ARTICLE IN PRESS

China Journal of Accounting Research xxx (2018) xxx–xxx

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China Journal of Accounting Research

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

The puzzling association between inventory and auditor pricing in China ☆

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ARTICLE INFO

Article history:
Received 7 October 2017
Accepted 21 July 2018
Available online xxxx

Keywords:
Inventory
Audit fees
Inherent risk
China

ABSTRACT

The theory of audit pricing suggests that audit fees are positively associated with areas of higher inherent risk. Inventory is commonly cited as one such area, and many Western studies have reported a positive association between inventory and audit fees. However, most Chinese studies have reported a significant *negative* association. This study finds that this puzzling association is attributable to Chinese auditors charging a significant discount on the opening balance of inventory, whereas their U.S. counterparts charge a significant premium. Meanwhile, we show that opening-balance inventory is associated with higher inherent risk both in China and the U.S. On the other hand, both Chinese and U.S. auditors charge a significant discount on the net increase in inventory as of the current year end, and we show that this is associated with lower inherent risk. Therefore, Chinese auditors appear to underreact to the inherent risk associated with opening-balance inventory, which helps explain the puzzling negative association between inventory and audit fees in China.

1. Introduction

Inventory is a major critical component of current assets, and has long been assumed to be an important determinant in audit pricing due to its complexity and riskiness (Simunic, 1980). Inventory can be a risky

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☆ We are grateful to an anonymous reviewer, Charles Hsu (the discussant at the 11th Symposium for China Journal of Accounting Research (November 2017), Oliver Zhen Li, Donghui Wu, Lijun Xia, Deren Xie, George Yong Yang and the participants at the 8th China Academic Accounting Consortium (October 2017) for their constructive comments.

https://doi.org/10.1016/j.cjar.2018.07.005
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Please cite this article in press as: Wu, X., et al. The puzzling association between inventory and auditor pricing in China☆. China Journal of Accounting Research (2018), https://doi.org/10.1016/j.cjar.2018.07.005

balance sheet component because specific auditing procedures (e.g., observation) are recommended, and the valuation of inventory is a complex task, requiring a forecast of future events (Simunic, 1980, p. 173). Therefore, inventory divided by total assets, also known as inventory intensity, is one of the most commonly used metrics in regression models for audit pricing studies (Hay, Knechel, & Wong, 2006).

According to the meta-analysis of audit pricing research of Hay et al. (2006), 46% of their cited studies report a significant positive association between inventory and audit fees, and the overall Stouffer test on inventory is significantly positive (Hay et al., 2006, p. 165), with one exception that finds a negative association. However, studies that use similar empirical models but Chinese data reveal a different pattern. These studies generally document a significant negative association between inventory and audit fees (e.g., Cahan and Sun, 2015; Chen, Su, & Wu, 2007; Habib, Jiang, & Zhou, 2015; Huang, Chang, & Chiou, 2016; Liu and Subramaniam, 2013; Wang, Wong, & Xia, 2008).

The contrast between the pattern found in China and that documented in conventional audit pricing literature is puzzling. Addressing this puzzle is important because the audit pricing model has been widely used to explain audit pricing practices in China. By reconciling Chinese results with major empirical regularities documented in the literature, researchers may validate the theories underlying the empirical model, thus legitimizing the use of the Western-market-based empirical model in China. Otherwise, researchers may find that conventional theories cannot explain the findings in China, and thus have to identify the applicable theories for the Chinese setting.

To date, no studies have addressed the above puzzle through formal analyses of how the negative association between inventory and audit fees is shaped in China. Many Chinese studies have left this phenomenon completely unexplained. Some researchers have argued that inventory in China could be a poor proxy for audit risk or client complexity. Some have conjectured that inventory may reflect a lower level of audit risk. Alternatively, some have argued that inventory could capture a higher level of audit risk, but that Chinese auditors fail to pay sufficient attention to it.

To fill this gap in the literature, our study examines why inventory is negatively associated with audit fees in China. We decompose ending inventory into opening balance and the current-period net change. Arguably, opening inventory could be more obsolete, whereas net change in inventory is more likely to reflect private management information about opportunities in the product market. Using the U.S. auditor pricing of inventory as the benchmark, we find that U.S. auditors charge a significant premium on opening inventory and a significant discount on the net increase in ending inventory. However, Chinese auditors charge a significant discount both on opening inventory and the net increase in inventory.

We then show that in both China and the U.S., the opening balance of inventory is significantly and positively associated with inherent risk. Specifically, a larger magnitude of the opening inventory (or its components, such as raw materials and finished goods) is associated with lower sales growth for the next period, with a larger magnitude of year-end inventory write-downs.[1] We also show that in both China and the U.S., the net increase in the ending inventory is significantly and negatively associated with inherent risk. Specifically, a larger increase in the ending inventory is associated with higher revenue growth for the next period, and associated with a smaller magnitude of year-end inventory impairment.

Finally, we show that Chinese auditors spend significantly fewer audit hours when there is a larger increase in the ending inventory, but they do not exert more audit effort when there is a higher inventory opening balance.

Overall, we conclude that Chinese auditors fail to respond to the higher inherent risk in the opening balance of inventory, either by charging higher audit fees or by exerting more audit effort. However, Chinese auditors respond to the lower inherent risk in the net increase in the ending inventory by charging a fee discount and by exerting less audit effort.

First, our study is one of the first to formally address the apparent puzzle of the negative inventory–audit fee association in China. We show that various inventory components still reflect inherent risk in Chinese listed companies. However, Chinese auditors do not respond to this inherent risk in a consistent manner. Our findings are relevant to researchers who use empirical audit pricing models with Chinese data, and to reviewers and editors who find the negative association documented in Chinese submissions puzzling.

[1] The inventory write-down evidence only pertains to China, as we do not have access to inventory impairment data from the U.S.

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Second, our study shows that in both a developed market, such as the U.S., and a developing market, such as China, opening inventory and the net change in ending inventory exhibit distinct risk profiles. This helps explain why the ending inventory variable shows a less consistent pattern than other inherent risk proxies (e.g., receivables, or combined receivables and inventory) in the audit pricing literature (Hay et al., 2006). By separating the opening balance from the net change in ending inventory, our findings potentially offer a refined approach to including inventory as a major proxy for inherent risk for audit pricing models (Simunic, 1980).

Third, our study hints at the possibility that audit pricing practices may not always be responsive to a client's inherent risk, particularly in emerging markets. This also likely explains why more than half of the cited studies in Hay et al. (2006) fail to report a significant positive association between inventory and audit fees, given the diversity of the audit markets examined. Therefore, our study has implications for future meta-analysis of audit pricing models. Specifically, researchers may wish to differentiate between evidence from developed markets and that from emerging markets to allow for different practices in audit pricing.

The remainder of this paper is organized as follows. Section 2 reviews the Chinese literature and develops our research questions. Section 3 replicates inventory–audit fee associations in China versus the U.S. and then reports the results of regressing audit fees on various inventory components. Section 4 provides evidence concerning risk implications among various inventory components. Section 5 examines the association between inventory components and audit hours. Section 6 concludes the paper.

2. Development of research questions

2.1. Prior Chinese literature

Although a positive association between inventory and audit fees has been well documented in jurisdictions outside China (Hay et al., 2006; Table 1), there has been no systematic review of Chinese evidence. Therefore, this section reviews prior Chinese studies, where the association between inventory and audit fees is examined and reported.

Our review covers studies published in both international and Chinese peer-reviewed journals. For international studies, we search within the publication list edited by Wu (2016, Chapter 18, Appendix), which identifies all Chinese accounting studies published in over 50 international journals up to March 2016. In addition, we search two English-language Chinese journals: *China Journal of Accounting Research* (CJAR) and *China Accounting and Finance Review* (CAFR). For Chinese-language studies, we search three major accounting journals: *Accounting Research* (*Kuaijiyanjiu* in Chinese), *Auditing Research* (*Shenjiyanjiu* in Chinese) and *China Accounting Review* (*Zhongguokuaijipinglun* in Chinese). We identify 58 archival studies on audit pricing up to March 2016. Of these studies, 23 examine and report the association between inventory and audit fees.

Panel A of Table 1 lists the distribution of the 23 relevant studies by journal: 6 studies were published in international journals, and 17 were published in Chinese journals. Panel B lists the distribution of the 23 studies by publication year. The earliest Chinese study that reports an inventory–audit fee association appears in 2004.

By reading the research design sections of the studies, we categorize the underlying rationale of including the inventory variable in each study's empirical audit pricing model. Panel C shows that 17 (73.9%) of the 23 studies state that they include the inventory variable to control for audit risk and/or audit complexity, which follows conventional audit pricing theory (Simunic, 1980).

Panel D shows that only 1 of the 23 papers reports a significant positive association between inventory and audit fees. However, 20 (86.9%) of the studies document a significant negative association. This pattern clearly contradicts evidence from outside China (Hay et al., 2006).

We are interested in how the researchers in the 20 studies that document a significant negative inventory–audit fee association interpret such an apparently puzzling finding. Panel E shows that 11 (55.0%) of the 20 studies leave this unexpected result completely unexplained. Among the nine studies that offer any interpretation, two argue that inventory may not be a sound measure of audit risk or client complexity (Liu and Subramaniam, 2013; Wang et al., 2008), while another two conjecture that inventory could be associated with lower audit risk in China (e.g., Wu, 2012). Five studies argue that greater inventory intensity may still be a

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Table 1
Summary of Chinese evidence on inventory–audit fee association.

	No. of publications
Panel A: Distribution by journal	
International journals	
The Accounting Review (TAR)	1
Journal of Accounting and Economics (JAE)	1
Journal of Accounting and Public Policy (JAPP)	1
Journal of Accounting, Auditing & Finance (JAAF)	1
The International Journal of Accounting (TIJA)	1
Journal of International Accounting Research (JIAR)	1
Subtotal	6
Chinese journals	
China Journal of Accounting Research (CJAR)	2
China Accounting and Finance Review (CAFR)	3
Accounting Research (*Kuaijiyanjiu*)	1
Auditing Research (*Shenjiyanjiu*)	10
China Accounting Review (*Zhongguokuaijipinglun*)	1
Subtotal	17
Total	23
Panel B: Distribution by publication year	
2004	1
2005	1
2006	1
2007	2
2008	1
2011	2
2012	3
2013	4
2014	2
2015	5
2016	1
Total	23
Panel C: Distribution by underlying theory cited	
Audit risk	12
Audit complexity	8
Not mentioned	6
Total	23[a]
Panel D: Distribution by significance and sign of the coefficient on inventory	
Significantly positive	1
Not significantly different from zero	2
Significantly negative	20
Total	23
Panel E: Distribution by interpretation of negative inventory–audit fee association	
Unexplained	11
Inventory not a sound measure of audit risk or complexity	2
Inventory associated with lower audit risk	2
Inventory associated with higher risk, but auditors fail to pay adequate attention	5
Total	20

[a] The breakdown does not add up to 23 because 3 papers control for the inventory variable for the consideration of both audit risk and audit complexity.

proxy for higher audit risk, but auditors may fail to pay adequate attention to it. None of these conjectures have been formally tested.

Overall, Table 1 shows that it is necessary to resolve the apparent puzzle about the inventory–audit fee association in China, which has been left unsolved for over a decade.

2.2. Heterogeneity of inventory components

Audit pricing studies often regress audit fees on *total* inventory intensity, which assumes that various components of inventory share homogeneous audit risk and/or complexity. However, inventory is an aggregated account in the balance sheet, consisting of the opening balance and the net change in the ending inventory from the opening balance. Inventory also consists of various items, including raw materials, work-in-process (WIP) and finished goods. As inventory components differ in terms of the speed of turnover, production stage and purpose, they may have different implications for audit procedures and audit risk.

As inventory is a current asset, the turnover cycle is usually under a year. In our sample of Chinese (U.S.) listed companies, the median of inventory turnover is 71 (139) days. Therefore, the opening balance of inventory likely contains more obsolete items than a current-period change in inventory, which hints at greater inherent risk and greater scrutiny from auditors.

Moreover, the literature suggests that the change in inventory is likely to reflect management's private information about opportunities in the market. For example, using data from 168 U.S. manufacturing public companies, Bernard and Noel (1991) find that changes in WIP inventory tend to be a positive leading indicator of sales. Bernard and Noel (1991) posit that a knowledgeable manager would choose to expand production by adding more resources to the manufacturing process when she expects an increase in future demand and sales. She can also slow down or even choose to pause production if she forecasts a decline in demand. Therefore, the net change in ending inventory likely reflects responsive production management and lower inherent risk for the company, requiring less scrutiny from auditors.

2.3. Research questions

The key debate underlying various conjectures on the puzzling negative inventory–audit fee association surrounds whether inventory in China is associated with a higher or lower level of inherent risk for the client or has no implications for audit risk at all. Further, given the heterogeneity of different inventory components as discussed in Section 2.2, it could be worthwhile to investigate how opening inventory and the net change in ending inventory, instead of aggregate inventory intensity, is associated with inherent risk. Therefore, our first research question is as follows:

RQ1. What is the relationship between each inventory component and client's inherent risk?

Studies that document a negative association between inventory and audit fee also conjecture that the assessed low audit risk of inventory could be associated with a lower level of audit effort (Wu, 2012). By obtaining proprietary audit hours data from the Ministry of Finance (MOF), we are able to examine the inventory–audit hour association, which helps us better understand the association between inventory and audit fees. Our second research question is as follows:

RQ2. What is the association between each inventory component and audit labor effort?

A joint analysis of RQ1 and RQ2 will be useful to distinguish between the various conjectures raised in prior studies (shown in Panel E of Table 1). For example, if we find that inventory is associated with a higher level of inherent risk (RQ1) but not with more audit effort (RQ2), the conjecture of auditor failure seems to be supported. However, if we find that inventory is associated with a lower level of future client risk (RQ1) and less audit effort (RQ2), the conjecture of inventory being associated with low audit risk is more likely to be valid.

3. Association between inventory and audit fees: replication and extension

3.1. Replication

We first replicate prior studies on audit fees to corroborate the contrasting patterns concerning the inventory–audit fee association in China versus in Western audit markets, and to form a basis for further decomposing analysis.

We regress audit fees ($LNFEE_t$), measured as the natural log of audit fees of annual audit of financial statements, on total inventory intensity (INV_t), measured as year-end total inventory scaled by opening total assets.[2] We estimate Eq. (1) using data from China and the U.S. (as the benchmark based on a major developed market), separately, for the same sample period.

$$LNFEE_t = \alpha_0 + \alpha_1 INV_t + Controls \tag{1}$$

Following Francis, Reichelt, and Wang (2005) and Su and Wu (2017), we incorporate a set of control variables including firm characteristics—firm size ($LNTA_t$), current assets (less inventory) to total assets ($CATA_t$), quick ratio ($QUICK_t$), financial leverage (LEV_t), profitability (ROA_t), prior-year audit opinion (OP_{t-1}), loss indicator ($LOSS_t$), state ownership (SOE_t), number of subsidiaries (SQ$SUBS_t$), inventory impairment ($IMPAIR_t$), foreign business indicator ($FOREIGN_t$) and 31 December fiscal year end indicator ($BUSY_t$)—and auditor-related variables, such as Big 4 indicator ($BIG4_t$), large local audit firms indicator ($BIGLOCAL_t$), industry specialist indicator ($EXPERT_t$) and auditor switch indicator ($SWITCH_t$). Industry- and year-fixed effects are also controlled for. See the Appendix for detailed variable definitions.

We aim to maintain a common set of control variables when separately estimating Eq. (1) for firms in China versus the U.S. However, given the institutional differences between China and the U.S., some control variables are included either for the Chinese sample or the U.S. sample. For example, all Chinese companies share the same fiscal year end. Thus, we do not include the $BUSY_t$ variable for Chinese firms. Although it is common to include SOE_t and $BIGLOCAL_t$ in Chinese studies, these variables are rarely used in U.S. studies because non-SOE companies and Big 4 auditors dominate the U.S. market. Thus, these two variables are not included for the U.S. sample. Further, due to the data availability issue, we do not include $FOREIGN_t$ for the Chinese sample, and we do not include SQ$SUBS_t$ and $IMPAIR_t$ for the U.S. sample, as these variables are either not readily available in major Chinese financial databases or in the Compustat database.

Our sample period spans 2004 to 2014. For Chinese firms, we retrieve inventory data from the RESSET database and all other financial data from the CSMAR database. For U.S. firms, we extract all information from Compustat. After excluding firm-year observations for financial institutions and utilities, as well as those with missing values for audit pricing model variables, we obtain a sample of 14,485 (37,197) Chinese (U.S.) firm-year observations. We winsorize continuous variables at the 1st and 99th percentiles.

Table 2 reports the descriptive statistics of the model variables. It shows that the mean (median) inventory intensity (INV_t) for Chinese sample firms is 0.20 (0.15), whereas the mean (median) for the U.S. sample is 0.10 (0.04). This suggests that Chinese listed companies are more inventory-intensive. During the sample period of 2004–2014, U.S. public companies have lower profitability (ROA_t and $LOSS_t$) and higher financial leverage (LEV_t) than Chinese listed companies. Compared with the Chinese audit market, the U.S. audit market features a much higher presence of Big 4 auditors ($BIG4_t$, 61% vs. 5%) and industry-specialist auditors ($EXPERT_t$, 38% vs. 12%). Moreover, the frequency of modified audit opinion is 6% in China, in contrast to 40% in the U.S. capital market.[3]

Table 3 reports the ordinary least squares (OLS) regression results of Eq. (1). Audit pricing models both in the U.S. and China are well explained, with adjusted R-square values of 0.859 and 0.662, respectively. For the U.S. sample, the coefficient of INV_t is significantly positive (t-stat. = 4.04), which is consistent with a positive inventory–audit fee association, as documented in Hay et al. (2006). In contrast, for the Chinese sample, the coefficient of INV_t is significantly negative (t-stat. = −3.39), which is consistent with most prior Chinese audit fee studies. Regarding control variables, our results are generally consistent with the audit pricing literature.

3.2. Inventory components and audit fees

To better understand the negative inventory–audit fee association in China, we extend Eq. (1) by decomposing the aggregate inventory into various components. In Eq. (2a), we decompose INV_t into the opening balance of inventory that is carried over from the previous period (INV_{t-1}) and the net change in ending inventory ($\triangle INV_t$), both scaled by beginning total assets. In Eq. (2b), INV_{t-1} is further decomposed into

[2] The results are qualitatively similar if using the ending total assets as the scalar. However, using the opening balance of total assets as the scalar eases subsequent decomposition analysis.

[3] Consistent with the high frequency of modified audit opinion in the U.S., Butler, Leone, and Willenborg (2004) report a frequency of 26% (34%) by Big 5 (non-Big 5) auditors during the 1988–1999 period.

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Table 2
Descriptive statistics.

Variable	Chinese sample (N = 14,485)				U.S. sample (N = 37,197)			
	Mean	Med.	Min.	Max.	Mean	Med.	Min.	Max.
$LNFEE_t$	13.33	13.27	11.98	15.41	13.03	13.12	8.97	16.77
INV_t	0.20	0.15	0.00	1.05	0.10	0.04	0.00	0.75
INV_{t-1}	0.17	0.13	0.00	0.75	0.09	0.04	0.00	0.61
$\triangle INV_t$	0.03	0.01	−0.15	0.53	0.01	0.00	−0.16	0.31
RM_{t-1}	0.05	0.03	0.00	0.28	0.03	0.00	0.00	0.27
WIP_{t-1}	0.06	0.02	0.00	0.61	0.02	0.00	0.00	0.17
FG_{t-1}	0.06	0.04	0.00	0.31	0.04	0.01	0.00	0.39
$\triangle RM_t$	0.01	0.00	−0.10	0.20	0.003	0.00	−0.07	0.11
$\triangle WIP_t$	0.01	0.00	−0.17	0.35	0.002	0.00	−0.04	0.07
$\triangle FG_t$	0.01	0.00	−0.09	0.22	0.004	0.00	−0.09	0.14
$LNTA_t$	21.74	21.62	18.76	25.99	4.91	5.04	−2.94	11.95
$CATA_t$	0.38	0.37	0.05	0.87	0.46	0.42	0.02	1.00
$QUICK_t$	1.62	0.92	0.11	14.79	2.98	1.59	0.00	27.67
LEV_t	0.49	0.48	0.05	1.59	1.10	0.46	0.03	21.67
ROA_t	0.03	0.03	−0.34	0.21	−0.21	0.01	−1.71	0.17
OP_{t-1}	0.06	0	0	1	0.40	0	0	1
$LOSS_t$	0.11	0	0	1	0.47	0	0	1
$EXPERT_t$	0.12	0	0	1	0.38	0	0	1
$BIG4_t$	0.05	0	0	1	0.61	1	0	1
$SWITCH_t$	0.09	0	0	1	0.10	0	0	1
$BIGLOCAL_t$	0.40	0	0	1				
SOE_t	0.49	0	0	1				
$SQSUBS_t$	3.07	2.83	0	8.83				
$IMPAIR_t$	0.22	0.01	0	39.86				
$FOREIGN_t$					0.42	0	0	1
$BUSY_t$					0.70	1	0	1

See the Appendix for the definition of variables.

the opening balance of specific items including raw materials (RM_{t-1}), work-in-process (WIP_{t-1}) and finished goods (FG_{t-1}), and $\triangle INV_t$ is decomposed into $\triangle RM_t$, $\triangle WIP_t$ and $\triangle FG_t$, which facilitates a more detailed understanding of the inventory–audit fee association.

$$LNFEE_t = \beta_0 + \beta_1 INV_{t-1} + \beta_2 \Delta INV_t + Controls \quad (2a)$$

$$LNFEE_t = \beta_0 + \beta_1 RM_{t-1} + \beta_2 WIP_{t-1} + \beta_3 FG_{t-1} + \beta_4 \Delta RM_t + \beta_5 \Delta WIP_t + \beta_6 \Delta FG_t + Controls \quad (2b)$$

We use the same Chinese and U.S. samples as in Eq. (1). Concerning the inventory components, Table 2 shows that in China (the U.S.), the mean opening inventory intensity is 0.17 (0.09), whereas the mean net change in ending inventory is 0.03 (0.01).

Panel A of Table 4 reports the OLS regression results of Eq. (2a). It shows that $\triangle INV_t$ is significantly and negatively associated with audit fees both in the U.S. and China (t-stats. = −6.07 and −3.56, respectively). However, INV_{t-1} is significantly and positively associated with audit fees in the U.S. (t-stat. = 7.34), but significantly and negatively associated with audit fees in China (t-stat. = −2.53).[4] Panel A reveals that the major difference in the auditor pricing of inventory between China and the U.S. lies in the pricing of opening inventory, rather than the net change in ending inventory.

Panel B of Table 4 further shows that U.S. auditors charge a significant fee discount for net increase in all three inventory items (i.e., $\triangle RM_t$, $\triangle WIP_t$ and $\triangle FG_t$). Similarly, Chinese auditors charge a significant fee

[4] The net change in ending inventory is only one-ninth of the opening inventory (= 0.1/0.9) for U.S. public companies, which justifies the significantly positive coefficient on INV_t (as shown in Table 3) being dominated by the significantly positive coefficient on INV_{t-1} (rather than the significantly negative coefficient on $\triangle INV_t$).

Table 3
Total year-end inventory and audit fees: OLS regression results.

Dep. Var: $LNFEE_t$	Chinese sample		U.S. sample	
	Coef.	t-stat.	Coef.	t-stat.
Variable of interest				
INV_t	−0.123	−3.39***	0.218	4.04***
Control variables				
$LNTA_t$	0.258	31.63***	0.517	109.20***
$CATA_t$	0.048	1.20	0.422	14.34***
$QUICK_t$	−0.009	−3.04***	−0.033	−21.14***
LEV_t	0.025	0.78	0.041	18.68***
ROA_t	0.108	1.12	−0.278	−16.64***
OP_{t-1}	0.167	7.69***	0.121	12.49***
$LOSS_t$	0.053	3.50***	0.074	6.05***
$EXPERT_t$	0.113	6.70***	0.000	0.02
$BIG4_t$	0.667	16.74***	0.365	17.74***
$SWITCH_t$	−0.051	−4.80***	−0.074	−6.41***
$BIGLOCAL_t$	0.072	6.05***		
SOE_t	−0.075	−5.54***		
$SQSUBS_t$	0.088	17.59***		
$IMPAIR_t$	0.031	5.72***		
$FOREIGN_t$			0.271	16.84***
$BUSY_t$			0.078	5.11***
Industry fixed effects	Yes		Yes	
Year fixed effects	Yes		Yes	
N	14,485		37,197	
Adj. R^2	0.662		0.859	

*** Denotes significance at the 1% level (two-tailed).
Standard errors are clustered at the company level.
See the Appendix for the definition of variables.

discount for the net increase in raw materials ($\triangle RM_t$) and WIP inventory ($\triangle WIP_t$).[5] These patterns corroborate the negative association between $\triangle INV_t$ and audit fees shown in Panel A of Table 4.

Moreover, Panel B shows that U.S. auditors charge a significant premium for the opening balance of all three inventory items (i.e., RM_{t-1}, WIP_{t-1} and FG_{t-1}). However, Chinese auditors do not charge a premium for the opening balances of raw materials (RM_{t-1}) or finished goods (FG_{t-1}), and charge a significant fee discount for the opening balance of WIP inventory (WIP_{t-1}). These findings help us understand how the significant and negative association between INV_{t-1} and audit fees in China is shaped.

4. Inventory components and corporate inherent risk

As Table 4 shows that the net increase in ending inventory is associated with lower audit fees, in this section, we examine whether it is also associated with lower inherent risk. More interestingly, we investigate whether the opening balance of inventory is associated with higher or lower inherent risk in the Chinese and U.S. samples, respectively, as Table 4 shows an inconsistent (and contrasting) pattern of audit pricing of opening inventory between Chinese and U.S. auditors.

4.1. Sales growth

Sales are the fundamental driver of earnings and cash flows (Dechow, Kothari, & Watts, 1998), through which the value of inventory becomes realized. Bernard and Noel (1991) argue that some inventory

[5] In the Chinese sample, the coefficient of $\triangle FG_t$ is also negative (t-stat. = −1.02).

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Table 4
Decomposed inventory and audit fees: OLS regression results.

Dep. Var: $LNFEE_t$	Chinese sample		U.S. sample	
	Coef.	t-stat.	Coef.	t-stat.
Panel A: Opening balance of and net change in total inventory				
INV_{t-1}	−0.122	−2.53**	0.491	7.34***
$\triangle INV_t$	−0.152	−3.56***	−0.442	−6.07***
Controls	Yes		Yes	
N	14,485		37,197	
Adj. R^2	0.662		0.861	
Panel B: Opening balance of and net change in three inventory items				
RM_{t-1}	−0.026	−0.20	0.318	2.25**
WIP_{t-1}	−0.211	−3.25***	0.525	2.33**
FG_{t-1}	0.059	0.59	0.747	7.30***
$\triangle RM_t$	−0.189	−2.30**	−0.710	−4.22***
$\triangle WIP_t$	−0.201	−3.44***	−0.777	−3.21***
$\triangle FG_t$	−0.087	−1.02	−0.344	−2.66***
Controls	Yes		Yes	
N	14,485		37,197	
Adj. R^2	0.662		0.861	

** and *** denote significance at the 5% and 1% levels (two-tailed), respectively.
Standard errors are clustered at the company level.
For the sake of brevity, we do not tabulate the control variables (including year and industry fixed effects) used in the estimation, which are the same as those used in Table 3.
See the Appendix for the definition of variables.

components reflect private management information about market opportunities. Therefore, we use next-period sales growth as our first proxy for inherent risk. We estimate the following models:

$$SALESGROW_{t+1} = \gamma_0 + \gamma_1 INV_{t-1} + \gamma_2 \Delta INV_t + Controls \quad (3a)$$

$$SALESGROW_{t+1} = \gamma_0 + \gamma_1 RM_{t-1} + \gamma_2 WIP_{t-1} + \gamma_3 FG_{t-1} + \gamma_4 \Delta RM_t + \gamma_5 \Delta WIP_t + \gamma_6 \Delta FG_t + Controls \quad (3b)$$

In Eqs. (3a) and (3b), the dependent variable $SALESGROW_{t+1}$ is the percentage change in revenue from year t to year t+1. Following Cooper, Gulen, and Schill (2008), we control for firm size ($LNTA_t$), financial leverage (LEV_t), profitability (ROA_t), operating cash flow ratio ($CASHFLOW_t$) and book-to-market ratio (BTM_t). In addition, we include annual stock return (RET_t) to control for factors that may not be reflected in accounting information. Due to missing values for some model variables, the Chinese and U.S. samples for estimating Eqs. (3a) and (3b) are reduced to 14,247 and 28,777, respectively.

Table 5 presents the OLS regression results for Eqs. (3a) and (3b). Panel A shows that both in China and the U.S., $\triangle INV_t$ is significantly and positively associated with $SALESGROW_{t+1}$, with t-statistics of 8.01 and 11.36, respectively. Panel B further shows that the net increase in all three inventory items ($\triangle RM_t$, $\triangle WIP_t$ and $\triangle FG_t$) is associated with higher future revenue growth. These results indicate that the net increase in ending inventory strongly predicts higher future revenue growth, which is consistent with management having private information about future opportunities in the product market (Bernard and Noel, 1991). It is also consistent with the evidence in Table 4 that both Chinese and U.S. auditors charge a significant fee discount for $\triangle INV_t$ in response to its lower inherent risk.

Panel A also shows that in the U.S. sample, INV_{t-1} is strongly and negatively associated with $SALESGROW_{t+1}$ (t-stat. = −9.40). Moreover, Panel B shows that the opening balance of all three inventory items (RM_{t-1}, WIP_{t-1} and FG_{t-1}) is associated with poorer future revenue growth. These results are consistent with U.S. auditors charging a significant fee premium for INV_{t-1} (as evidenced in Table 4) in response to its higher inherent risk.

Finally, we come to the coefficient of INV_{t-1} in the Chinese sample. If Chinese auditors charge a significant fee discount for opening inventory due to its lower inherent risk, we would expect a significant and positive

Table 5
Decomposed inventory and next-period sales growth: OLS regression results.

Dep. Var: $SALESGROW_{t+1}$	Chinese sample		U.S. sample	
	Coef.	t-stat.	Coef.	t-stat.
Panel A: Opening balance of and net change in total inventory				
Variables of interest				
INV_{t-1}	−0.050	−0.84	−0.489	−9.40***
$\triangle INV_t$	0.666	8.01***	1.387	11.36***
Control variables				
$LNTA_t$	−0.035	−5.28***	−3.46***	−3.46***
LEV_t	−0.004	−0.10	−7.19***	−7.19***
ROA_t	−0.124	−0.85	−7.73***	−7.73***
$CASHFLOW_t$	−0.224	−2.44**	−2.13**	−2.13**
BTM_t	−0.126	−5.29***	−12.72***	−12.72***
RET_t	0.109	7.68***	7.77***	7.77***
Industry fixed effects	Yes		Yes	
Year fixed effects	Yes		Yes	
N	14,247		28,777	
Adj. R^2	0.051		0.077	
Panel B: Opening balance of and net change in three inventory items				
RM_{t-1}	−0.367	−2.86***	−0.604	−6.11***
WIP_{t-1}	0.056	0.79	−0.608	−5.61***
FG_{t-1}	−0.250	−2.67***	−0.561	−7.86***
$\triangle RM_t$	0.547	3.00***	1.673	6.36***
$\triangle WIP_t$	0.646	5.21***	2.421	6.93***
$\triangle FG_t$	1.065	6.12***	1.111	6.34***
Controls	Yes		Yes	
N	14,247		28,777	
Adj. R^2	0.051		0.077	

** and *** denote significance at the 5% and 1% levels (two-tailed), respectively.
Standard errors are clustered at the company level.
For the sake of brevity, we do not tabulate the control variables (including year and industry fixed effects) in Panel B, which are the same as those used in Panel A.
See the Appendix for the definition of variables.

coefficient of INV_{t-1}. However, this is not the case. As shown in Panel A, the coefficient of INV_{t-1} in the Chinese sample has a negative sign, rather than a significant positive one. Panel B further shows that the coefficients of RM_{t-1} and FG_{t-1} are significantly negative (t-stats. = −2.86 and −2.67, respectively), which suggests higher inherent risk for the opening balances of raw materials and finished goods in China. However, recall that Panel B of Table 4 shows that Chinese auditors do not charge a higher fee premium for the opening balances of these two inventory items.

Overall, the evidence in Table 5 suggests that the audit pricing of opening inventory by Chinese auditors is not consistent with its inherent risk when measured by future sales growth.

4.2. Inventory impairment

Our second proxy for inherent risk is inventory impairment for the current year, which incorporates management's evaluation of the economic value of the ending inventory (Feng, Li, McVay, & Skaife, 2015). To examine how inventory components are associated with inventory impairment, we specify the following models:

$$IMPAIR_t = \delta_0 + \delta_1 INV_{t-1} + \delta_2 \Delta INV_t + Controls \quad (4a)$$

$$IMPAIR_t = \delta_0 + \delta_1 RM_{t-1} + \delta_2 WIP_{t-1} + \delta_3 FG_{t-1} + \delta_4 \Delta RM_t + \delta_5 \Delta WIP_t + \delta_6 \Delta FG_t + Controls \quad (4b)$$

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Table 6
Decomposed inventory and year-end inventory impairment: Tobit regression results.

Dep. Var: $IMPAIR_t$	Coef.		t-stat.
Panel A: Opening balance of and net change in total inventory			
Variables of interest			
INV_{t-1}	1.095		4.70***
$\triangle INV_t$	−1.100		−5.58***
Control variables			
$MARGIN_t$	−0.709		−3.78***
$CAPINTENSITY_t$	0.115		4.26***
$SALESVOL_t$	0.505		4.30***
$SALESGROW_t$	0.013		0.63
$SQSUBS_t$	0.043		4.23***
AGE_t	0.054		2.60***
$BIG4_t$	0.177		3.60***
$BIGLOCAL_t$	0.063		1.99**
$LOSS_t$	0.493		8.04***
$LNTA_t$	−0.128		−4.32***
Industry fixed effects		Yes	
Year fixed effects		Yes	
N		13,570	
Pseudo R^2		0.088	
Panel B: Opening balance of and net change in three inventory items			
RM_{t-1}	2.086		4.16***
WIP_{t-1}	0.285		1.08
FG_{t-1}	3.280		8.82***
$\triangle RM_t$	−1.261		−2.66***
$\triangle WIP_t$	−1.469		−4.87***
$\triangle FG_t$	−0.686		−2.01**
Controls		Yes	
N		13,570	
Pseudo R^2		0.088	

** and *** denote significance at the 5% and 1% levels (two-tailed), respectively.
Standard errors are clustered at the company level.
For the sake of brevity, we do not tabulate the control variables (including year and industry fixed effects) in Panel B, which are the same as those used in Panel A.
See the Appendix for the definition of variables.

In Eqs. (4a) and (4b), the dependent variable $IMPAIR_t$ is measured as the absolute magnitude of year-end inventory impairment (scaled by the ending total assets). Following Feng et al. (2015), we control for gross margin ($MARGIN_t$), capital intensity ($CAPINTENSITY_t$), sales volatility ($SALESVOL_t$) and sales growth ($SALESGROW_t$). We also include a number of firm and auditor characteristics, such as the number of subsidiaries ($SQSUBS_t$), listing age (AGE_t), Big 4 auditor indicator ($BIG4$), large local auditor indicator ($BIGLOCAL_t$), profitability (ROA_t), reporting loss indicator ($LOSS_t$) and firm size ($LNTA_t$). Because inventory impairment data are not readily available in Compustat for U.S. public companies, we estimate Eqs. (4a) and (4b) only for the Chinese sample.

We use Tobit regression to estimate Eqs. (4a) and (4b) because the absolute magnitude of inventory impairment is always positive (i.e., left censored).[6] The regression results are shown in Table 6.

As shown in Panel A of Table 6, the coefficient of INV_{t-1} is 1.095 (t-stat. = 4.70), whereas the coefficient of $\triangle INV_t$ is −1.100 (t-stat. = −5.58). These findings suggest that in China, the net increase in ending inventory is associated with significantly lower impairment risk, whereas opening inventory is associated with a significantly higher impairment risk.

[6] The results remain robust when using OLS regression.

Panel B of Table 6 further shows that the net increase in all three inventory items ($\triangle RM_t$, $\triangle WIP_t$ and $\triangle FG_t$) is associated with significantly lower impairment risk. In contrast, the coefficients of all three inventory items (RM_{t-1}, WIP_{t-1} and FG_{t-1}) are positive, and those of raw materials and finished goods are significant (t-stats. = 4.16 and 8.82, respectively).

Overall, the evidence in Table 6 suggests that although Chinese auditors charge a significant fee discount for the net increase in ending inventory in response to its lower impairment risk, they fail to charge higher audit fees for opening inventory despite its greater impairment risk.

5. Inventory components and audit labor effort

Our second research question asks how inventory components are associated with audit labor effort. The MOF required audit firms to file audit labor effort information (including the size of the audit team and the number of field days) for audits of listed companies during the 2006–2011 period. We obtain this proprietary data to measure auditors' labor inputs, and specify Eqs. (5a) and (5b) as follows:

$$LAL_t = \eta_0 + \eta_1 INV_{t-1} + \eta_2 \Delta INV_{t-1} + Controls \quad (5a)$$

$$LAL_t = \eta_0 + \eta_1 RM_{t-1} + \eta_2 WIP_{t-1} + \eta_3 FG_{t-1} + \eta_4 \Delta RM_t + \eta_5 \Delta WIP_t + \eta_6 \Delta FG_t + Controls \quad (5b)$$

The dependent variable LAL_t is the natural log of audit labor effort. We measure LAL_t as the natural log of the size of the audit team ($LNTEAM_t$), the natural log of the number of field days ($LNDAY_t$), or the natural log of the size of the audit team multiplied by the number of field days ($LN(TEAM\times DAY)_t$). We use the same set of explanatory variables as in Eqs. (2) and (3). As the audit labor input data are not available for U.S. public companies, we estimate Eqs. (5a) and (5b) for the Chinese sample only. The sample size is reduced to 6412 because the audit labor data in China are only available for the 2006–2011 period.

Panel A of Table 7 reports the OLS regression results of Eq. (5a). Across three specifications of audit labor effort, our model shows sound explanatory power, with an adjusted R-square of 0.385. This is comparable to the adjusted R-square of 0.365 reported in a prior Chinese study (Gong, Li, Lin, & Wu, 2016, Table 3, Column 3). The results for the control variables are generally consistent with the literature on audit labor effort (Caramanis and Lennox, 2008; Gong et al., 2016).

Panel A shows that the coefficients of $\triangle INV_t$ are significant and negative across all three specifications for audit labor input. Therefore, Chinese auditors spend considerably fewer audit hours when there is a larger net increase in ending inventory, which is consistent with the expected response to its lower inherent risk (as manifested in sales growth and inventory impairment). Panel B of Table 7 further shows that less audit effort is made particularly when there is a larger increase in the ending balance of WIP inventory (t-stats. = −2.57 and −2.62 in the $LNDAY_t$ and $LN(TEAM\times DAY)_t$ models, respectively) and, to a lesser extent, raw materials (t-stat. = −1.82 in the $LN(TEAM\times DAY)_t$ model).

In contrast, the coefficients of INV_{t-1} are not significantly different from zero in any of the three audit labor effort models. Panel B of Table 7 further shows that Chinese auditors do not devote significantly greater effort to the opening balance of raw materials or finished goods, despite their higher inherent risk in terms of sales growth and inventory impairment.[7] Moreover, Chinese auditors spend significantly fewer audit hours on the opening balance of WIP inventory, with t-statistics of −2.41, −1.95 and −3.02 in the three specifications of Eq. (5b). This pattern is consistent with Chinese auditors charging a significant fee discount for the opening balance of WIP as shown in Panel B of Table 4 (t-stat. = −3.25). However, no evidence in Tables 5 and 6 suggests that the opening balance of WIP is associated with higher sales growth (t-stat. = 0.79) or lower impairment risk (t-stat. = 1.08).

Overall, Table 7 shows that the pattern of Chinese auditor labor effort is consistent with the audit pricing pattern, and is also consistent with expected effort for the net change in ending inventory. However, the pattern is inconsistent with expected audit effort for the opening balance of inventory.

[7] There is only one exception: the marginally significant and positive coefficient of FG_{t-1} in the $LN(TEAM\times DAY)_t$ model (t-stat. = 1.71).

Table 7
Decomposed inventory and audit labor effort: OLS regression results.

Dep. Var:	$= LNTEAM_t$		$= LNDAY_t$		$= LN(TEAM \times DAY)_t$	
	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.
Panel A: Opening balance of and net change in total inventory						
Variables of interest						
INV_{t-1}	−0.059	−0.98	−0.036	−0.35	−0.095	−0.80
$\triangle INV_t$	−0.115	−1.81*	−0.300	−2.91***	−0.415	−3.34***
Control variables						
$LNTA_t$	0.154	15.03***	0.101	7.22***	0.256	14.42***
$CATA_t$	0.184	3.42***	0.037	0.44	0.221	2.18**
$QUICK_t$	−0.017	−3.91***	−0.027	−3.92***	−0.044	−5.09***
LEV_t	0.011	0.3	−0.081	−1.34	−0.070	−0.99
ROA_t	0.261	1.96*	−0.089	−0.44	0.172	0.7
OP_{t-1}	−0.002	−0.08	0.122	2.50**	0.120	2.02**
$LOSS_t$	0.028	1.05	0.001	0.02	0.029	0.6
$EXPERT_t$	0.111	3.44***	−0.246	−6.56***	−0.134	−2.64***
$BIG4_t$	0.531	9.60***	0.082	1.52	0.613	7.61***
$SWITCH_t$	0.084	3.96***	0.145	4.86***	0.229	5.71***
$BIGLOCAL_t$	0.060	3.50***	0.125	4.34***	0.186	5.37***
SOE_t	0.015	0.89	0.117	4.06***	0.132	3.93***
$SQSUB_t$	0.106	15.87***	0.130	12.41***	0.236	19.21***
$IMPAIR_t$	0.010	1.57	0.051	6.97***	0.061	6.72***
Industry fixed effects	Yes		Yes		Yes	
Year fixed effects	Yes		Yes		Yes	
N	6412		6412		6412	
Adj. R^2	0.385		0.385		0.385	
Panel B: Opening balance of and net change in three inventory items						
RM_{t-1}	0.082	0.47	0.169	0.64	0.251	0.80
WIP_{t-1}	−0.183	−2.41**	−0.245	−1.95*	−0.428	−3.02***
FG_{t-1}	0.183	1.28	0.300	1.33	0.483	1.71*
$\triangle RM_t$	−0.232	−1.54	−0.296	−1.29	−0.528	−1.82*
$\triangle WIP_t$	−0.087	−0.93	−0.373	−2.57**	−0.460	−2.62***
$\triangle FG_t$	0.014	0.09	−0.251	−1.06	−0.237	−0.76
Controls	Yes		Yes		Yes	
N	6412		6412		6412	
Adj. R^2	0.386		0.386		0.386	

*, ** and * denote significance at the 10%, 5% and 1% levels (two-tailed), respectively.
Standard errors are clustered at the company level.
For the sake of brevity, we do not tabulate the control variables (including year and industry fixed effects) in Panel B, which are the same as those used in Panel A.
See the Appendix for the definition of variables.

6. Summary and conclusions

Table 8 summarizes our main findings in the analyses of audit pricing (Table 4), inherent risk in terms of sales growth (Table 5), inventory impairment (Table 6) and audit labor effort (Table 7). We organize the evidence with the inherent risk assessment presented first, followed by auditor response. This fits the idea of risk-based audits advocating a reasonable response to a given level of inherent risk (Bell, Peecher, & Solomon, 2005; Knechel, 2007), which has been accepted worldwide in the past several decades. In the last column of Table 8, we evaluate the consistency between the assessed inherent risk level for each inventory component (INV_{t-1} or $\triangle INV_t$) and the assessed auditor response level. Panels A and B of Table 8 present the U.S. and Chinese evidence, respectively.

Table 8
Summary of main evidence.

	Inherent Risk			Auditor response			Consistency
	Sales growth	Impairment	Risk level	Fees	Labor effort	Response level	
Panel A: U.S. Sample							
INV_{t-1}	$-^{***}$	na.	High	$+^{***}$	na.	High	Yes
RM_{t-1}	$-^{***}$	na.	High	$+^{**}$	na.	High	Yes
WIP_{t-1}	$-^{***}$	na.	High	$+^{**}$	na.	High	Yes
FG_{t-1}	$-^{***}$	na.	High	$+^{***}$	na.	High	Yes
$\triangle INV_t$	$+^{***}$	na.	Low	$-^{***}$	na.	Low	Yes
$\triangle RM_t$	$+^{***}$	na.	Low	$-^{***}$	na.	Low	Yes
$\triangle WIP_t$	$+^{***}$	na.	Low	$-^{***}$	na.	Low	Yes
$\triangle FG_t$	$+^{***}$	na.	Low	$-^{***}$	na.	Low	Yes
Panel B: Chinese Sample							
INV_{t-1}	ns.	$+^{***}$	High	$-^{**}$	ns.	Low	No
RM_{t-1}	$-^{***}$	$+^{***}$	High	ns.	ns.	Medium	No
WIP_{t-1}	ns.	ns.	Medium	$-^{***}$	$-^{***}$	Low	No
FG_{t-1}	$-^{***}$	$+^{***}$	High	ns.	$+^{*}$	Medium#	No
$\triangle INV_t$	$+^{***}$	$-^{***}$	Low	$-^{***}$	$-^{***}$	Low	Yes
$\triangle RM_t$	$+^{***}$	$-^{***}$	Low	$-^{**}$	$-^{*}$	Low	Yes
$\triangle WIP_t$	$+^{***}$	$-^{***}$	Low	$-^{***}$	$-^{***}$	Low	Yes
$\triangle FG_t$	$+^{***}$	$-^{**}$	Low	ns.	ns.	Medium	No

"+" ("−") denotes a significant and positive (negative) sign of coefficient.
*, ** and *** denote significance at the 10%, 5% and 1% levels (two-tailed), respectively.
na.: data not available.
ns.: not significant.
The medium level is assessed given an insignificant fee response and a weakly positive labor effort response.
Consistency: Evaluated as "Yes" ("No") if the auditor response level is consistent (inconsistent) with the inherent risk level.
Labor effort results are based on Eqs. (5a) and (5b) using $LN(TEAM*DAY)_t$ as the dependent variable.
See the Appendix for the definition of variables.

As shown in Panel A of Table 8, our study documents that U.S. auditors respond to inventory components ($\triangle INV_t$) with significantly lower inherent risk by charging a significant fee discount, and to inventory components (INV_{t-1}) with significantly higher inherent risk by charging a significant fee premium. Therefore, we conclude that in the U.S. market, audit pricing is consistent with the idea of business risk audits.[8]

As shown in Panel B of Table 8, Chinese auditors respond to inventory components ($\triangle INV_t$) with significantly lower inherent risk by charging a significant fee discount, and this is particularly responsive to the net change in raw materials and WIP. However, Chinese auditors fail to charge a significant fee premium for inventory components (INV_{t-1}) with significantly higher inherent risk. They even charge a significant fee discount for opening inventory, which is mainly driven by the underpricing of the opening balance of WIP. We therefore conclude that in the Chinese market, audit pricing practices only partially implement the idea of risk-based audits.

Our study provides useful insight into the puzzling negative association between inventory and audit fees in China. The evidence points to imperfect risk-based auditing practices in China. Our study also highlights a risky audit area (i.e., the opening balance of inventory) for future improvement toward more responsive pricing and audit labor resource allocation. Finally, our findings offer a refinement to the audit pricing model by separating the opening balance from the net change in ending inventory when using inventory as a major proxy for inherent risk.

[8] We were unable to assess the U.S. evidence from inventory impairment or audit labor effort due to data unavailability.

Appendix A

Variable List

Variable	Definition and Measurement
$LNFEE_t$	Natural log of annual audit fees for year t
INV_t	Total net inventory at the end of year t/total assets at the end of year t−1
INV_{t-1}	Total net inventory at the end of year t−1/total assets at the end of year t−1
$\triangle INV_t$	Change in total net inventory from year t−1 to year t/total assets at the end of year t−1
RM_{t-1}	Net raw materials at the end of year t−1/total assets at the end of year t−1
WIP_{t-1}	Net work-in-process inventory at the end of year t−1/total assets at the end of year t−1
FG_{t-1}	Net finished goods at the end of year t−1/total assets at the end of year t−1
$\triangle RM_t$	Change in net raw materials from year t−1 to year t/total assets at the end of year t−1
$\triangle WIP_t$	Change in net work-in-process inventory from year t−1 to year t/total assets at the end of year t−1
$\triangle FG_t$	Change in net finished goods from year t−1 to year t/total assets at the end of year t−1
$LNTA_t$	Natural log of total assets at the end of year t
$CATA_t$	Current assets (less inventory) at the end of year t/total assets at the end of year t
$QUICK_t$	Current assets (less inventory) at the end of year t/current liabilities at the end of year t
LEV_t	Total liabilities at the end of year t/total assets at the end of year t
ROA_t	Net income for year t/total assets at the end of year t
OP_{t-1}	Coded 1 for a prior-year modified audit opinion, and 0 otherwise
$LOSS_t$	Coded 1 if the current-year net income is negative, and 0 otherwise
$EXPERT_t$	Coded 1 for the first- or second-ranked audit firm as a nation-wide industry leader for year t, and 0 otherwise
$BIG4_t$	Coded 1 if the auditor is a Big 4 audit firm, and 0 otherwise
$SWITCH_t$	Coded 1 for an initial audit engagement, and 0 otherwise
$BIGLOCAL_t$	Coded 1 if the auditor is a local non-Big 4 audit firm and ranks top 10 based on the sum of total assets audited by an audit firm for year t, and 0 otherwise
SOE_t	Coded 1 if the controlling shareholder of the company is the government or a state-owned enterprise for year t, and 0 otherwise
$SQSUBS_t$	Square root of consolidated subsidiaries at the end of year t
$IMPAIR_t$	(The absolute magnitude of inventory impairment provided for year t/total assets at the end of year t) × 100
$FOREIGN_t$	Coded 1 for companies reporting pretax income from foreign operations for year t, and 0 otherwise
$BUSY_t$	Coded 1 for companies with December 31st fiscal year end, and 0 otherwise
$SALESGROW_t$	(Sales for year t/total assets at the end of year t) – (sales for year t−1/total assets at the end of year t−1)
$CASHFLOW_t$	Net cash flow from operations for year t/total assets at the end of year t
BTM_t	Book-to-market value of equity at the end of year t
RET_t	Annual return in the stock market for year t
$MARGIN_t$	(Sales for year t – cost of goods sold for year t)/sales for year t
$CAPINTENSITY_t$	The natural log of gross property, plant, and equipment at the end of year t
$SALESVOL_t$	The standard deviation of annual sales divided by total assets over the prior seven years (requiring at least three observations)
AGE_t	Number of years (by the end of year t) since a company was listed
$LNTEAM_t$	Natural log of the size of the audit team for the audit of year t
$LNDAY_t$	Natural log of the number of field days for the audit of year t
$LN(TEAM \times DAY)_t$	Natural log of the size of the audit team multiplied by the number of field days for the audit of year t

Please cite this article in press as: Wu, X., et al. The puzzling association between inventory and auditor pricing in China☆. China Journal of Accounting Research (2018), https://doi.org/10.1016/j.cjar.2018.07.005

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