	0.0042 (1.39)
<i>SOE</i>	-0.1434* (-1.70)
Constant	0.3103 (0.22)
Year FE	YES
Firm FE	YES
Observations	33,088
R-squared	0.5845

This table shows the result of real effect of trade dispute investigations of firms’ performance. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

The dependent variable of model (4), $CAR[-3,1]_{i,t}$, measures short-term market reaction when firms release their annual reports, calculated as the five-day cumulative abnormal stock return during the $[t - 3, t + 1]$ announcement window. $MOREDA_{i,t}$ is a dummy variable equals to one if the value of earnings management is higher than the median for that year, and zero otherwise. We drop 211 observations due to missing data of stock return and the final sample for the regression consists of 32,877 firm-year observations. Table 9 presents the results.

In Table 9, the coefficients on TD are negative, suggesting that trade dispute investigations reduce the market value, and we find that the coefficients on $TD * MOREDA$ are significantly positive in the analyses of $MOREDA_MJONES$ and $MOREDA_INTAN$ ($t = 1.86, 1.96$, respectively), indicating that upward earnings management can alleviate the negative effect of investigation. The coefficients of $MOREDA_MJONES$ and $MOREDA_INTAN$ are not significant, suggesting that investors cannot distinguish upward earnings management.

5. Additional analyses

5.1. Rule out alternative explanation

It is not easy to accurately estimate the accrual process. The increased discretionary accruals may be caused by foreign buyers increasing their order to avoid the potential tariff. To address this issue, we include the level of accounts receivable ($ACCREC$) as a control variable into the main regression model and Table 10 shows the results.

In Table 10, the coefficients of TD are still significantly positive when controlling the potential influence of accounts receivable, indicating that our results are not likely to be driven by the foreign buyers increasing their order.

Table 12
Robust test – DID test.

	(1) <i>DA_MJONES</i>	(2) <i>DA_INTAN</i>
<i>TDPOST</i>	0.0056** (2.16)	0.0053** (2.05)
<i>SIZE</i>	0.0106*** (6.21)	0.0109*** (6.42)
<i>LEV</i>	-0.0003* (-1.95)	-0.0003** (-1.97)
<i>ROA</i>	-0.0000*** (-3.84)	-0.0000*** (-3.78)
<i>MTB</i>	0.0000 (1.40)	0.0000 (1.45)
<i>LOSS</i>	-0.0769*** (-27.53)	-0.0761*** (-27.17)
<i>DUAL</i>	0.0027 (0.93)	0.0025 (0.85)
<i>TOPTEN</i>	0.0007*** (7.00)	0.0007*** (6.92)
<i>SOE</i>	-0.0124*** (-3.43)	-0.0127*** (-3.51)
Constant	-0.2439*** (-6.96)	-0.2495*** (-7.16)
Year FE	YES	YES
Firm FE	YES	YES
Observations	23,757	23,757
R-squared	0.2656	0.2646

This table reports the results of DID test. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

5.2. Real effect of trade dispute investigations on firms' performance

In this section we test the real effect of trade dispute investigations on firms' performance. Considering that ROA or net income may be influenced by discretionary accruals, they may not reflect real effect well, and the direct impact of investigation is export, we use percentage of U.S. operating revenue (*PCTUSREVENUE*) to proxy real effect and results are shown in Table 11.

The coefficient of *TD* is significantly negative, indicating that the investigation hurts firms' export to the U.S.

5.3. Robust tests

5.3.1. Difference-in-Difference test (DID)

Although we control for firm fixed effect, which can alleviate endogenous problem of omitted variables to some extent, there still may be some unobserved time-variant characteristics can affect both U.S.-initiated trade dispute investigations and upward earnings management. To address this issue, refer to Liu et al., (2018), we keep the observations during the year of U.S.-initiated trade dispute investigations and one year before the U.S.-initiated trade dispute investigations, then estimate the following Difference-in-Difference model (Bertrand and Mullainathan, 2003; Huang et al., 2016):

$$DA_{i,t} = \beta_0 + \beta_1 TDPOST_{i,t} + ControlVariables + YearFE + FirmFE + \varepsilon_{i,t} \quad (5)$$

where *TDPOST* is a dummy variable that indicates whether firms have been involved in U.S.-initiated trade dispute investigations and equals 1 if firm is in the industry that involved in U.S.-initiated trade dispute

Table 13
Robust test – Placebo test.

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>DA_MJONES</i>	<i>DA_INTAN</i>	<i>DA_MJONES</i>	<i>DA_INTAN</i>	<i>DA_MJONES</i>	<i>DA_INTAN</i>
<i>PSEUDOTD1</i>	-0.0015 (-0.85)	-0.0013 (-0.71)				
<i>PSUEDOTD2</i>			-0.0018 (-0.97)	-0.0016 (-0.86)		
<i>PSUEDOTD3</i>					-0.0015 (-0.80)	-0.0016 (-0.88)
<i>SIZE</i>	0.0131*** (8.47)	0.0133*** (8.63)	0.0131*** (8.47)	0.0133*** (8.63)	0.0131*** (8.47)	0.0133*** (8.64)
<i>LEV</i>	-0.0368*** (-5.80)	-0.0355*** (-5.63)	-0.0368*** (-5.80)	-0.0355*** (-5.63)	-0.0368*** (-5.80)	-0.0355*** (-5.62)
<i>ROA</i>	0.5339*** (31.27)	0.5273*** (30.98)	0.5339*** (31.28)	0.5273*** (30.99)	0.5339*** (31.27)	0.5273*** (30.98)
<i>MTB</i>	0.0002 (0.68)	0.0002 (0.64)	0.0002 (0.68)	0.0002 (0.64)	0.0002 (0.67)	0.0002 (0.63)
<i>LOSS</i>	-0.0003 (-0.11)	-0.0004 (-0.16)	-0.0002 (-0.10)	-0.0004 (-0.16)	-0.0003 (-0.11)	-0.0004 (-0.17)
<i>DUAL</i>	0.0023 (1.13)	0.0022 (1.08)	0.0023 (1.13)	0.0022 (1.08)	0.0023 (1.13)	0.0022 (1.08)
<i>TOPTEN</i>	0.0004*** (4.91)	0.0004*** (4.94)	0.0004*** (4.92)	0.0004*** (4.94)	0.0004*** (4.92)	0.0004*** (4.95)
<i>SOE</i>	-0.0014 (-0.45)	-0.0019 (-0.58)	-0.0014 (-0.44)	-0.0019 (-0.58)	-0.0014 (-0.44)	-0.0019 (-0.58)
Constant	-0.2917*** (-9.46)	-0.2953*** (-9.62)	-0.2916*** (-9.45)	-0.2952*** (-9.62)	-0.2918*** (-9.46)	-0.2954*** (-9.62)
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
Observations	33,088	33,088	33,088	33,088	33,088	33,088
R-squared	0.3258	0.3233	0.3258	0.3233	0.3258	0.3233

This table shows the results of placebo test. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

investigations at the current year, and 0 otherwise. Treatment sample are firms that in the industry involved in U.S.-initiated trade dispute investigations, control sample are firms in the industry that has never been investigated. If firms encounter U.S.-initiated trade dispute investigations for two consecutive years or more, we use the first one. Table 12 presents the results.

In columns (1)–(2), the coefficients of *TDPOST* are significantly positive at the 5% level, which indicate that our findings in main test are robust when considering the endogenous problem of unobserved time-variant characteristics.

5.3.2. Placebo test

To rule out the explanation of some other random factors rather than U.S.-initiated trade dispute investigations, we conduct a placebo test. Specifically, we move the U.S.-initiated trade dispute investigations event date forward one year, two years and three years, defined as *PSEUDOTD1*, *PSEUDOTD2* and *PSEUDOTD3* respectively. Then we re-estimate the regressions in Table 3. The results of placebo test are showed in Table 13.

Table 13 shows that the coefficients of *PSEUDOTD1*, *PSEUDOTD2* and *PSEUDOTD3* are not significant at the 10% level, which indicates that it is U.S.-initiated trade dispute investigations rather than some other random factor that drives upward earnings management.

5.3.3. Matching sample

To further address the issue of omitted variables, we use the matching sample to re-estimate the regressions in main test. Specifically, we match each treat firm (*TD* = 1) with one control firm (*TD* = 0) by size and year. Table 14 reveals the results.

The coefficients of *TD* in Table 14 are still significantly positive, our results are robust to matching sample.

Table 14
Robust test - Matching sample.

	(1) <i>DA_MJONES</i>	(2) <i>DA_INTAN</i>
<i>TD</i>	0.0059** (2.17)	0.0056** (2.07)
<i>SIZE</i>	0.0104*** (4.24)	0.0106*** (4.34)
<i>LEV</i>	-0.0175 (-1.60)	-0.0171 (-1.56)
<i>ROA</i>	0.5552*** (19.68)	0.5488*** (19.43)
<i>MTB</i>	0.0003 (0.65)	0.0003 (0.67)
<i>LOSS</i>	-0.0029 (-0.68)	-0.0030 (-0.68)
<i>DUAL</i>	0.0042 (1.11)	0.0038 (1.02)
<i>TOPTEN</i>	0.0004*** (3.14)	0.0004*** (3.26)
<i>SOE</i>	-0.0006 (-0.12)	-0.0008 (-0.14)
Constant	-0.2518*** (-5.03)	-0.2551*** (-5.12)
Year FE	YES	YES
Firm FE	YES	YES
Observations	9714	9714
R-squared	0.2034	0.2013

This table shows the results of using matching sample by firm size. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Table 15
Robust test – subsample in 2007–2018.

	(1) <i>DA_MJONES</i>	(2) <i>DA_INTAN</i>
<i>TD</i>	0.0078*** (3.55)	0.0075*** (3.45)
<i>SIZE</i>	0.0156*** (7.71)	0.0156*** (7.73)
<i>LEV</i>	-0.0432*** (-5.31)	-0.0421*** (-5.19)
<i>ROA</i>	0.5460*** (26.17)	0.5399*** (25.92)
<i>MTB</i>	0.0003 (1.11)	0.0003 (1.10)
<i>LOSS</i>	-0.0004 (-0.16)	-0.0006 (-0.22)
<i>DUAL</i>	0.0043* (1.87)	0.0042* (1.84)
<i>TOPTEN</i>	0.0005*** (5.64)	0.0005*** (5.64)
<i>SOE</i>	-0.0061 (-1.42)	-0.0063 (-1.49)
Constant	-0.3777*** (-8.60)	-0.3765*** (-8.61)
Year FE	YES	YES
Firm FE	YES	YES
Observations	26,432	26,432
R-squared	0.3578	0.3554

This table shows the results of using sub-sample after the changes in accounting standards. T-statistics based on robust standard errors clustered at firm levels are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

5.3.4. Sub-sample after the changes in accounting standards

Considering that the changes of accounting standards in 2007 may affect the calculation of discretionary accruals, we use the subsample of 2007–2018 to re-estimate the main test. Table 15 shows that our findings are robust to controlling for influence of changes in accounting standards.

6. Conclusion

In this paper, we study the impact of U.S.-initiated trade dispute investigations on affected Chinese firms' earnings management strategy. We find that affected firms will engage in more upward earnings management. The relation between U.S.-initiated trade dispute investigations and upward earnings management is more pronounced in firms with more negative market reaction, firms whose U.S. operating revenue and management ownership is high, firms in provinces with weak investor protection, and firms that perform well one year after initiation of the investigations. Further, firms would improve their market valuation through upward earnings management. Finally, our findings are robust to a series of test such as DiD and placebo test.

Our findings indicate that firms may manipulate earnings upward to offset or mitigate the negative impact when they suffer negative impact during the U.S.-initiated trade dispute investigations. As for implications of this paper, we suggest that regulators should strengthen the supervision of firms' disclosure behavior under the trade dispute environment and we also suggest investors carefully analyzing earnings of firms involved in U.S.-initiated trade dispute investigations.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

Kemin Wang acknowledges financial support from National Natural Science Foundation of China (NSFC Project Numbers 71972049).

Appendix A. Variable definitions

Variables	Definition
<i>DA_MJONES</i>	Value of discretionary accruals estimated following Dechow et al. (1995)
<i>DA_INTAN</i>	Value of discretionary accruals estimated following Lu (1999)
<i>TD</i>	Indicator variable of whether firms are affected by the investigations (<i>TD</i>), which equals 1 when firm's industry is related to the U.S.-initiated trade dispute investigations in the current year, and 0 otherwise
<i>SIZE</i>	Natural logarithm of total assets
<i>LEV</i>	Total liabilities deflated by total assets
<i>ROA</i>	Net income deflated by total assets
<i>MTB</i>	Market value of equity divided by the book value of equity at the end of the year
<i>LOSS</i>	Indicator variable equals to one if the net income is negative and zero otherwise
<i>DUAL</i>	Indicator variable equals to one if CEO is duality and zero otherwise
<i>TOPTEN</i>	Sum of top ten shareholders' ownership
<i>SOE</i>	Indicator variable equals to one if firm is state owned enterprise and zero otherwise

References

- Aharony, J., Lin, C., Loeb, M.P., 1993. Initial public offerings, accounting choices, and earnings management. *Contemporary Account. Res.* 10 (1), 61–81.
- Ball, R., Brown, P., 1968. An empirical evaluation of accounting income numbers. *J. Account. Res.*, 159–178
- Beneish, M.D., Vargus, M.E., 2002. Insider trading, earnings quality, and accrual mispricing. *Account. Rev.* 77 (4), 755–791.
- Bergstresser, D., Philippon, T., 2006. CEO incentives and earnings management. *J. Financ. Econ.* 80 (3), 511–529.
- Bertrand, M., Mullainathan, S., 2003. Enjoying the quiet life? Corporate governance and managerial preferences. *J. Political Econ.* 111 (5), 1043–1075.
- Boynon, C.E., Dobbins, P.S., Plesko, G.A., 1992. Earnings management and the corporate alternative minimum tax. *J. Account. Res.*, 131–153
- Burgstahler, D., Dichev, I., 1997. Earnings management to avoid earnings decreases and losses. *J. Account. Econ.* 24 (1), 99–126.
- Burns, N., Kedia, S., 2006. The impact of performance-based compensation on misreporting. *J. Financ. Econ.* 79 (1), 35–67.
- Chen, Y., Chen, D., Wang, W., Zheng, D., 2018. Political uncertainty and firms' information environment: evidence from China. *J. Account. Public Policy* 37 (1), 39–64.
- Cheng, Y., Park, J., Pierce, S., Zhang, T., 2018. Big Bath Accounting Following Natural Disasters. Available at SSRN 3305478.
- Crowley, M., Meng, N., Song, H., 2018. Tariff scares: trade policy uncertainty and foreign market entry by Chinese firms. *J. Int. Econ.* 114, 96–115.
- David, H., Dorn, D., Hanson, G.H., 2013. The China syndrome: local labor market effects of import competition in the United States. *Am. Econ. Rev.* 103 (6), 2121–2168.
- DeAngelo, L.E., 1988. Managerial competition, information costs, and corporate governance: the use of accounting performance measures in proxy contests. *J. Account. Econ.* 10 (1), 3–36.
- Dechow, P.M., Sloan, R.G., Sweeney, A.P., 1995. Detecting earnings management. *Account. Rev.*, 193–225
- DeFond, M.L., Jiambalvo, J., 1994. Debt covenant violation and manipulation of accruals. *J. Account. Econ.* 17 (1–2), 145–176.
- Dhaliwal, D.S., Gleason, C.A., Mills, L.F., 2004. Last-chance earnings management: using the tax expense to meet analysts' forecasts. *Contemporary Account. Res.* 21 (2), 431–459.
- Efendi, J., Srivastava, A., Swanson, E.P., 2007. Why do corporate managers misstate financial statements? The role of option compensation and other factors. *J. Financ. Econ.* 85 (3), 667–708.
- Erickson, M., Wang, S., 1999. Earnings management by acquiring firms in stock for stock mergers. *J. Account. Econ.* 27 (2), 149–176.
- Fan, G., Wang, X., Yu, J., 2016. Marketization Index of China's Provinces: Neri Report 2016 (in Chinese). Social Science Academic Press, China.
- Healy, P.M., 1985. The effect of bonus schemes on accounting decisions. *J. Account. Econ.* 7 (1–3), 85–107.

- Healy, P.M., Wahlen, J.M., 1999. A review of the earnings management literature and its implications for standard setting. *Account. Horizons* 13 (4), 365–383.
- Huang, Y., Jennings, R., Yu, Y., 2016. Product market competition and managerial disclosure of earnings forecasts: evidence from import tariff rate reductions. *Account. Rev.* 92 (3), 185–207.
- Kirschenheiter, M., Melumad, N.D., 2002. Can “big bath” and earnings smoothing co-exist as equilibrium financial reporting strategies? *J. Account. Res.* 40 (3), 761–796.
- Klevak, J., Livnat, J., Pei, D., Suslava, K., 2019. “Fake” Tariff news: is corporate America concerned with trade wars? *J. Invest.* 19.
- Kothari, S.P., Leone, A.J., Wasley, C.E., 2005. Performance matched discretionary accrual measures. *J. Account. Econ.* 39 (1), 163–197.
- Leuz, C., Nanda, D., Wysocki, P.D., 2003. Earnings management and investor protection: an international comparison. *J. Financ. Econ.* 69 (3), 505–527.
- Li, Y., Bao, S., Gao, R., Kong, X., 2007. The management compensations, supervision of the board of directors and earnings management of listed companies in China. *Nankai Bus. Rev.* 10 (6), 55–61 (in Chinese).
- Liu, Q., Ma, H., 2016. Trade policy uncertainty and innovation: firm level evidence from China’s WTO accession. *J. Int. Econ.* 103387.
- Liu, S., Weng, R., Yang, D., 2018. Natural disaster, fiscal pressure, and tax avoidance: an empirical study based on typhoon disaster. *Account. Res.* 03, 34–41 (in Chinese).
- Lu, J., 1999. Empirical research on earnings management of China’s listed companies with loss. *Account. Res.* 9, 25–35 (in Chinese).
- Lu, Z., Wei, T., 2006. Underperformance of rights issues: the consequence of earnings management or the deterioration of real performance. *Account. Res.* 8, 52–59 (in Chinese).
- Magnan, M., Nadeau, C., Cormier, D., 1999. Earnings management during antidumping investigations: analysis and implications. *Can. J. Admin. Sci./Revue Canadienne des Sciences de l’Administration* 16 (2), 149–162.
- Schipper, K., 1989. Earnings management. *Account. Horizons* 3 (4), 91.
- Sweeney, A.P., 1994. Debt-covenant violations and managers’ accounting responses. *J. Account. Econ.* 17 (3), 281–308.
- Teoh, S.H., Welch, I., Wong, T.J., 1998a. Earnings management and the long-run market performance of initial public offerings. *J. Finance* 53 (6), 1935–1974.
- Teoh, S.H., Welch, I., Wong, T.J., 1998b. Earnings management and the underperformance of seasoned equity offerings. *J. Financ. Econ.* 1, 63–99.
- Wang, H., Luo, T., Tian, G.G., Yan, H., 2020. How does bank ownership affect firm investment? Evidence from China. *J. Bank. Finance* 113, 105741.
- Wang, K., Liu, B., 2012. SEO performance threshold and earnings management. *Manage. World* 8, 30–42 (in Chinese).
- Wang, K., Wang, H., Li, D., Dai, X., 2018. Complexity of annual report and management self-interest: empirical evidence from chinese listed firms. *Manage. World* 34 (12), 120–132 (in Chinese).
- Wang, K., Wang, Z., 2007. Executive control rights, compensation and earnings management: based on empirical research on Chinese listed companies. *Manage. World* 2007 (07), 111–119 (in Chinese).
- Wang, Y., Wu, L., Bai, Y., 2005. Frequency and magnitude of earnings management of listed companies in China. *Econ. Res. J.* 12, 102–112 (in Chinese).
- Watts, R.L., Zimmerman, J.L., 1978. Towards a positive theory of the determination of accounting standards. *Account. Rev.*, 112–134
- Wu, L., Bo, X., Wang, Y., 2007. The extent of earnings management to avoid loss: comparisons between listed and non-listed firms. *Account. Res.* 2, 44–51.
- Wu, Q., Ma, Y., Yao, Z., 2015. Analysis on determinants of effects of U.S. antidumping investigation on Chinese listed companies. *J. Int. Trade* 3, 98–107.