

Yang, Hualing; Ma, Yunbiao

Article

Does insider selling affect audit fees?

China Journal of Accounting Studies (CJAS)

Provided in Cooperation with:

Accounting Society of China (ASC), Beijing

Suggested Citation: Yang, Hualing; Ma, Yunbiao (2020) : Does insider selling affect audit fees?, China Journal of Accounting Studies (CJAS), ISSN 2169-7221, Taylor & Francis, Abingdon, Vol. 8, Iss. 4, pp. 556-574,
<https://doi.org/10.1080/21697213.2021.1966178>

This Version is available at:

<https://hdl.handle.net/10419/338437>

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/4.0/>



Does insider selling affect audit fees?

Hualing Yang & Yunbiao Ma

To cite this article: Hualing Yang & Yunbiao Ma (2020) Does insider selling affect audit fees?, China Journal of Accounting Studies, 8:4, 556-574, DOI: [10.1080/21697213.2021.1966178](https://doi.org/10.1080/21697213.2021.1966178)

To link to this article: <https://doi.org/10.1080/21697213.2021.1966178>



© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 20 Aug 2021.



Submit your article to this journal [↗](#)



Article views: 1544



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 2 View citing articles [↗](#)

Does insider selling affect audit fees?*

Hualing Yang^a and Yunbiao Ma^b

^aSchool of Business, Zhengzhou University of Aeronautics, Zhengzhou, Henan, China; ^bSchool of Accounting, Central University of Finance and Economics, Beijing, Haitians District, China

ABSTRACT

Using a sample of Chinese A-share listed companies from 2006 to 2016, this paper examines the impact of insider selling on audit fees. The results show that auditors of clients with higher insider selling tend to charge higher fees. Mechanism tests show that the presence of insider selling is associated with a higher level of audit risk, which in turn increases audit fees. Further tests show that, the positive relation between insider selling and audit fees is stronger for non-SOEs and BIG4 audited firms; auditors only charge higher audit fees for share selling of large shareholders and directors. These results indicate that auditors can identify the risk of insider selling and charge higher audit fees, and provide new insight into the economic consequence of insider selling and a new determinant of audit fees.

KEYWORDS

Insider selling; audit fees; audit risk; agency risk; operating risk

1. Introduction

Since the Share Splitting Reform in 2005, large shareholders of Chinese listed companies have gained the right to trade their shares in the secondary market. At the same time, more and more private enterprises are listed on Small and Medium Sized Enterprises (SME) board and Growth Enterprise Market (GEM) board, which are highly favoured by the market. The large bubble in the valuation of Chinese listed companies results in a strong incentive for insiders to sell their holdings and cash out. According to statistics, during 2006 and 2016, there were 68,490 times of insider share selling with a total amount of 181.4 billion shares and 2,060.3 billion Yuan. Since the normalisation of IPO in China's capital market and the lockup expiration of restricted stocks insider selling has been a common feature of Chinese stock market, and have attracted great attention from regulators and academics.

Although the right to transfer is a fundamental right of shareholders, prior studies have shown that insiders sell their holdings opportunistically. Insiders, such as large shareholders, directors, senior executives, supervisors, have strong incentive to profit from insider selling. Insiders participate in corporate daily operating or in making important decisions. Thus, they certainly have information and valuation advantages with respect to the prospects of their companies. Insiders often use their information and valuation

CONTACT Yunbiao Ma  mayunbiao@cufo.edu.cn  School of Accounting, Central University of Finance and Economics, 39 South College Road, Haitians District, Beijing, 100081, China

*Paper accepted by Kangtao Ye.

© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

advantages to sell their holdings to gain abnormal trading profit when they believe that the price of their holdings is overvalued by external investors. Therefore, insider selling conveys negative information about corporate value or prospects, which leads to sell-herding (Zhu et al., 2011) and stock price crashes (Chen et al., 2018; Sun et al., 2017; Wu & Li, 2015). In addition, in order to maximise the profit from insider selling, insiders tend to inflate stock prices by manipulating information disclosure, engaging in capital operation, and paying large stock dividends (Cai et al., 2017; Lu et al., 2017; Xie et al., 2016; Yi et al., 2017). Moreover, insider selling increases the conflict of interest between insiders and external investors. When insiders are company executives, insider selling exacerbates the agency conflict between executives and external investors (named type I agency conflict). When insiders are large shareholders, insider selling exacerbates the agency conflict between large shareholders and external investors (called type II agency conflict) (Wu & Li, 2015). The opportunism in insider selling not only will lead to stock price crashes in the short term (Chen et al., 2018; Sun et al., 2017; Wu & Li, 2015), but also negative long-term consequences, such as higher capital cost, less access to finance (Ausubel, 1990; Bhattacharya & Daouk, 2002; Manove, 1989; Zhou & Zhao, 2015), lower investment efficiency (Wu & Wu, 2018), and poorer firm growth (Li et al., 2013). Therefore, insider selling will increase firms' agency risk and operation risk.

Although extant studies have shown that agency risk and operation risk are determinants of auditor fees (Bedard & Johnstone, 2004; Bell et al., 2001; Gul & Tsui, 1997; Houston et al., 2011; Xing & Chen, 2013; Zhu et al., 2017), no studies examine the impact of insider selling on audit fees. To fill this gap, this paper examines the impact of insider selling on audit fees by using a sample of Chinese A-share listed companies from 2006 to 2016. The results show that auditors of clients with higher insider selling tend to charge higher fees. Mechanism tests show that the presence of insider selling is associated with a higher level of audit risk, which in turn increases audit fees. Further tests show that, the positive relation between insider selling and audit fees is stronger for non-SOEs and BIG4 audited firms; auditors only charge higher audit fees for share selling of large shareholders and directors. These results indicate that auditors can identify the risk of insider selling and charge higher audit fees.

Our paper contributes to the literature in several ways. First, this paper extends the short selling literature. Existing studies have examined the impact of insider selling on the listed firms (Cai, 2012; Chen et al., 2018; Liu et al., 2017; Sun et al., 2017; Wu & Li, 2015; Wu & Wu, 2010; Wu & Zhang, 2009; Zhou & Zhao, 2015; Zhu et al., 2011). Unlike prior studies, our research shows that the impact extends to other related market participants, such as auditors, therefore expanding the research perspective of insider selling. Secondly, this paper helps to deepen the understanding of audit fees. With regard to audit fees, existing studies mainly focus on business complexity, litigation risk and agency risk (Bedard & Johnstone, 2004; Bell et al., 2001; Gul & Tsui, 1997; Houston. et al., 2011; Xing & Chen, 2013; Zhu et al., 2017). Based on the risk caused by insider selling, this paper explores the effect of insider selling on audit fees, and identifies a new determinant of audit fees.

The remainder of this paper is organised as follows. [Section 2](#) reviews related literature and develops testing hypotheses. [Section 3](#) describes the given data and regression model. [Section 4](#) presents baseline results and robustness tests. [Section 5](#) provides an additional analysis. [Section 6](#) outlines a conclusion of the given research.

2. Literature review and research hypotheses

2.1. Literature review

Existing studies on insider selling mainly focus on: (1) the economic consequences of insider selling, (2) opportunism in insider selling.

2.1.1. *The economic consequences of insider selling*

First, insiders selling has an impact on firms' stock price. Theoretically, the effect of insider selling on firms' stock price comes from two aspects. The first one is the signal effect. Insiders participate in corporate daily operating or in making important decisions. Furthermore, they certainly have information and valuation advantages with respect to the prospects of their companies. Therefore, external investors view insider selling as an important signal of insiders' private information on firm value, and will re-evaluate firm value when they receive the signal delivered by insider selling (Piotroski & Roulstone, 2005), thus indirectly affecting the stock price. Because insiders often utilise their information and valuation advantages to sell their holdings to gain abnormal trading profit, they believe that the price of their holdings is overvalued by external investors. Therefore, insider selling conveys negative information about corporate value or prospects, and often leads to large fluctuation of stock price. The second one is that insider selling affects the supply of stocks. Even if there is no signal effect, insiders selling will increase the supply of stocks in the market. If the demand of the stock does not change, an increase in supply of stock will lead to a decline of a stock price.

In addition, prior studies have shown the more extreme situation when insider selling can lead to a stock price crash (Chen et al., 2018; Sun et al., 2017; Wu & Li, 2015). Wu and Li (2015) argue that insider selling conveys negative information about corporate uncertainty, valuation or prospects, which exacerbates the conflict between executives and external investors, increases the uncertainty of the company's future, and then leads to a stock price crash. Sun et al. (2017) believe that insiders would suppress bad news when they sell their holdings, which leads to negative news accumulation and eventually results in a stock price crash.

Sudden and large declines in stock price caused by inside selling would cause a significant loss on external investors' wealth and harm investors' confidence. Therefore, inside selling has a long-term detrimental impact on the development and growth of firms. Specifically, insider selling will cause adverse selection of external investors, which results in higher cost of capital and less access to external finance (Ausubel, 1990; Bhattacharya & Daouk, 2002; Manove, 1989; Zhou & Zhao, 2015). The adverse selection of external investors caused by insider selling decreases capital expenditure, investment-investment opportunities sensitivity (Wu & Wu, 2018), and firm growth (Li et al., 2013).

2.1.2. *Opportunism in insider selling*

Prior studies have shown that in order to maximise the profit from insider selling, insiders tend to inflate stock prices by manipulating information disclosure, engaging in capital operation, and paying large stock dividends. Earnings management is a common tool used by insiders to mislead external investors to inflate stock price. Wu and Zhang (2009)

find that insider selling often occurs before income-decreasing earnings management, and manipulating real activities has become a common way to manage earnings when insiders sell their holdings. Wu and Wu (2010) find that firms tend to manipulate corporate disclosure by accelerating (delaying) the disclosure of good (bad) news before insider selling in order to maximise the profit from insider selling. Using the data of changes in restricted shares after the Share Splitting Reform, Cai (2012) finds that when non-tradable shareholders selling more shares, firms will have a higher level of earnings management. Using voluntary management forecasts data, Lu et al. (2017) find that firms with insider selling will issue more voluntary management forecasts.

In addition, insiders will also manipulate non-financial information and collude with information intermediaries to maximise the profit from insider selling. Based on textual analysis, Zeng et al. (2018) find that the more positive the tone of a listed company's annual report is, the more shares insiders sell after the announcement of annual reports. Yi et al. (2017) find that media attention and media tone are significantly higher than normal levels during the period of insider selling, confirming the collusion between insiders and media to manipulate the content and timing of corporate disclosure.

Finally, in order to maximise the profit from insider selling, insiders tend to mislead investors through investment and dividend payment policies. Zhang and Xu (2017) find that firms are more likely to engage in capital operation around the expiration date of restricted stocks held by large shareholders, because capital operation can inflate stock price. Xie et al. (2016) find that insiders are more likely to pay large stock dividends before they sell their holdings, because irrational retailer investors suffer from nominal illusion caused by large stock dividends.

2.2. Research hypotheses

According to the literature (Bedard & Johnstone, 2004; Bell et al., 2001; Gul & Tsui, 1997; Houston et al., 2011; Xing & Chen, 2013; Zhu et al., 2017), audit fees are mainly decided by audit costs and audit risk. When audit cost is unchanged or not obviously changed, whether the audit fees change or not mainly depends on the auditor's judgement on the changes of audit risk. When audit risk increases, auditors will charge higher audit fees to compensate for such increase in risk. We propose that insiders selling will increase agency risk and corporate operating risk, which results in higher audit risk and the resulting audit fees.

First, insider selling will increase the agency risk. Agency risk in the literature refers to the risk that corporate insiders pursue for a private benefit at the expense of the external investors. Insider selling will reduce the effectiveness of equity incentives and will increase the agency conflict between insiders and external investors. When insiders are company executives, insider selling exacerbates the agency conflict between executives and external investors. When insiders are large shareholders, insider selling exacerbates the agency conflict between large shareholders and external investors (Wu & Li, 2015). When agency conflict increases, insiders will engage in complex operating activities and manipulation of information disclosure for their private benefit, which results in an increase in risk of material misstatement and corporate fraud. Studies have shown that firms with more

serious agency problems have higher audit difficulties and greater audit risk. To compensate the audit risk caused by agency risk, auditors will charge more audit fees (Bedard & Johnstone, 2004; Gul & Tsui, 1997; Zhu et al., 2017).

In addition, agency risk will increase a corporate operating risk. Insider selling has a long-term negative impact on the development and growth of firms. Bhattacharya and Daouk (2002) find that insiders selling will cause adverse selection of external investors, which results in higher cost of capital and less access to external finance. Atallah et al. (2014) find that insider selling exacerbates corporate financing constraints because the incentive to maximise trading profit induces insiders to manipulate corporate disclosure and make firms' information environment opaque. Wu and Li (2015) also find insider selling will lead to stock price crashes and exacerbate corporate financing constraints. Zhou and Yang (2018) find that in order to avoid government supervision, firms with insider trading often adopt accounting policies that are different from industry standards, thereby significantly reducing the comparability of accounting information. Because a higher level of comparability of accounting information can decrease cost of equity capital (Wang et al., 2018), the manipulation of accounting policies caused by insider selling increases cost of equity capital. In addition, insider selling conveys negative information about corporate value and harms confidence of external investors, which also leads to an increase in financing constraints (Zhou & Zhao, 2015). Li et al. (2013) find that the abnormal share selling of core management has a negative impact on firm growth. Wu and Wu (2018) find that share sales of large shareholders increase firms' financing constraints and reduce investment efficiency.

As firm riskiness is a key factor that induces managers to manipulate financial disclosure (Dye, 1988; Kim et al., 2011; Lambert, 1984), insider selling can increase their incentives to engage in material misstatement and corporate fraud, which results in higher audit difficulties and greater audit risk. To compensate the increase audit risk, auditors will charge higher auditing fees. Therefore, the more insider selling, the higher the audit fees will be.

Finally, in order to maximise the profit from insider selling, insiders will engage in a series of opportunistic information disclosure. Wu and Zhang (2009) find that insider selling often occurs before income-decreasing earnings management, supporting the view that manipulation of corporate earnings is a common way to increase trading profit when insiders intend to sell their shares. Wu and Wu (2010) find that large shareholders have incentive and ability to manipulate corporate information disclosure to maximise the profit of share selling. Cai (2012) finds that when non-tradable shareholders selling more shares, firms will have a higher level of earnings management. Therefore, the increase in opportunistic information disclosure caused by insiders selling will increase the audit risk for auditors. To compensate such increase in audit risk, auditors will charge a higher risk premium, which results in higher audit fees.

Based on the analysis above, we propose our hypothesis as follows:

H: Firms with more insider selling are charged for higher audit fees.

3. Research design

3.1. Sample and data

As insider trading was not allowed before 2006, we construct our sample with all Chinese A-share listed companies between 2006 and 2016 as our initial sample, and then select our samples as follows: (1) we exclude observations from financial sector; (2) we exclude ST observations; (3) we exclude observations with missing variables. Our final sample includes 17,982 observations. We obtain our insider trading data and firm characteristics data from the CSMAR database. We also winsorise the continuous variables at the 1% and 99% levels to mitigate the effect of outliers. It is worth to mention that the reasons for insiders to sell their holdings in CSMAR database include secondary market trading, stock auction, block trading, stock dividends, equity incentive implementation, and stock compensation in Share Splitting Reform. Following Zhou et al. (2015), we only keep insider selling of secondary market trading, stock auction, block trading.

3.2. Regression model and variable definition

To examine the impact of insider selling on audit fees, following Li et al. (2017) and Zhou and Yang (2018), we estimate the following model:

$$LNFEF = \alpha_0 + \beta STRADER + \gamma Controls + \varepsilon \quad (1)$$

where the dependent variable, *LNFEF*, which is equal to the natural logarithm of audit fees. The independent variable, *STRADER*, which equals to the number of shares sold by insiders divided by the total share at the end of the previous year. Insiders include controlling shareholders, directors, executives, and supervisors. The control variables (*Controls*) are the potential factors that have been shown to affect audit fees in prior studies. The definition of control variables is shown in Table 1.

Table 1. Variable definition.

Symbol	Variable definition
Dependent Variable	
<i>LNFEF</i>	The natural logarithm of annual audit fees.
Independent Variable	
<i>STRADER</i>	The number of shares sold by insiders divided by the total share at the end of the previous year. Insiders include controlling shareholders, directors, executives, supervisors.
Control Variables	
<i>SIZE</i>	The natural logarithm of total assets at the end of the year.
<i>ROA</i>	Net income deflated by total assets at the end of the year.
<i>LEV</i>	Total current liabilities divided by total assets at the end of the period.
<i>ARR</i>	Accounts receivable divided by the total assets at the end of the period.
<i>INV</i>	Inventory divided by total assets at the end of the period.
<i>LOSS</i>	A dummy variable that equals 1 if net profit is negative, and 0 otherwise.
<i>CUR</i>	Total current assets divided by the total assets at the end of the period.
<i>ABSACC</i>	Absolute value of discretionary accruals estimated from Jones (1991).
<i>OPINION</i>	A dummy variable that equals one for standard qualified report, and 0 otherwise.
<i>AUDIN</i>	The natural logarithm of the number of days from the beginning of the year to the announcement date of the annual audit report.
<i>TENURE</i>	The natural logarithm of audit tenure of audit firm.
<i>TOP1</i>	Fraction of shares held by the largest shareholder.
<i>MHOLD</i>	Fraction of shares held by executives.
<i>INDEP</i>	Number of independent directors divided by total number of directors.

3.3. Summary statistics

Table 2 reports the summary statistics of the variables used in our baseline analyses. As shown, the mean value of insider selling (*STRADER*) is 1.2%, and the median value of insider selling (*STRADER*) is 0, indicating that *STRADER* is left-censored. The mean values of firm size (*SIZE*), profitability (*ROA*), and current liabilities ratio (*LEV*), are 21.89, 3.6% and 19.8% respectively. The mean values of accounts receivable ratio (*ARR*), inventory ratio (*INV*), and current assets ratio (*CUR*) 10.6%, 16.5% and 55.5% respectively. The mean values of *LOSS* and accrual profit ratio (*ABSACC*) are 10.2% and 3.7% respectively, indicating that 10.2% of our sample companies are in loss and the absolute value of discretionary accruals account for 3.7 of total assets. The mean values of audit opinion (*OPINION*), audit input (*AUDIN*), and auditor tenure (*TENURE*) are 95.9%, 4.47 and 4.08 respectively. This indicates that 95.9% of annual reports are received standard unqualified opinions, and the average auditor tenure is 4.08 years. Among the indicators proxy for corporate governance, the mean values of the percentage shares held by largest shareholders (*TOP1*), the percentage shares held by managerial team (*MHOLD*) and the proportion of independent directors (*INDEP*) are 38.4%, 9.7% and 36.9% respectively. The summary statistics reported in Table 2 are basically consistent with the existing literature.

4. Empirical results and analysis

4.1. Main regression results

Table 3 reports the estimation results for our baseline regression. In Column 1, we only include firm financial characteristics, such as a firm size, profitability, interest-bearing liability ratio, accounts receivable ratio, inventory ratio, current assets ratio, *LOSS*, and discretionary accruals, along with industry and year fixed effects. The coefficient of insider selling is 0.210 and significant at the 5% level, indicating that insider selling is positively related to audit fees. This result is consistent with our research hypothesis. Among the control variables, the coefficients of firm size, accounts receivable ratio, *Loss* and absolute value of discretionary accruals are significantly positive, indicating firms are charged higher audit fees when size is larger, accounts receivable ratio is higher, net income is

Table 2. Summary statistics.

Variables	N	Mean	S.D.	Min	Median	Max
<i>LNFEED</i>	17,982	13.42	0.606	12.21	13.31	15.51
<i>STRADER</i>	17,982	0.012	0.028	0.000	0.000	0.150
<i>SIZE</i>	17,982	21.89	1.228	19.00	21.76	25.71
<i>ROA</i>	17,982	0.036	0.058	-0.224	0.034	0.218
<i>LEV</i>	17,982	0.198	0.167	0.000	0.175	0.659
<i>ARR</i>	17,982	0.106	0.098	0.000	0.081	0.444
<i>INV</i>	17,982	0.165	0.154	0.000	0.125	0.756
<i>LOSS</i>	17,982	0.102	0.303	0.000	0.000	1.000
<i>CUR</i>	17,982	0.555	0.212	0.009	0.566	1.000
<i>ABSACC</i>	17,982	0.059	0.061	0.001	0.041	0.358
<i>OPINION</i>	17,982	0.959	0.198	0.000	1.000	1.000
<i>AUDIN</i>	17,982	4.473	0.279	3.332	4.489	4.771
<i>TENURE</i>	17,982	4.081	2.983	1.000	3.000	20.00
<i>TOP1</i>	17,982	0.384	0.157	0.096	0.369	0.758
<i>MHOLD</i>	17,982	0.097	0.181	0.000	0.000	0.672
<i>INDEP</i>	17,982	0.369	0.052	0.300	0.333	0.571

negative, and absolute value of discretionary accruals is larger. The coefficients of current liabilities ratio, inventory ratio, and current assets ratio are significantly negative, indicating that auditors charge higher audit fees for firms with lower current liabilities ratio, inventory ratio, and current assets ratio. The coefficients of control variables are generally consistent with the results of previous studies.

We then estimate a model that incorporates additional audit characteristics controls. According to Column 2 of Table 3, the coefficient of insider selling is 0.270 and significant at the 1% level, which is quantitatively and qualitatively similar with estimations made earlier. And this result also indicates that the higher the level of insider selling is, the higher audit fees charged by auditors. Among the control variables, firms with non-standard unqualified audit opinion, longer audit time input and auditor tenure pay for higher audit fees.

Finally, in Columns 3, we estimate a full model described in Eq (1) that incorporates additional corporate governance characteristics. The coefficient of insider selling variable is 0.229 and significant at the level of 5%. Among the control variables, the coefficient of

Table 3. Insider selling and audit fees.

	LNFEF		
	(1)	(2)	(3)
STRADER	0.210** (2.04)	0.270*** (2.61)	0.229** (2.20)
SIZE	0.370*** (99.57)	0.370*** (99.59)	0.372*** (97.15)
ROA	0.094 (1.19)	0.240*** (3.01)	0.208*** (2.60)
LEV	-0.157*** (-6.11)	-0.165*** (-6.51)	-0.162*** (-6.37)
ARR	0.406*** (10.15)	0.415*** (10.41)	0.408*** (10.23)
INV	-0.061* (-1.96)	-0.034 (-1.10)	-0.024 (-0.76)
LOSS	0.074*** (5.43)	0.060*** (4.41)	0.061*** (4.46)
CUR	-0.136*** (-5.66)	-0.131*** (-5.48)	-0.142*** (-5.90)
ABSACC	0.281*** (5.08)	0.197*** (3.59)	0.202*** (3.66)
OPINION		-0.160*** (-9.74)	-0.165*** (-9.97)
AUDIN		0.086*** (8.15)	0.085*** (8.06)
TENURE		0.009*** (7.74)	0.009*** (8.14)
TOP1			0.020 (0.96)
MHOLD			0.084*** (4.78)
INDEP			0.083 (1.38)
Constant	5.265*** (67.70)	4.999*** (56.56)	4.927*** (53.29)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Observations	17,982	17,982	17,982
Adj.R ²	0.554	0.559	0.560

Heteroscedasticity robust *t* statistics are displayed in parentheses; ***, ** and * denote significance levels of 1%, 5% and 10%, respectively.

shareholdings of executives is significantly positive. However, the coefficients of shareholdings of the largest shareholder and the proportion of independent directors are not significant related with audit fees. In summary, the results in Table 3 are consistent with our hypothesis that firms with more insider selling tend to be charged more audit fees.

4.2. Robustness tests

In this subsection, we conduct several robustness tests. First, to mitigate endogeneity concerns, we employ an instrumental variable method. Second, we check whether our findings are robust to using alternative measures of insider selling.

4.2.1. Endogeneity

In the previous section, we show that there is a positive relation between insider selling and audit fees after we control for other factors that have been shown to affect audit fees. However, the documented positive relation between insider selling and audit fees may be affected by endogeneity concerns related to omitted variables and reverse causality. For example, the omitted corporate characteristics may make insiders more likely to sell their holdings, and these corporate characteristics lead auditors to adopt more rigorous risk-response audit process, thus resulting in an increase in audit fees. And an increase in the corporate operating risk leads to an increase in insider selling, which may be associated with an increase in audit fees. Endogeneity concerns caused by missing variables or reverse causality may affect the robustness of our previous findings.

We employ an instrumental variable method to mitigate endogeneity concern. Instrumental variable method allows to address both omitted variables and reverse causality at the same time. To do so, we need at least one instrumental variable that is correlated with insider selling, meanwhile uncorrelated with audit fees. First, following Cui et al. (2017), we use the expiration year of restricted shares (*ExpirationYear*) as an exogenous instrument. Xie et al. (2016) find that insider selling significantly increases at the expiration year of restricted shares. Therefore, the expiration year of restricted shares is highly correlated with insider selling, which meets the correlation requirement of instrumental variables. In addition, the expiration year of restricted shares is scheduled one year or three years ahead, which is theoretically not related to the random error term in Eq (1). Therefore, the expiration year of restricted shares satisfies the exclusion condition of instrumental variable method. Second, we use industry averages of insider selling of all the other firms in the same industry as our second instrumental variable. An average industry insider trading should meet the relevance condition because Yi et al. (2019) find that peer firms play an important role in determining insider selling. However, industry average insider selling is unlikely related to the individual firm's audit fees. Thus, industry average insider selling likely satisfies the exclusion restriction.

We report the first-stage result in Column 1 of Table 4. Column 1 of Table 4 shows that the coefficients of our instruments, the expiration year of restricted shares (*ExpirationYear*) and industry average insider selling (*Average-industry InsiderSelling*), are 0.007 and 0.192, which are both significantly positive at the 1% level. Then we conduct tests for the validity of our instruments. The Cragg-Donald Wald F statistic is 81.85 and rejects the weak IV null hypothesis at the 10% level (Stock & Yogo, 2005), suggesting that our tests are unlikely to suffer from a weak IV problem. We then compute Hansen's J-test statistic to test for over-

Table 4. Instrumental variable analysis.

	(1) First Stage <i>STRADER</i>	(2) Second Stage <i>LNFE</i>
<i>STRADER</i>		1.454** (2.14)
<i>ExpirationYear</i>	0.007*** (10.42)	
<i>Average-industry InsiderSelling</i>	0.192*** (3.02)	
<i>SIZE</i>	0.000 (0.38)	0.304*** (42.70)
<i>ROA</i>	0.010 (1.44)	0.149** (2.27)
<i>LEV</i>	0.008*** (2.93)	-0.047* (-1.76)
<i>ARR</i>	0.000 (0.07)	0.321*** (6.17)
<i>INV</i>	0.005 (1.39)	0.041 (1.16)
<i>LOSS</i>	0.002** (2.36)	0.014 (1.61)
<i>CUR</i>	-0.003 (-0.92)	-0.201*** (-8.17)
<i>ABSACC</i>	0.005 (1.23)	0.096** (2.54)
<i>OPINION</i>	0.004** (2.55)	-0.056*** (-3.97)
<i>AUDIN</i>	-0.001 (-1.01)	0.022*** (2.87)
<i>TENURE</i>	-0.000 (-0.77)	0.001 (1.32)
<i>TOP1</i>	-0.045*** (-11.78)	0.038 (0.80)
<i>MHOLD</i>	-0.020*** (-3.26)	-0.177*** (-4.15)
<i>INDEP</i>	0.000 (0.02)	-0.097* (-1.68)
<i>Constant</i>	0.015 (1.08)	6.830*** (61.78)
<i>Industry fixed effect</i>	Yes	Yes
<i>Year fixed effect</i>	Yes	Yes
<i>Observations</i>	17,952	17,952
<i>Test of weak instruments and overidentification</i>		
<i>Cragg-Donald Wald F statistic</i>	81.85	
<i>Hansen J-statistic</i>	1.019	
<i>p-Value</i>	0.313	

Heteroscedasticity robust *t* statistics are displayed in parentheses; ***, ** and * denote significance levels of 1%, 5% and 10%, respectively.

identifying restrictions. The *J*-statistics fail to reject the joint null hypothesis that our instruments are uncorrelated with the error term, implying that the instruments are exogenous with respect to a firms' audit fees. Column 2 of Table 4 shows the second-stage result. The coefficient of insider selling is 1.454, which is also significantly positive at the 5% level. Table 4 shows that after mitigating the endogeneity concerns, the effect of insider selling on audit fees still holds. To conclude, the results of instrumental variable method suggest a causal effect from insider selling to audit fees.²

²Our results still hold if we only use *ExpirationYear* as our instrumental variable.

4.2.2. Alternative measure for insider selling

We then check whether our findings are robust to alternative measure of insider selling. In the previous section, the explanatory variable is a continuous variable, which implies the percentage shares sold by insiders. According to our summary statistics, nearly 53% (9,530/17,982) of our observations do not have insider selling. Therefore, it is necessary to further examine whether the presence of insider selling affects audit fees. In order to effectively conduct it we split our full sample based on whether a firm has insider selling in a given year and define an indicator variable, *STRADER_D*, which equals to one if a firm reports insider selling in a given year, and zero otherwise. And then, we repeat our analysis to test whether the presence of insider selling affects audit fees.

The results are shown in Table 5. In Column 1, we only include firm financial characteristics. The coefficient of *STRADER_D* is 0.024 and significant at the 5% level, indicating that

Table 5. Alternative measures of insider selling.

	<i>LNFE</i>		
	(1)	(2)	(3)
<i>STRADER_D</i>	0.024*** (3.79)	0.027*** (4.40)	0.016** (2.47)
<i>SIZE</i>	0.375*** (110.21)	0.375*** (109.78)	0.379*** (108.10)
<i>ROA</i>	-0.407*** (-6.60)	0.113 (1.41)	0.093 (1.16)
<i>LEV</i>	-0.274*** (-11.72)	-0.282*** (-11.38)	-0.272*** (-10.96)
<i>ARR</i>	0.335*** (10.15)	0.389*** (10.20)	0.367*** (9.64)
<i>INV</i>	-0.159*** (-7.62)	-0.103*** (-3.62)	-0.077*** (-2.70)
<i>LOSS</i>		0.068*** (4.93)	0.069*** (5.02)
<i>CUR</i>		-0.035 (-1.49)	-0.058** (-2.48)
<i>ABSACC</i>		0.090 (1.62)	0.110** (1.98)
<i>OPINION</i>		-0.160*** (-9.44)	-0.167*** (-9.81)
<i>AUDIN</i>		0.119*** (11.09)	0.115*** (10.71)
<i>TENURE</i>		0.010*** (9.14)	0.011*** (9.60)
<i>TOP1</i>			-0.009 (-0.42)
<i>MHOLD</i>			0.153*** (8.80)
<i>INDEP</i>			0.181*** (2.99)
<i>Constant</i>	5.243*** (73.32)	4.794*** (57.36)	4.680*** (54.20)
<i>Industry fixed effect</i>	Yes	Yes	Yes
<i>Year fixed effect</i>	Yes	Yes	Yes
<i>Observations</i>	17,982	17,982	17,982
<i>Adj.R²</i>	0.531	0.541	0.543

Heteroscedasticity robust *t* statistics are displayed in parentheses; ***, ** and * denote significance levels of 1%, 5% and 10%, respectively.

insider selling is positively related to audit fees. We then estimate a model that incorporates additional audit characteristics controls. According to Column 2 of Table 5, the coefficient of insider selling is 0.027 and significant at the 1% level, which is quantitatively and qualitatively similar with the estimated earlier. Finally, in Columns 3, we estimate a full model described in Eq (1) that incorporates additional corporate governance characteristics. The coefficient of insider selling variable is 0.016 and significant at the level of 5%. In summary, the results in Table 5 indicate that firms with insider selling tend to be charged more audit fees and our findings are robust to using alternative measure of insider selling.

5. Mechanism tests

As discussed above, an important channel through which insider sells can increase audit fees is by magnifying audit risk. In this subsection, we further test whether the positive impact of insider selling on audit fee is mediated by audit risk. That is, the presence of insider selling is associated with a higher level of audit risk, which in turn increases audit fees. Following Baron and Kenny (1986) and Banker et al. (2008), we estimate the following models:

$$LNFE = \alpha_0 + \beta_1 STRADER + \gamma Controls + \varepsilon \quad (2)$$

$$AuditRisk = \alpha_0 + \beta_2 STRADER + \gamma Controls + \varepsilon \quad (3)$$

$$LNFE = \alpha_0 + \beta_3 STRADER + \beta_4 AuditRisk + \gamma Controls + \varepsilon \quad (4)$$

Equation (2) is same as Equation (1), and β_1 represents the total effect of insider selling on audit fees. In Equation (3), we estimate the relation of insider selling on audit risk, and β_2 represents the direct effect of insider selling on audit fees. In Eq (4), we modify Eq (2) to include our audit risk variable and β_3 represent the direct effect of insider selling on audit fee. The mediated effect is represented by the product of β_2 and β_4 in Equations (3,4).

Following Song (2011), we use the financial fraud identified by the China Securities Regulatory Commission as a measure of audit risk. Column (1), (2), and (3) in Table 6 show the regression results for Equations (2–4), respectively. We find that β_1 , β_2 , β_3 , and β_4 are all significantly positive. The product of β_2 and β_4 is also positive. Sobel z-test shows that the product of β_2 and β_4 is statistically significant. Therefore, the results indicate that insider sellings can increase audit fees is by enlarging audit risk.

6. Further tests

In this section, we explore cross-sectional variations in the impact of insider selling on audit fees. We then test which category of insiders primarily drives the positive relation between insider selling and audit fees.

6.1. The effect of client and auditor types

Based on the above research findings, we then explore cross-sectional variations in the impact of insider selling on audit fees.

Table 6. Insider Selling and Audit Risk.

	(1) <i>LNFFEE</i>	(2) <i>Audit Risk</i>	(3) <i>LNFFEE</i>
<i>STRADER</i>	0.229** (2.20)	0.256*** (2.73)	0.222** (2.13)
<i>Audit Risk</i>			0.027*** (2.78)
<i>SIZE</i>	0.372*** (97.15)	-0.012*** (-5.29)	0.372*** (97.24)
<i>ROA</i>	0.208*** (2.60)	-0.163*** (-2.68)	0.213*** (2.65)
<i>LEV</i>	-0.162*** (-6.37)	0.078*** (4.16)	-0.164*** (-6.45)
<i>ARR</i>	0.408*** (10.23)	0.053* (1.76)	0.407*** (10.20)
<i>INV</i>	-0.024 (-0.76)	0.003 (0.12)	-0.024 (-0.76)
<i>LOSS</i>	0.061*** (4.46)	0.033*** (2.72)	0.060*** (4.40)
<i>CUR</i>	-0.142*** (-5.90)	-0.002 (-0.13)	-0.142*** (-5.90)
<i>ABSACC</i>	0.202*** (3.66)	0.047 (1.05)	0.201*** (3.64)
<i>OPINION</i>	-0.165*** (-9.97)	-0.114*** (-6.55)	-0.162*** (-9.77)
<i>AUDIN</i>	0.085*** (8.06)	0.040*** (4.79)	0.084*** (7.95)
<i>TENURE</i>	0.009*** (8.14)	-0.002** (-1.98)	0.009*** (8.18)
<i>TOP1</i>	0.020 (0.96)	-0.078*** (-5.22)	0.022 (1.07)
<i>MHOLD</i>	0.084*** (4.78)	0.005 (0.36)	0.084*** (4.78)
<i>INDEP</i>	0.083 (1.38)	-0.059 (-1.35)	0.085 (1.41)
<i>Constant</i>	4.927*** (53.29)	0.299*** (4.91)	4.919*** (53.22)
<i>Industry fixed effect</i>	Yes	Yes	Yes
<i>Year fixed effect</i>	Yes	Yes	Yes
<i>Observations</i>	17,982	17,982	17,982
<i>Pseudo R²</i>	0.560	0.031	0.560

Heteroscedasticity robust *t* statistics are displayed in parentheses; ***, ** and * denote significance levels of 1%, 5% and 10%, respectively.

First, we explore whether and how the types of clients may affect the positive relation between insider selling and audit fees. In China, due to the different nature of property, there are great differences between state-owned enterprises and non-state-owned enterprises in incentives and restrictions of insider selling (Li & Liu, 2012). As a result, same activities of insiders in these two types of enterprises may lead to different economic consequences. Compared with non-state-owned listed companies, insiders of state-owned listed companies are less keen to cash out by selling their holdings (Gao et al., 2016). In addition, unlike insiders of non-state-owned listed companies, insiders of state-owned listed companies usually use insider selling as a way to smooth performance rather than to pursue profit (Wang et al., 2013). And, there are many restrictions on insider selling in state-owned listed companies. Therefore, compared to the insiders of non-state-owned companies, the insiders of state-owned listed companies have less incentive to manipulate information disclosure or engage in other opportunistic behaviours in the process of

share selling. Moreover, the conflict between insiders of non-state-owned listed companies and external investors are more severe (Jiang et al., 2010; Jiang et al., 2015), which could lead to more opportunistic behaviours. Hence, compared with state-owned enterprises, the effect of insider selling on audit risk is stronger for non-state-owned enterprises. Therefore, compared with state-owned enterprises, the relation between insider selling and audit fees is more pronounced for non-state-owned enterprises.

To test this conjecture, we estimate the following model:

$$LNFE = \alpha_0 + \beta STRADER * SOE + \gamma Control + \varepsilon \quad (5)$$

Where *SOE* is an indicator which equals one if a client is state-owned, and 0 otherwise. The main explanatory variable is the interaction term between insider selling and client types (*STRADER*SOE*). Other variables are defined as in Eq (1). The results are reported in Column 1 in Table 7. The coefficient of *STRADER*SOE* is significantly negative, suggesting that the positive relation between insider selling and audit fees is stronger in private enterprises. This result is consistent with our prediction that auditors charge a higher risk premium for insider selling in private enterprises.

Second, we explore whether and how the types of auditor may affect the positive relation between insider selling and audit fees. Studies have shown that there are significant differences in risk pricing between BIG4 auditors and non-BIG4 auditors. According to Simunic (1980), when clients are with high risk, auditors will charge a higher level of audit fees to compensate for the expected loss. The expected loss can be divided into two parts, the reputation loss in case of an audit failure and the legal liability costs in case of losing a lawsuit (Liu et al., 2014). For BIG4 auditors, they have greater reputation capital at stake, and thus will suffer a greater reputation loss in case of an audit failure, compared with the non-Big4 auditors. In addition, Big 4 auditors have deeper pockets and are more likely to be sued when external investor suffer financial losses (Lennox, 1999). Therefore, BIG4 auditors are more inclined to be cautious of clients with insider selling and tend to charge higher audit fee (Elliott et al., 2013; Hogan & Wilkins, 2010).

To test this conjecture, we estimate the following model:

$$LNFE = \alpha_0 + \beta STRADER * BIG4 + \gamma Controls + \varepsilon \quad (6)$$

Where *BIG4* is an indicator which equals one if a firm is audited by BIG4 auditors, and 0 otherwise. The main explanatory variable is the interaction term between insider selling and auditor types (*STRADER*BIG4*). Other variables are defined as in Eq (1). The results are reported in Column 2 in Table 7. The coefficient of *STRADER*BIG4* is significantly positive, suggesting that the positive relation between insider selling and audit fees is stronger for firms with BIG4 auditors. This result is consistent with our prediction that BIG4 auditors charge higher risk premium for insider selling.

6.2. Insider heterogeneity

Our previous results show that auditors can identify the risk of insider selling and ask for higher audit fees. However, the empirical reality is that not all insiders are sufficiently significant to have an impact on audit risk. It is therefore instructive to see which category of insiders primarily drives our findings. To do so, we further partition our insiders into the

Table 7. The effect of client and auditor types.

	LNFEF	
	(1) SOE v.s. Non-SOE	(2) BIG4 v.s. Non-BIG5
<i>STRADER</i>	0.246** (2.18)	0.214** (2.13)
<i>STRADER*SOE</i>	-0.693*** (-2.63)	
<i>STRADER*BIG4</i>		1.485** (2.09)
<i>SOE</i>	-0.141*** (-18.58)	
<i>BIG4</i>		0.620*** (32.81)
<i>SIZE</i>	0.392*** (110.12)	0.334*** (92.53)
<i>ROA</i>	-0.019 (-0.24)	0.151** (2.00)
<i>LEV</i>	-0.290*** (-11.79)	-0.064*** (-2.67)
<i>ARR</i>	0.356*** (9.51)	0.360*** (9.41)
<i>INV</i>	-0.085*** (-3.02)	-0.002 (-0.08)
<i>LOSS</i>	0.068*** (4.97)	0.051*** (3.96)
<i>CUR</i>	-0.086*** (-3.70)	-0.086*** (-3.68)
<i>ABSACC</i>	0.105* (1.91)	0.163*** (3.13)
<i>OPINION</i>	-0.161*** (-9.53)	-0.144*** (-9.24)
<i>AUDIN</i>	0.102*** (9.64)	0.094*** (9.37)
<i>TENURE</i>	0.010*** (8.90)	0.006*** (5.72)
<i>TOP1</i>	-0.000 (-0.01)	-0.008 (-0.41)
<i>MHOLD</i>	-0.001 (-0.04)	0.091*** (5.32)
<i>INDEP</i>	0.117* (1.95)	0.018 (0.32)
<i>Constant</i>	4.591*** (53.44)	5.655*** (64.56)
<i>Industry fixed effect</i>	Yes	Yes
<i>Year fixed effect</i>	Yes	Yes
<i>Observations</i>	17,978	17,982
<i>Adj.R²</i>	0.553	0.602

Heteroscedasticity robust *t* statistics are displayed in parentheses; ***, ** and * denote significance levels of 1%, 5% and 10%, respectively.

following four mutually exclusive categories: (1) large shareholders, (2) directors, (3) non-directors executives, and (4) supervisors, and test whether the effect of insider selling on audit fees varies among insider types.

The results are reported in Table 8. We find that auditors charge higher audit fees only for share selling of large shareholders and directors. The reason may be that non-director executives and supervisors have few shares and few selling activities, which could lower the validity of test. In addition, large shareholders use their voting rights to gain the control of board members and decision right of listed firms in China. Therefore, as the core

Table 8. Insider Heterogeneity.

	LNFEF			
	(1) Large shareholders	(2) Directors	(3) Non-director executives	(4) Supervisors
<i>STRADER</i>	0.246** (2.04)	0.334* (1.65)	-3.073 (-1.18)	-5.429 (-1.06)
<i>SIZE</i>	0.370*** (96.81)	0.370*** (96.87)	0.369*** (96.75)	0.369*** (96.77)
<i>ROA</i>	0.319*** (3.82)	0.317*** (3.80)	0.317*** (3.80)	0.318*** (3.81)
<i>LEV</i>	-0.145*** (-5.69)	-0.144*** (-5.65)	-0.144*** (-5.66)	-0.144*** (-5.65)
<i>ARR</i>	0.426*** (10.58)	0.425*** (10.57)	0.427*** (10.61)	0.428*** (10.63)
<i>INV</i>	-0.005 (-0.16)	-0.008 (-0.25)	-0.007 (-0.23)	-0.007 (-0.23)
<i>LOSS</i>	0.064*** (4.74)	0.065*** (4.77)	0.065*** (4.76)	0.065*** (4.77)
<i>CUR</i>	-0.129*** (-5.35)	-0.127*** (-5.28)	-0.127*** (-5.28)	-0.127*** (-5.30)
<i>ABSACC</i>	0.219*** (4.99)	0.217*** (4.95)	0.217*** (4.95)	0.217*** (4.95)
<i>OPINION</i>	-0.174*** (-10.50)	-0.174*** (-10.49)	-0.173*** (-10.45)	-0.173*** (-10.45)
<i>AUDIN</i>	0.086*** (8.18)	0.086*** (8.16)	0.086*** (8.17)	0.086*** (8.17)
<i>TENURE</i>	0.009*** (8.03)	0.009*** (7.96)	0.009*** (7.94)	0.009*** (7.93)
<i>TOP1</i>	0.015 (0.73)	0.014 (0.67)	0.012 (0.57)	0.012 (0.57)
<i>MHOLD</i>	0.090*** (5.17)	0.083*** (4.58)	0.094*** (5.31)	0.094*** (5.25)
<i>INDEP</i>	0.093 (1.55)	0.092 (1.54)	0.093 (1.55)	0.091 (1.52)
<i>Constant</i>	4.952*** (53.68)	4.960*** (53.79)	4.964*** (53.82)	4.964*** (53.82)
<i>Industry fixed effect</i>	Yes	Yes	Yes	Yes
<i>Year fixed effect</i>	Yes	Yes	Yes	Yes
<i>Observations</i>	17,982	17,982	17,982	17,982
<i>Adj.R²</i>	0.560	0.560	0.560	0.560

Heteroscedasticity robust *t* statistics are displayed in parentheses; ***, ** and * denote significance levels of 1%, 5% and 10%, respectively.

members of management team, large shareholders and directors' share selling activities have more significant impact on firms' audit risk and are more likely to be priced by auditors. However, non-director executives and supervisors are not core members of management team, and their selling activities have little impact on audit risk. As a result, their selling activities are not priced by auditors (Zhou & Yang, 2018; Zhou & Zhao, 2015).

7. Conclusion

In recent years, insider selling has been a common feature of Chinese stock market, and has attracted great attention from regulators and academics. Prior studies have shown that insider selling will increase firms' operation risk and agency risk, and operating risk and agency risk are the key determinants of auditor fees. However, there are no studies investigating the impact of insider selling on audit fees. To fill this gap, this paper

examines the impact of insider selling on audit fees by using a sample of Chinese A-share listed companies from 2006 to 2016. The results show that auditors of clients with higher insider selling tend to charge higher fees. Mechanism tests show that insider selling is associated with a higher level of audit risk, which in turn increases audit fees. Further tests show that, the positive relation between insider selling and audit fees is stronger for non-SOEs and BIG4 audited firms; auditors only charge higher audit fees for share selling of large shareholders and directors. These results indicate that auditors can identify the risk of insider selling and charge higher audit fees, and provide new insight into the economic consequence of insider selling and a determinant of audit fees.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

Hualing Yang acknowledges the financial support from Zhengzhou University of Aeronautics Pre-research Project [2018KJ001]. Yunbiao Ma acknowledges financial support from the National Natural Science Foundation of China [71802049, 71802207], MOE (Ministry of Education in China) Project of Humanities and Social Sciences [20YJC630101, 18YJC630271], the Program for Innovation Research, and China's Management Accounting Research and Development Center in Central University of Finance and Economics.

References

- Ataullah, A., Goergen, M., & Le, H. (2014). Insider trading and financing constraints. *Financial Review*, 49(4), 685–712. <https://doi.org/10.1111/fire.12053>
- Ausubel, L.M. (1990). Insider trading in a rational expectations economy. *American Economic Review*, 80(5), 1022–1041. <https://www.jstor.org/stable/2006759>
- Banker, R.D., Bardhan, I.R., & Chen, T. (2008). The role of manufacturing practices in mediating the impact of activity-based costing on plant performance. *Accounting, Organizations and Society*, 33(1), 1–19. <https://doi.org/10.1016/j.aos.2006.12.001>
- Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182. <https://doi.org/10.1037/0022-3514.51.6.1173>
- Bedard, J.C., & Johnstone, K.M. (2004). Earnings manipulation risk, corporate governance risk and auditors' planning and pricing decisions. *The Accounting Review*, 79(2), 277–304. <https://doi.org/10.2308/accr.2004.79.2.277>
- Bell, T.B., Landsman, W.R., & Shackelford, D.A. (2001). Auditors' perceived business risk and audit fees: Analysis and evidence. *Journal of Accounting Research*, 39(1), 35–43. <https://doi.org/10.1111/1475-679X.00002>
- Bhattacharya, U., & Daouk, H. (2002). The world price of insider trading. *The Journal of Finance*, 57(1), 75–108. <https://doi.org/10.1111/1540-6261.00416>
- Cai, H., Wang, X., & Tan, C. (2017). Large stock dividends, financial performance and the scale of large shareholders' stock-selling. *Accounting Research*, (12), 45–51+96 (In Chinese). <http://kns.cnki.net>
- Cai, N. (2012). Information advantage, timing and insider trading. *Journal of Financial Research*, (5), 179–192 (In Chinese). <http://kns.cnki.net>
- Chen, Z., Fang, H., & Wang, S. (2018). Dose share selling of directors, executives and supervisors affect stock price crash risk? *China Accounting Review*, 16(2), 175–204 (In Chinese). <http://kns.cnki.net>

- Cui, C., Chen, Y., & Zheng, D. (2017). Private placement and abnormal corporate payouts: Evidence from large stock dividends. *China Journal of Accounting Studies*, 5(1), 28–49. <https://doi.org/10.1080/21697213.2017.1292717>
- Dye, R.A. (1988). Earnings management in an overlapping generations model. *Journal of Accounting Research*, 26(2), 195–235. <https://doi.org/10.2307/2491102>
- Elliott, J.A., Ghosh, A., & Peltier, E. (2013). Pricing of risky initial audit engagements. *Auditing: A Journal of Practice & Theory*, 32(4), 25–43. <https://doi.org/10.2308/ajpt-50523>
- Gao, Y., Yang, T., Zheng, G., Long, Z., & Du, W. (2016). Research on current situation and influencing factors of large shareholders' selling under the background of full circulation. *Macroeconomics*, (8), 107–115 (In Chinese). <http://kns.cnki.net>
- Gul, F.A., & Tsui, J.S.L. (1997). A test of the free cash flow and debt monitoring hypotheses: Evidence from audit pricing. *Journal of Accounting and Economics*, 24(2), 219–237. [https://doi.org/10.1016/S0165-4101\(98\)00006-8](https://doi.org/10.1016/S0165-4101(98)00006-8)
- Hogan, C.E., & Wilkins, M.S. (2010). Evidence on the audit risk model: Do auditors increase audit fees in the presence of internal control deficiencies? *Contemporary Accounting Research*, 25(1), 219–242. <https://doi.org/10.1506/car.25.1.9>
- Houston, R.W., Peters, M.F., & Pratt, J.H. (2011). Nonlitigation risk and pricing audit services. *Auditing: A Journal of Practice & Theory*, 24(1), 37–53. <https://doi.org/10.2308/aud.2005.24.1.37>
- Jiang, F., Ma, Y., & Wang, Y. (2015). Can exit threats inhibit controlling shareholders' self-interested behaviors? *Management World*, (5), 147–159 (In Chinese). <http://kns.cnki.net>
- Jiang, G., Lee, C.M.C., & Yue, H. (2010). Tunneling through intercorporate loans: The China experience. *Journal of Financial Economics*, 98(1), 1–20. <https://doi.org/10.1016/j.jfineco.2010.05.002>
- Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 29(2), 193–228. <https://doi.org/10.2307/2491047>
- Kim, J.B., Li, Y., & Zhang, L. (2011). CFOs versus CEOs: Equity incentives and crashes. *Journal of Financial Economics*, 101(3), 713–730. <https://doi.org/10.1016/j.jfineco.2011.03.013>
- Lambert, R.A. (1984). Income smoothing as rational equilibrium behavior. *The Accounting Review*, 59(4), 604–618. <https://www.jstor.org/stable/247322>
- Lennox, C. (1999). Are large auditors more accurate than small auditors? *Accounting & Business Research*, 29(3), 217–227. <https://doi.org/10.1080/00014788.1999.9729582>
- Li, L., Zhang, D., & Xia, P. (2017). Annual report supervision, reducing holding-shares of the insiders and market responses: A study based on annual report enquiry letters issued by the Shenzhen Stock Exchange. *Contemporary Finance & Economics*, (12), 108–119 (In Chinese). <http://kns.cnki.net>
- Li, M., & Liu, F. (2012). Social capital, nature of property rights and listing qualification—empirical evidence from the SME board IPO. *Management World*, (11), 110–123 (In Chinese). <http://kns.cnki.net>
- Li, W., Li, C., & Hao, C. (2013). Study on the effects of executives' share reduction and corporate governance on growth enterprises market companies's growth. *Journal of Management Science*, (4), 1–12 (In Chinese). <http://kns.cnki.net>
- Liu, Q., Li, H., Zhao, C., Liao, Y., & Chen, H. (2014). Negative press coverage, litigation Risk and audit fees. *Accounting Research*, (6), 81–88 (In Chinese). <http://kns.cnki.net>
- Liu, Y., Long, Y., & Zeng, Z. (2017). Research on market reaction to information disclosure of major shareholders' violation of reducing shareholdings. *Finance Research*, (4), 17–27 (In Chinese). <http://kns.cnki.net>
- Lu, G., Zhang, J., & Liu, B. (2017). Do voluntary positive earnings forecasts of Chinese listed companies benefit public or private interests? empirical evidence based on the major shareholders' selling of non-tradable shares. *Nankai Business Review*, (2), 133–143 (In Chinese). <http://kns.cnki.net>
- Manove, M. (1989). The harm from insider trading and informed speculation. *Quarterly Journal of Economics*, 104(4), 823–845. <https://doi.org/10.2307/2937869>

- Piotroski, J.D., & Roulstone, D.T. (2005). Do insider trades reflect both contrarian beliefs and superior knowledge about future cash flow realizations? *Journal of Accounting & Economics*, 39(1), 1–81. <https://doi.org/10.1016/j.jacceco.2004.01.003>
- Simunic, D.A. (1980). The pricing of audit services: Theory and evidence. *Journal of Accounting Research*, 18(1), 161–190. <https://doi.org/10.2307/2490397>
- Song, Y. (2011). Audit risk, audit pricing and relative bargaining power—evidence from listed companies that are investigated or punished by supervisors. *Accounting Research*, (2), 79–84 (In Chinese). <http://kns.cnki.net>
- Stock, J.H., & Yogo, M. (2005). *Testing for weak instruments in linear IV regression*, in: *Andrews DWK Identification and inference for econometric models*. Cambridge University Press.
- Sun, S., Liang, S., Ruan, G., & Fu, X. (2017). Management selling, suppression of information and stock price crash risk. *Journal of Financial Research*, (11), 175–190 (In Chinese). <http://kns.cnki.net>
- Wang, X., Cui, X., & Pan, L. (2018). Can improving the comparability of accounting information reduce the cost of equity capital? *China Accounting Review*, (1), 107–128 (In Chinese). <http://kns.cnki.net>
- Wang, Y., Chen, X., & Xue, J. (2013). Selling non-tradable shares: Earning smoothing or investment return maximization? *Journal of Financial Research*, 16(1), 164–176 (In Chinese). <http://kns.cnki.net>
- Wu, C., & Zhang, J. (2009). Insider Trading and Earnings Management. *Economic Management Journal*, (8), 113–118 (In Chinese). <http://kns.cnki.net>
- Wu, Y., & Wu, S. (2010). Tunneling behaviors during large shareholders' stock-selling periods. *China Industrial Economics*, (5), 121–130 (In Chinese). <http://kns.cnki.net>
- Wu, Z., & Li, X. (2015). Insider selling, information environment and stock price crash risk. *Accounting Research*, (6), 48–55 (In Chinese). <http://kns.cnki.net>
- Wu, Z., & Wu, W. (2018). Does the large shareholders' selling hurt the substantial economy? *Nankai Business Review*, (1), 99–108 (In Chinese). <http://kns.cnki.net>
- Xie, D., Cui, C., & Liao, K. (2016). Large stock dividends and insiders' shares selling: Which one dominates the other? *Journal of Financial Research*, (11), 158–173 (In Chinese). <http://kns.cnki.net>
- Xing, L., & Chen, H. (2013). Product market competition, competitive position and audit fees—double considerations based on agency costs and business risks. *Auditing Research*, (3), 50–58 (In Chinese). <http://kns.cnki.net>
- Yi, Z., Li, X., Pan, Z., & Mao, N. (2019). The peer effects of managers' stock selling and stock price crash risk. *Economic Research Journal*, (11), 54–70 (In Chinese). <http://kns.cnki.net>
- Yi, Z., Pan, Z., Mao, N., & Li, X. (2017). Strategic media disclosure and wealth transfer: Evidence from managers' stock selling. *Economic Research Journal*, (4), 166–180 (In Chinese). <http://kns.cnki.net>
- Zeng, Q., Zhou, B., Zhang, C., & Chen, X. (2018). Annual report's tone and corporate insider trading: Do insiders act as what they said? *Management World*, (9), 143–160 (In Chinese). <http://kns.cnki.net>
- Zhang, X., & Xu, L. (2017). Expiration of share lockups, capital operation and stock price crash risk. *Journal of Financial Research*, (11), 158–174 (In Chinese). <http://kns.cnki.net>
- Zhou, D., Kang, H., & Zhao, Y. (2015). Insider trading and going-concern opinions—empirical evidence from listed companies in financial distress. *Auditing Research*, (2), 99–107 (In Chinese). <http://kns.cnki.net>
- Zhou, D., & Yang, X. (2018). Will insider trading affect the comparability of accounting information? *Accounting Research*, (3), 27–33 (In Chinese). <http://kns.cnki.net>
- Zhou, D., & Zhao, Y. (2015). Will insider trading increase the degree of financing constraints for listed companies? *Journal of Shanxi University of Finance and Economics*, (1), 92–102 (In Chinese). <http://kns.cnki.net>
- Zhu, C., Wu, L., & Tian, L. (2017). The effects of agency cost and flexible information disclosure on audit fees. *Accounting Research*, (7), 89–95+97 (In Chinese). <http://kns.cnki.net>
- Zhu, C., Yao, Z., & Li, Z. (2011). Can executive trading predict future stock returns? *Management World*, (9), 141–152 (In Chinese). <http://kns.cnki.net>