

Liang, Shangkun; Wen, Wen; Lin, Nan

## Article

# Discourage one to encourage another? Deleveraging and accounting conservatism

China Journal of Accounting Studies (CJAS)

## Provided in Cooperation with:

Accounting Society of China (ASC), Beijing

*Suggested Citation:* Liang, Shangkun; Wen, Wen; Lin, Nan (2024) : Discourage one to encourage another? Deleveraging and accounting conservatism, China Journal of Accounting Studies (CJAS), ISSN 2169-7221, Taylor & Francis, Abingdon, Vol. 12, Iss. 2, pp. 223-246, <https://doi.org/10.1080/21697213.2025.2468325>

This Version is available at:

<https://hdl.handle.net/10419/338528>

### 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/>





# Discourage one to encourage another? Deleveraging and accounting conservatism

Shangkun Liang <sup>a</sup>, Wen Wen<sup>b</sup> and Nan Lin<sup>c</sup>

<sup>a</sup>School of Accountancy, Central University of Finance and Economics, Beijing, China; <sup>b</sup>Management College, Beijing Union University, Beijing, China; <sup>c</sup>School of Financial Innovation Development Research, Fuzhou University of International Studies and Trade, Beijing, China

## ABSTRACT

Deleveraging policies help mitigate firms' financial risks and reduce systemic economic risks, yet their other consequences need examination. Using data of A-share listed firms in China from 2012 to 2018, we find that after the implementing of the deleveraging policy, the accounting conservatism of firms facing a greater impact of the deleveraging policy significantly decreases. The impact mainly comes from long-term and bank loan leverage reduction, and from high initial leverage firms. The mechanism tests indicate that a deleveraging policy reduces accounting conservatism by mitigating a firm's default risk and weakening agency conflict between creditors and shareholders. Further analyses show that the impact of the deleveraging policy on accounting conservatism is more pronounced among firms with stronger policy implementation, firms in regions with low non-performing loans (NPL), firms without political connections, and non-zombie firms.

## KEYWORDS

Accounting conservatism; Deleveraging Policy; initial leverage; term of leverage

## 1. Introduction

Crude economic growth has long been the main feature of China's economic development. This growth mode, which relies on many factor inputs and is oriented towards the output volume, was rendered unsustainable by the international financial crisis that erupted in 2008. The financial crisis led to a decline in demand in the global market and an increase in credit availability in various countries, resulting in overcapacity in some Chinese firms and a vicious cycle of 'borrowing new debt to repay old ones'. The revenues and profits of non-financial firms have generally decreased, and firms' reliance on liabilities has gradually increased (Lu & Ge, 2016). Against the backdrop of the economic downturn, both the growth in production capacity triggered by credit expansion and the maintenance of production capacity in the face of shrinking demand increased China's macro- and micro-leverage. In terms of macro leverage, at the beginning of 2008, the total macro debt was approximately 148% of GDP; at the end of 2015, the ratio reached 249%, and the total macro debt was as high as 168 trillion RMB. The average

**CONTACT** Nan Lin  [linnan@fzu.edu.cn](mailto:linnan@fzu.edu.cn)  School of Financial Innovation Development Research, Fuzhou University of International Studies and Trade, 706, Block B, New Zhongguan Building, Haidian District, Beijing, China

Paper accepted by Kangtao Ye.

© 2025 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. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

annual growth rate of China's macro-leverage from 2008 to 2015 reached 14.25%.<sup>1</sup> The micro-leverage of China's non-financial firms was as high as 132.2% at the end of 2015, far exceeding the threshold of 90% set by the Organization for Economic Cooperation and Development. Up to now, the leverage of some state-owned firms is greater than 70%, exceeding the red line drawn by the State-owned Assets Supervision and Administration Commission of the State Council, and some firms are on the verge of bankruptcy. Thus, high leverage has become a critical problem that must be addressed to ensure the smooth development of China's economy.

The impact of high leverage on economic performance has been widely discussed among practitioners and academic circles. Mendoza (2010) points out that leverage exceeding a certain level triggers a constraint effect that reduces the size of credit and the price and quantity of pledged assets through a Fisher deflationary mechanism. Moreover, high leverage causes the economy to fall into a vicious cycle of 'debt deflation', eventually leading to a recession (Liu et al., 2018). The Chinese government first put forward five economic reform tasks, 'address overcapacity, reduce inventory, deleverage, lower costs, and bolster areas of weakness' at the Central Economic Work Conference in December 2015 and then proposed to continue to deepen deleveraging at the subsequent Central Economic Work Conferences from 2016 to 2018 to reduce the leverage to a reasonable range. The essence and purpose of each deleveraging policy is to control the business risks of firms by reducing the leverage and ultimately alleviate the operational risks of the entire economy.

A firm's accounting information is an essential reference for formulating and implementing a contract for each subject of economic operations. Whether accounting information is conservative for firm stakeholders is an essential criterion for measuring the risk of accounting information disclosure and relates to the firm's future operational and financial risks (Aier et al., 2014; Kim & Zhang, 2016). Unconservative accounting information may damage investors' trust in the financial market, which may trigger systemic risks, cause resource mismatches, and impact the economy development (Chen et al., 2018).

Among the various stakeholders, creditors are strongly motivated to monitor accounting conservatism. Financial reporting is a comprehensive reflection of information in financial statements, operating results, and cash flows, and its risk is directly related to a firm's solvency (Sun et al., 2006). Therefore, will creditors' demand for firm accounting conservatism change under the exogenous impact of a deleveraging policy? Does this effect differ by debt type and firm? Exploring these questions may enhance the current understanding of the impact of deleveraging policy on the risks of micro-firms' risk and the whole economy from multiple perspectives.

To address these issues, we empirically examine the impact of a deleveraging policy on the accounting conservatism of Chinese A-share listed firms from 2012 to 2018. The results show that after the implementing of the deleveraging policy, the accounting conservatism of firms facing a greater impact of the deleveraging policy significantly decreases. Distinguishing the type of leverage, the impact of the deleveraging policy mainly stems from the reduction in long-term leverage and bank loan leverage; distinguishing the initial leverage, the impact mainly comes from firms with high initial

---

<sup>1</sup>Calculated from the Macro Leverage report published by the National Balance Sheet Research Center of the National Laboratory for Finance and Development.

leverage. The mechanism tests indicate that a deleveraging policy reduces accounting conservatism by mitigating a firm's default risk and weakening agency conflict between creditors and shareholders. Further analyses show that the impact of the deleveraging policy on accounting conservatism is more pronounced among firms with stronger policy implementation, firms in regions with low non-performing loans (NPL), firms without political connections, and non-zombie firms. These findings remain robust after the parallel trend test, propensity score matching test, and placebo test, as well as variations to the sample period and other variables.

The present research makes three main contributions. First, it strengthens the causal identification of the relationship between debt covenants and accounting conservatism from the perspective of exogenous shocks to leverage. Endogeneity issues have plagued earlier studies examining the relationship between debt covenants and accounting conservatism (Aier et al., 2014). This study uses a quasi-natural experiment on China's deleveraging policy, which alleviates the endogeneity problem in previous studies and helps establish the causal effect between debt covenants and accounting conservatism. Second, it provides comprehensive evidence of the economic consequences of the deleveraging policy. Since the implementing of the Chinese deleveraging policy in 2015, scholars have conducted several studies on its impact. However, no literature has yet focused on the effects of deleveraging policy on the quality of firm financial information. Therefore, this study extends the investigation of the microeconomic consequences of deleveraging policy research and provides empirical evidence for optimising deleveraging policy. Finally, this study's findings are risk-suggestive for both sides of the credit supply in the context of deleveraging and for capital market regulators and investors. When assessing firm risk, it is essential to focus on both entity debt service and financial reporting risks; thus, a more prudent understanding of firm financial conditions is needed.

In recent years, part of the literature has employed exogenous policy shocks to conduct research, arguing that policy shocks can change creditors' demand for accounting conservatism to strengthen the identification of the causal effect of debt covenants on accounting conservatism.<sup>2</sup> Compared to these studies, the present analysis makes two incremental contributions.

On the one hand, it provides empirical evidence for China, an emerging transitional economy. The existing literature mainly addresses the economic practices of emerging market countries, such as India, or developed countries, such as the United States. Relevant empirical studies of China, an emerging transitional economy, are scarce. Since China's marketisation process has not yet been completed, large numbers of rigid payments in the debt market are expected, which makes the research conclusions obtained through observation of other economies not applicable to China. Moreover, some studies argue that debt covenants in China do not affect the need for accounting conservatism

---

<sup>2</sup>For example, Gormley et al. (2012) use the entry of foreign banks into India as an exogenous shock and find that an increase in creditors' demand for conservatism can increase accounting conservatism. Aier et al. (2014) find that after a Delaware court ruled in 1991 that the directors of a firm on the verge of insolvency could extend their fiduciary duties to their creditors, accounting conservatism significantly increased. Martin and Roychowdhury (2015) find that when banks purchase credit default swaps (CDS), the risk of debt default shifts from the original debtor to the CDS contractual party. Thus, the initiation of CDS reduces creditors' incentives to regulate debtors, which in turn affects debtors' accounting conservatism. Huang (2021) and Hou et al. (2023) use the IBBEA Act as an exogenous shock and find that increased competition in the banking sector reduces its bargaining power, which in turn reduces the impact on debtors' accounting conservatism.

and that firms may not have true accounting conservatism.<sup>3</sup> This study provides empirical evidence based on China, an emerging transitional economy, and confirms that China's debt covenants can affect accounting conservatism.

On the other hand, it also provides direct evidence of the effect of debt covenants on accounting conservatism. Previous studies have introduced changes in creditor characteristics through policy shocks, which affect creditors' demand for conservatism and ultimately test the causal relationship between debt covenants and accounting conservatism. However, these exogenous policy shocks change creditor characteristics and induce other changes.<sup>4</sup> A deleveraging policy can provide a better research opportunity as it directly affects creditors' demand for conservatism through the change in leverage, avoids the change in the characteristics of creditors while causing a change in other borrowing and lending environments, and helps identify the causality between debt covenants and accounting conservatism more directly.

The remainder of this paper is organised as follows: the second section describes the institutional background, literature review, and hypothesis development; the third section presents the research design; the fourth section describes the empirical analyses and results; the fifth section presents further analyses, and the last section concludes.

## 2. Institutional background, literature review, and hypothesis development

### 2.1. Institutional background

In December 2015, the Central Economic Work Conference proposed for the first time five economic reform tasks, namely, 'address overcapacity, reduce inventory, deleverage, lower costs, and bolster areas of weakness'. In October 2016, the State Council promulgated the 'State Council's Opinions on Actively and Steadily Reducing the Leverage of Firms', proposing to adhere to the 'principles of marketization, legalization, orderly development, and coordination' and adopting the 'active promotion of mergers and acquisitions, improvement of the modern firm system to strengthen self-restriction, taking measures to revitalize the stock of assets of firms, optimizing the debt structure of firms in an orderly manner, and optimizing the debt structure of firms in an orderly manner'. In December 2016, the Central Economic Work Conference pointed out the need to continue to deepen the task of 'three cuts, one lower and one strengthen' and made reducing the leverage of firms a top priority. In April 2018, the Central Economic Work Conference made significant theoretical and practical innovations to the deleveraging policy, proposing 'structural deleveraging', that is, different sectors and types of debt should have different leverage requirements. The focus should be on lowering the

---

<sup>3</sup>Currently, a controversy exists over whether debt covenants can affect conservatism in China. One view is that debt covenants are a key factor constituting the conservatism of China's listed firms, especially when firms lose money, as creditors can protect their interests through conservative accounting information (Xu & Shen, 2010). In contrast, another view is that there is a relative lack of demand for conservative accounting information in China's debt covenants, and the conservatism demonstrated by China's firms is not true surplus conservatism (Zhang et al., 2003).

<sup>4</sup>For example, the IBBEA Act deregulates the banking industry and allows banks to establish branches across state lines. Taking the IBBEA Act as an exogenous shock, Huang (2021) argues that after banking deregulation, banks entering new markets must compete with local banks, and the increase in banking competition reduces their bargaining power over debtors, thus reducing the demand for accounting conservatism. However, banking deregulation may not only enhance the competition in the banking sector, but also increase the supply in the capital market, and loose money supply reduces accounting conservatism (Rao & Jiang, 2011). Therefore, Huang (2021) may capture not only the effect of debt covenants on conservatism but also the effect of macro money supply on conservatism.

leverage rate of local governments and firms, especially state-owned firms, to stabilise the overall leverage at a relatively stable level. The National Development and Reform Commission has also focused on deleveraging efforts to promote market-based debt-to-stock swaps, clear zombie firms, and reduce the leverage of state-owned firms.<sup>5</sup>

The results of the policy implementation show that the deleveraging policy can optimise the debt structure and promote stable economic growth. People's Daily released news in 2018 stating that China's leverage increase in 2017 was 10.9% lower than the average annual leverage increase from 2012 to 2016, indicating that deleveraging had begun to bear fruit. In terms of micro-leverage, Shen et al. (2021) points out that the deleveraging policy have reduced firms' leverage by an average of 5.1% under the pressure of government policies. Huang and Jiang (2015) find that under the spontaneous adjustment of the market, the adjustment speed of firm leverage is around 1%, indicating that the 5.1% leverage change belongs to the larger adjustment of firm capital structure. The implementation of the deleveraging policy is quite effective. Overall, China's deleveraging policy has been well implemented and has achieved some results.

## 2.2. Literature review

### 2.2.1. The economic consequences of deleveraging policies

Since the implementing of the deleveraging policy in 2015, scholars have conducted several studies on its impact. At the macro level, Ma et al. (2016) use cross-country data to show that deleveraging inhibits economic growth and raises the probability of a financial crisis; thus, the government should prevent the economic system from overleveraging. Ma and Chen (2017) find that as leverage rises, the economic growth rate increases first and then falls. Liu et al. (2018) suggest that leverage generally reduces the economic growth rate and increases the recession probability. Li et al. (2018) argue that the structural deleveraging process must stabilise the residential sector's leverage. Dong et al. (2020) explore the impact of the deleveraging policy on the distributional effects between capital and labour and find that the deleveraging policy can alleviate the inequality of labour income and increase the labour income share of workers.

At the micro level, Wang and Wang (2018) argue that a deleveraging policy should be urged for firms with a high proportion of liabilities. Liu and Liu (2019) find that increasing micro-leverage reduces a firm's return on assets and increases its return on equity, suggesting that the use of leverage satisfies shareholders' interests to a greater extent. Yang et al. (2020) show that during a period of deleveraging, the bank-firm relationship can reduce a firm's reliance on operating and financial liabilities. It has also been demonstrated that over-indebted firms are more likely to deleverage (Xu et al., 2020). A greater application of increasing equity to reduce leverage (Zhou et al., 2020) and deleveraging can improve the performance of over-indebted firms through the channel of financial risk (Qi et al., 2018) and also help increase their productivity (Ma & Zhu, 2020).

---

<sup>5</sup>Data from: [https://www.sohu.com/a/247283069\\_561670?\\_f=index\\_pagerecom\\_12](https://www.sohu.com/a/247283069_561670?_f=index_pagerecom_12).

### *2.2.2. The influencing factors of accounting conservatism*

This study is mainly related to 'the role of accounting conservatism in debt covenants'; hence, this paper reviews the literature in this field. First, some studies have examined the relationship between accounting conservatism and debt-covenant contracts. Ahmed et al. (2002) and Zhang (2008) find that accounting conservatism can alleviate the conflict between creditors and shareholders over dividend policies and reduce the cost of debt financing for firms. Rao and Jiang (2011) find that in a period of monetary tightening, firms with higher accounting conservatism are easier to access credit resources. Zhao et al. (2014) point out that the higher the accounting conservatism of Chinese firms are, the more they can obtain loans with large amounts, long maturities, and low interest rates. Second, some studies show that creditor monitoring can significantly impact accounting conservatism. Djankov et al. (2008) argue that the effectiveness and prevalence of accounting conservatism depend on the enforcement of debt covenants in both developed and emerging markets. Reducing the renegotiation costs of debt covenants and strengthening the enforcement of debt contract defaults can improve accounting conservatism (Aghamolla & Li, 2018; Bonetti, 2016). Consequently, firms with higher information uncertainty (Guay & Verrecchia, 2018), borrowing from non-state-owned commercial banks (Callen et al., 2016), foreign bank entry (Gormley et al., 2012), more special clauses (Callen et al., 2016), a higher proportion of bank loans (X. Xu & Shen, 2010), and being sued by banks (Zhu, 2011) are more cautious in handling accounting information and have higher requirements for accounting conservatism.

### *2.3. Hypothesis development*

Watts (2003) argues that accounting conservatism is influenced by four factors—debt covenants, compensation contracts, legal risks, and tax costs and emphasises the role of accounting conservatism in debt contracts. Creditors have a high demand for accounting conservatism to collect principal and interest on time because conservative accounting information requires firms to recognise losses promptly, whereas gains must only be recognised with solid evidence. This asymmetric recognition of gains and losses can limit firms' opportunistic behaviour and protect creditors' interests (Liang et al., 2017). At the same time, accounting conservatism arises not only from creditors' demands but also from debtors' supply. Therefore, creditors constrain debtors' behaviour by setting debt covenants, thus improving accounting conservatism. For example, bondholders may develop mechanisms such as trustee-managers, bondholders' meetings, and 'voting with feet' (Feng & Yan, 2017), and banks may increase restrictive clauses and raise loan interest rates (Xu & Shen, 2010). These debt covenants force debtors to handle financial information prudently and provide conservative accounting information. A deleveraging policy causes changes in debt covenants, which impact firms' accounting conservatism. Hence, this study addresses the following issues.

On the one hand, a deleveraging policy can reduce a firm's default risk, limiting creditors' need for accounting conservatism. Accounting conservatism implies that firms recognise bad news more quickly than good news (Basu, 1997). The asymmetric

recognition of gains and losses can make it easier for debtors to trigger default clauses, providing an early signal of default (Christensen & Nikolaev, 2012; Zhang, 2008). This asymmetric recognition also increases debtors' default costs and reduces their willingness to default (Xin et al., 2018). Therefore, creditors demand that firms provide conservative accounting. This request is because accounting conservatism can reduce the loss to creditors due to debt default and improve the efficiency of debt contracts by recognising the signs of debtor default, triggering the renegotiation of debt contracts, and transferring the control of firms from shareholders to creditors (Christensen & Nikolaev, 2012). After implementing a deleveraging policy, firms gradually eliminate unreasonable leverage. On the one hand, this approach optimises the capital structure and improves the quality of its collateralizable assets and its ability to repay debt (Liu et al., 2022). On the other hand, it improves firm performance and the efficiency of capital utilisation (Qi et al., 2018). By combining these two aspects, the implementation of a deleveraging policy reduces the risk of firm default, weakening creditors' demand for accounting conservatism to improve the efficiency of debt contracts.

On the other hand, the deleveraging policy weakens the agency conflict between creditors and shareholders, reducing the demand for conservatism. Compared with creditors, shareholders are more inclined to ask firms to adopt more aggressive accounting policies, such as under accounting for impairment losses on assets or bad debt provisions, to increase the firm's assets and profits and thus satisfy their self-interest. However, this unconservative accounting policy affects the possibility of realising the firm's assets; as a result, creditors may not recover their principal and interest in time. Consequently, creditors demand that firms provide conservative accounting information to constrain the opportunistic behaviour of shareholders and guarantee that loans can be safely recovered. For example, the literature has shown that accounting conservatism can inhibit shareholders from transferring profits through dividend payments and connected transactions, among others (Biddle et al., 2022; Johnson et al., 2000; Shleifer & Vishny, 1997). After implementing a deleveraging policy, firms actively cooperate by continuously reducing the total amount of debt and increasing the proportion of equity financing, removing the unreasonable part of leverage so that their capital structure gradually reaches the target level (Zheng & Li, 2018). As the share of equity enjoyed by creditors in a firm decreases, agency conflicts with shareholders continue to decline, and the incentive to monitor shareholder behaviour decreases, weakening the need for conservatism.

Based on the above theoretical analysis, we propose a research hypothesis:

**Hypothesis 1:** After the implementing of a deleveraging policy, the accounting conservatism of firms facing a greater impact of the deleveraging policy significantly decreases compared to firms with a lesser impact of the policy.

### 3. Research design

#### 3.1. Model construction and variable definition

Following Ahern and Dittmar (2012), we construct the difference-in-differences (DID) Model (1):

$$Conserv_{i,t} = \beta_0 + \beta_1 Treat_{i,t} \times Post_{i,t} + \beta_2 Control_{i,t} + \Sigma Firm + \Sigma Year + \varepsilon_{i,t} \quad (1)$$

Specifically, Model (1) contains the following variables:

#### 1. Dependent Variables

*Conserv* is the accounting conservatism calculated according to Khan and Watts (2009).

#### 2. Independent variables

*Treat* denotes firms facing a greater impact of the deleveraging policy; it is a dummy variable that equals one if the degree of reduction in a firm's leverage is above the industry median in 2016 compared to 2014, and zero otherwise.<sup>6</sup> *Post* denotes the deleveraging policy; it is a dummy variable that equal to one when the year is after the implementing of the deleveraging policy (i.e. 2016, 2017, or 2018), and zero otherwise.

#### 3. Control Variables

Referring to Watts (2003), Francis et al. (2015), and C. Wang et al. (2018), this study includes the following control variables in Model (1): *Size*, *Roe*, *Growth*, *CF*, *First*, *Largest10*, *Indepen*, *Lncp*, *Dual*, *Evol*, *Lnage*, *Big4*. It also includes both firm- and year-fixed effects. All continuous variables are winsorised at the 1st and 99th percentiles. Table 1 presents the definitions of the variables.

**Table 1.** Variable definitions.

Variable type	Variable	Variable Definition
Dependent Variable	<i>Conserv</i>	Accounting conservatism, following Khan and Watts (2009)
	<i>Treat</i>	Dummy variable, equals one if the degree of reduction of firm's leverage is above the industry median in 2016 as compared to 2014, and zero otherwise
		<i>Post</i>
Control Variables	<i>Size</i>	Natural logarithm of total sales
	<i>Roe</i>	Ratio of net income to total equity
	<i>Growth</i>	Growth rate of revenue
	<i>CF</i>	Ratio of net cash flow from operating activities to revenue
	<i>First</i>	Shareholding ratio of the largest shareholder
	<i>Largest10</i>	Squared percentage of shareholdings of the top 10 shareholders
	<i>Indepen</i>	Ratio of the number of independent directors to the number of board members
	<i>Lncp</i>	Natural logarithm of manager salary
	<i>Dual</i>	Dummy variable, equal to one if the chairman of the board is also the managing director, and zero otherwise
	<i>Evol</i>	Standard deviation of net income of the firm in the previous five years
	<i>Lnage</i>	Natural logarithm of years a company has been listed plus one
<i>Big4</i>	Dummy variable, equal to one if the firm is audited by Big4, and zero otherwise	

<sup>6</sup>Lu et al. (2015) point out that only the absolute level of leverage as the basis for deleveraging is unreasonable, and its change value needs to be examined. In the short term, firm financial risk will not produce large fluctuations, so leverage should be maintained at a stable level. After the implementation of a deleveraging policy, firms need to actively consider the problem of deleveraging, banks significantly reduce the scale of credit, and firm leverage will show rapid changes. Therefore, the before and after changes in firm leverage can be reversed to launch the leverage plummeted firms for the deleveraging policy impact of the larger firms.

### 3.2. Sample selection and data sources

The sample comprises Chinese A-share listed firms during 2012–2018. The following screening is performed: (1) excluding financial and insurance industry firms; (2) excluding firms listed after 2012; (3) excluding special treated (ST) firms; (4) excluding firms with negative total assets or book value of equity; (5) excluding firms with missing financial data; (6) excluding unbalanced panel firms; and (7) excluding observations from 2015. The final sample contains 11,484 firm-year observations. Bank NPL and benchmarks for deposit and loan rates are obtained from Wind. Financial data is obtained from CSMAR.

### 3.3. Descriptive statistics and univariate analysis

Table 2 Panel A reports the descriptive statistics of the main variables. The mean and median of *Conserv* are 0.058 and 0.032, respectively, with a left-skewed distribution, consistent with Liang et al. (2017). The percentage of *Treat* in the sample is 49.8%, and the mean value of *Post* is 50.0%, with a more even distribution of the impact size and time before and after. The statistical values of other variables align with previous literature.

Table 2 Panel B reports the results of the univariate analysis of leverage and accounting conservatism. The DID estimate of *Lev* for the treatment and control groups and before and after the policy implementation is  $-0.152$ , significant at the 1% level. This result indicates that the leverage of firms facing a greater impact of deleveraging policy decreases significantly after implementing the policy. For accounting conservatism, the DID estimate of *Conserv* for the treatment and control groups and before and after the policy implementation is  $-0.008$ , significant at the 5% level. This result shows that the accounting conservatism of firms facing a greater impact of deleveraging policy indicates a significant decrease after implementing deleveraging policy, supporting Hypothesis 1.

## 4. Empirical analysis and results

### 4.1. Test results

#### 4.1.1. Effect of deleveraging policy on accounting conservatism

Column (1) of Table 3 presents the test results for Hypothesis 1. The coefficient of *Treat*×*Post* is significantly negative at the 1% level. These results indicate that after the implementing of the deleveraging policy, the accounting conservatism of firms facing a greater impact of the deleveraging policy significantly decreases compared to firms with a lesser impact of the deleveraging policy, supporting Hypothesis 1.

#### 4.1.2. Tests for distinguishing maturity of leverage

Firm debt can be classified in terms of maturity into long- and short-term debt. With an increase in debt maturity, the probability of firms facing systemic risk gradually increases, and the uncertainty factor of creditors' debt recovery also increases. Therefore, from the perspective of risk aversion, creditors have stronger incentives to supervise long-term debt compared to short-term debt, and the requirements for accounting conservatism will be higher. Accordingly, accounting conservatism is more affected by long-term debt adjustments.

**Table 2.** Descriptive statistics and univariate analysis.

Variable	Obs	Mean	Sd	Min	Med	Max	
<b>Panel A: Descriptive Statistics</b>							
<i>Conserv</i>	11484	0.058	0.090	-0.086	0.032	0.430	
<i>Treat</i>	11484	0.498	0.500	0.000	0.000	1.000	
<i>Post</i>	11484	0.500	0.500	0.000	0.500	1.000	
<i>Size</i>	11484	21.655	1.453	18.495	21.515	25.642	
<i>Roe</i>	11484	0.063	0.095	-0.450	0.064	0.294	
<i>Growth</i>	11484	0.179	0.408	-0.520	0.108	2.712	
<i>CF</i>	11484	0.086	0.189	-0.684	0.075	0.724	
<i>First</i>	11484	0.345	0.149	0.084	0.324	0.743	
<i>Largest10</i>	11484	0.160	0.114	0.015	0.128	0.562	
<i>Indepen</i>	11484	0.374	0.054	0.333	0.333	0.571	
<i>Lncp</i>	11484	15.304	0.714	13.629	15.267	17.264	
<i>Dual</i>	11484	0.238	0.426	0.000	0.000	1.000	
<i>Evol</i>	11484	0.027	0.028	0.002	0.018	0.173	
<i>Lnage</i>	11484	2.345	0.647	0.693	2.485	3.258	
<i>Big4</i>	11484	0.061	0.240	0.000	0.000	1.000	
		<i>Post = 0</i>		<i>Post = 1</i>		<i>Diff-in-Diff</i>	
<b>Panel B: Univariate Analysis</b>							
<i>Lev</i>	<i>Treat = 0</i>	<i>Treat = 1</i>	<i>Diff1</i>	<i>Treat = 0</i>	<i>Treat = 1</i>	<i>Diff2</i>	-0.152***
	0.387	0.473	0.085***	0.477	0.410	-0.067***	
<i>Conserv</i>	<i>Treat = 0</i>	<i>Treat = 1</i>	<i>Diff1</i>	<i>Treat = 0</i>	<i>Treat = 1</i>	<i>Diff2</i>	-0.008**
	0.032	0.032	0.000	0.087	0.080	-0.008***	

This study distinguishes leverage by maturity into short- and long-term leverage and defines two variables: *Treat\_short* (*Treat\_long*), which denotes firms with a greater impact of short-term (long-term) leverage, is a dummy variable that equals one if the degree of reduction in a firm's short-term (long-term) leverage is above the industry median in 2016 compared to 2014, and zero otherwise.

Columns (2)–(4) of Table 3 report the results. Column (2) shows the impact of short-term leverage reductions. The coefficient of *Treat\_short*×*Post* is not significant. Column (3) shows the effect of long-term leverage reductions. The coefficient of *Treat\_long*×*Post* is significantly negative at the 1% level. Column (4) examines both short- and long-term leverage reduction effects. The coefficient of *Treat\_short*×*Post* is insignificant, whereas that of *Treat\_long*×*Post* is significantly negative at the 1% level. These results suggest that a reduction in long-term leverage has a greater impact on accounting conservatism after implementing the deleveraging policy, which is consistent with our inference.

#### 4.1.3. Tests for distinguishing source of leverage

According to source division, debt mainly includes bank loans and commercial credit.<sup>7</sup> Due to the close contractual relationship between suppliers and purchasers, suppliers, as providers of commercial credit, have a unique advantage in obtaining information (Smith, 1987), and as upstream firms, they also have some control over downstream purchasers (Petersen & Rajan, 1997). Compared with bank loans, commercial credit providers can obtain more realistic operating information about a firm through business transactions, with less reliance on accounting information and less need for accounting conservatism

<sup>7</sup>Since bond financing accounts for a relatively small proportion of the debts of listed firms in China, the role of bond financing is not considered in this paper.

**Table 3.** The effect of deleveraging policy on accounting conservatism.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
DepVar = Treat×Post	Conserv <b>-0.008***</b> (-3.09)	Conserv	Conserv	Conserv	Conserv	Conserv	Conserv
Treat_short×Post		<b>0.002</b> (0.95)		<b>0.001</b> (0.52)			
Treat_long×Post			<b>-0.007***</b> (-2.95)	<b>-0.007***</b> (-2.88)			
Treat_loan×Post					<b>-0.005*</b> (-1.92)		<b>-0.005*</b> (-1.93)
Treat_ftd×Post						<b>-0.001</b> (-0.21)	<b>-0.001</b> (-0.27)
Size	0.002 (1.06)	0.003 (1.38)	0.003 (1.21)	0.003 (1.24)	0.003 (1.28)	0.003 (1.30)	0.003 (1.25)
Roe	-0.069*** (-6.03)	-0.070*** (-6.11)	-0.069*** (-5.99)	-0.069*** (-5.99)	-0.069*** (-6.06)	-0.070*** (-6.12)	-0.069*** (-6.06)
Growth	0.000 (0.04)	0.000 (0.01)	0.000 (0.04)	0.000 (0.04)	-0.000 (-0.02)	0.000 (0.02)	-0.000 (-0.01)
CF	0.015*** (3.34)	0.015*** (3.29)	0.015*** (3.27)	0.015*** (3.26)	0.015*** (3.35)	0.015*** (3.30)	0.015*** (3.35)
First	-0.050 (-1.34)	-0.174*** (-4.64)	-0.172*** (-4.60)	-0.172*** (-4.60)	-0.174*** (-4.65)	-0.175*** (-4.66)	-0.174*** (-4.66)
Largest10	0.090* (1.76)	-0.042 (-1.13)	-0.048 (-1.29)	-0.047 (-1.26)	-0.044 (-1.17)	-0.044 (-1.17)	-0.044 (-1.18)
Indepen	0.023 (1.14)	0.080 (1.59)	0.087* (1.74)	0.086* (1.72)	0.081 (1.61)	0.082 (1.62)	0.082 (1.62)
Lncp	-0.003 (-1.19)	0.024 (1.20)	0.023 (1.13)	0.023 (1.14)	0.023 (1.14)	0.024 (1.18)	0.023 (1.14)
Dual	-0.003 (-1.07)	-0.003 (-1.26)	-0.003 (-1.28)	-0.003 (-1.29)	-0.003 (-1.19)	-0.003 (-1.22)	-0.003 (-1.18)
Evol	-0.174*** (-4.66)	-0.007 (-1.64)	-0.008* (-1.77)	-0.008* (-1.73)	-0.008* (-1.81)	-0.008* (-1.71)	-0.008* (-1.81)
Lnage	-0.008* (-1.87)	-0.003 (-1.12)	-0.003 (-1.07)	-0.003 (-1.08)	-0.003 (-1.13)	-0.003 (-1.11)	-0.003 (-1.13)
Big4	-0.014 (-1.44)	-0.013 (-1.34)	-0.014 (-1.38)	-0.014 (-1.37)	-0.014 (-1.40)	-0.013 (-1.36)	-0.014 (-1.40)
Constant	0.071 (1.25)	0.054 (0.95)	0.066 (1.16)	0.064 (1.12)	0.059 (1.04)	0.058 (1.02)	0.060 (1.06)
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.669	0.669	0.669	0.669	0.669	0.669	0.669
N	11484	11484	11484	11484	11484	11484	11484

(Li et al., 2018). Therefore, from the perspective of creditor demand, bank loan changes have a greater impact on accounting conservatism than business credit.

This study distinguishes leverage by source into bank loan and commercial credit leverage and defines two variables (Li et al., 2018): *Treat\_loan* (*Treat\_ftd*), which denotes firms facing a greater impact of bank loan (commercial credit) leverage, is a dummy variable equal to one if the degree of reduction in a firm's bank loan (commercial credit) leverage is above the industry median in 2016 as compared to 2014, and zero otherwise.

Columns (5)–(7) of Table 3 report the results. Column (5) examines the impact of the bank loan leverage reduction. The coefficient of *Treat\_loan×Post* is significantly negative at the 10% level. Column (6) examines the impact of the commercial credit leverage reduction. The coefficient of *Treat\_ftd×Post* is not significant. Column (7) examines the reduction effects of both bank loan and commercial credit leverage. The coefficient of

$Treat\_loan \times Post$  is significantly negative at the 10% level, whereas that of  $Treat\_ftd \times Post$  is not significant. These results suggest that a reduction in bank loan leverage has a greater impact on accounting conservatism after implementing the deleveraging policy, which is consistent with our inference.

#### 4.1.4. Tests for distinguishing initial leverage

Creditors judge debtors' need for accounting conservatism based on their circumstances (Zhu, 2011). When a firm's leverage is high, it faces more pressure to repay capital and interest, with higher default risk and agency conflict. In this case, creditors pay more attention to the firm's financial status and require such firms to provide more conservative accounting information (Sun et al., 2006). Therefore, the impact of the deleveraging policy on accounting conservatism should be greater when initial leverage is higher.

The overall sample is divided into five subsamples based on the quintiles of firm leverage in 2014, and the impact of the deleveraging policy on accounting conservatism is separately tested. Table 4 shows the results. In Columns (1)–(3), the sample below the 3/5 quantile of initial leverage and the coefficients of  $Treat \times Post$  are not significant. In Columns (4)–(5), the sample above the 4/5 quantile of initial leverage and the coefficients of  $Treat \times Post$  are significantly negative at the 1% level. Moreover, after testing the difference between the groups in Columns (1) and (5), the coefficients of  $Treat \times Post$  are significantly different between the two groups ( $p = 0.000$ ). A test of between-group variation is also conducted for Columns (2) and (4), and the coefficients of  $Treat \times Post$  are significantly different ( $p = 0.003$ ). This findings indicate that the impact of reduced accounting conservatism after implementing the deleveraging policy significantly differs between groups with higher and lower initial leverage. These results suggest that the effect of reduced accounting conservatism after the implementing of the deleveraging policy is mainly observed in the group with higher initial leverage; hence, the deleveraging policy has a greater impact on accounting conservatism in these firms.

## 4.2. Robustness test

### 4.2.1. Parallel trend test

A prerequisite for using the DID model is the parallel trend assumption. This study takes 2015 as the base year, and six dummy variables are set up for  $year12$ – $year18$ ;  $year12$  equals one if the year is 2012, and zero otherwise, and so on. Then,  $Treat$  is multiplied by each of the above six dummy variables ( $year12$ – $year18$ ) and included in the regression model.

Table 4. Tests for distinguishing initial leverage.

	(1) 1/5	(2) 2/5	(3) 3/5	(4) 4/5	(5) 5/5
DepVar =	<i>Conserv</i>	<i>Conserv</i>	<i>Conserv</i>	<i>Conserv</i>	<i>Conserv</i>
$Treat \times Post$	<b>-0.002</b> (-0.42)	<b>-0.007</b> (-1.50)	<b>-0.007</b> (-1.58)	<b>-0.026***</b> (-4.84)	<b>-0.042***</b> (-6.78)
Constant	-0.112 (-0.97)	0.196* (1.83)	0.096 (1.26)	0.030 (0.24)	-0.132 (-1.09)
Control	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.700	0.686	0.767	0.734	0.755
N	2298	2298	2298	2298	2292

Table 5 shows the results. The coefficients of *Treat×year12*, *Treat×year13*, and *Treat×year14* are not significant, indicating no significant difference in accounting conservatism between firms facing a greater impact of the deleveraging policy and those facing a lesser policy impact before the implementing of the deleveraging policy. The coefficients of *Treat×year16*, *Treat×year17*, and *Treat×year18* are significantly negative at 1% and 5% levels. Their coefficients show an increasing trend in absolute value, indicating that after the implementing of the deleveraging policy, the accounting conservatism of firms facing a greater impact of the deleveraging policy declines significantly compared to firms facing a lesser impact of the policy. Over time, the reducing effect of the deleveraging policy on the accounting conservatism of firms facing a larger policy impact has increased.

#### 4.2.2. Propensity score matching test

This study uses the propensity score matching method to mitigate endogenous problems. The specific steps are as follows. First, the control variables in Model (1) are used as covariates to construct a probit model. Second, based on the calculated propensity score, a one-to-one nearest neighbour method with a caliper range of 0.01 is used for matching, and 8884 observations are obtained. Panel A of Table 6 reports the results of the balance assumption tests. The standard deviation of all covariates after matching is lower than 10%, and none of the differences between the treatment and control groups are significant, supporting the balance assumption. Panel B of Table 6 reports the results of the common support assumption tests. The propensity scores of both the control and treatment groups are within the common range of values, supporting the common support assumption. Panel C of Table 6 reports the sample regression results after propensity score matching. The coefficient of *Treat×Post* is significantly negative at the 1% level.

Table 5. Parallel trend test.

	(1)
DepVar =	<i>Conserv</i>
<i>Treat×year12</i>	<b>0.004</b> (1.33)
<i>Treat×year13</i>	<b>-0.002</b> (-1.34)
<i>Treat×year14</i>	<b>-0.003</b> (-1.54)
<i>Treat×year16</i>	<b>-0.002</b> (-1.55)
<i>Treat×year17</i>	<b>-0.010</b> <sup>***</sup> (-3.63)
<i>Treat×year18</i>	<b>-0.012</b> <sup>**</sup> (-2.43)
Constant	0.100* (1.86)
Control	Yes
Year	Yes
Firm	Yes
Adj-R <sup>2</sup>	0.650
N	13398

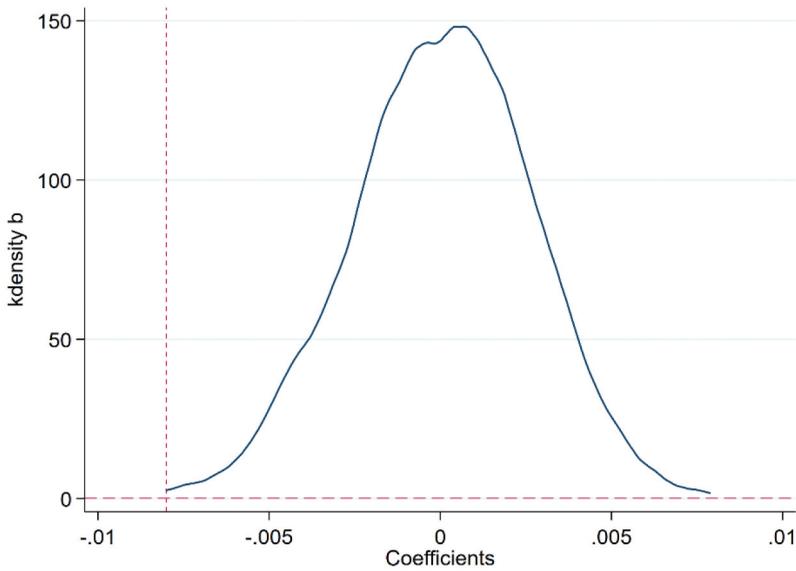
**Table 6.** Propensity score matching test.

Variable	Treatment Group	Control Group	Sd (%)	T-value	P-value
<b>Panel A: Balance Assumption Test</b>					
<i>Size</i>	21.660	21.684	-1.60	-0.88	0.38
<i>Roe</i>	0.061	0.062	-1.00	-0.52	0.61
<i>Growth</i>	0.171	0.162	2.20	1.19	0.23
<i>CF</i>	0.089	0.085	1.80	0.99	0.32
<i>First</i>	0.342	0.343	-0.60	-0.31	0.76
<i>Largest10</i>	0.157	0.157	-0.60	-0.35	0.73
<i>Indepen</i>	0.373	0.372	1.70	0.88	0.38
<i>Lncp</i>	15.286	15.303	-2.40	-1.27	0.20
<i>Dual</i>	0.230	0.227	0.60	0.33	0.74
<i>Evol</i>	0.027	0.027	1.00	0.53	0.60
<i>Lnage</i>	2.392	2.400	-1.30	-0.70	0.48
<i>Big4</i>	0.058	0.059	-0.50	-0.28	0.78
	Off support	On support			Total
<b>Panel B: Common Support Assumption Test</b>					
Control Group	0	5760			5760
Treatment Group	0	5724			5724
Total	0	11484			11484
		(1)			
<b>Panel C: Regression Results After Propensity Score Matching</b>					
DepVar=		<i>Conserv</i>			
Treat×Post		<b>-0.009***</b>			
		<b>(-2.98)</b>			
Constant		0.014			
		(0.22)			
Control		Yes			
Year		Yes			
Firm		Yes			
Adj-R <sup>2</sup>		0.670			
N		8884			

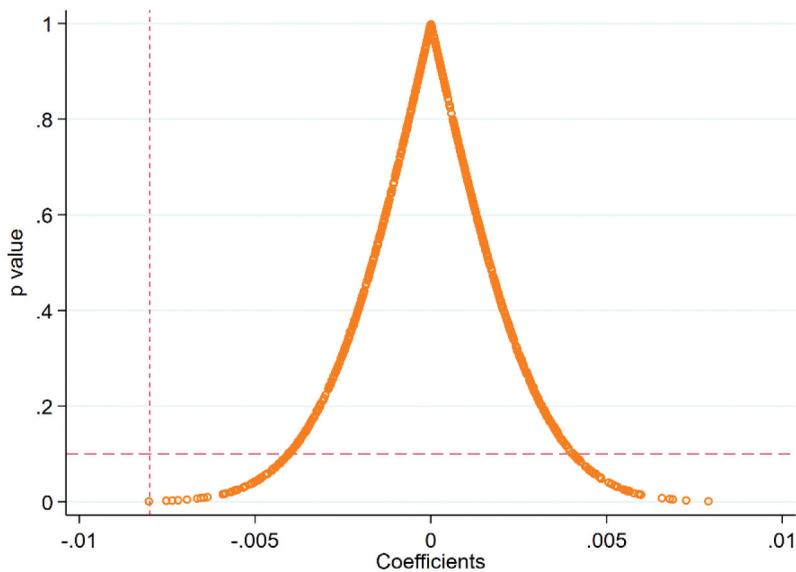
#### 4.2.3. Placebo test

A placebo test is conducted by randomly defining the treatment and control groups. Specifically, 50% of all sample firms are randomly selected as the treatment group, and the remaining 50% are used as the control group to construct a placebo test dummy variable,  $Treat^{false}$ . We conduct the above process 1000 times for regression analysis. Figure 1 shows the kernel density plot of the coefficients of  $Treat^{false} \times Post$  after 1000 times random assignments to the treatment groups. The distribution of the coefficients of  $Treat^{false} \times Post$  is concentrated around zero. Figure 2 shows the distribution of the regression coefficients and the corresponding p-values. The mean of the coefficients of  $Treat^{false} \times Post$  is close to zero (mean value = -0.00005), and most coefficients have p-values greater than 0.1. Moreover, the vertical line in both Figures 1 and 2 represent the actual regression coefficient of -0.008, which belongs to the outliers, suggesting that the results are unlikely to be driven by omitted variables.

In unreported tables, the inferences remain unchanged in the following three robustness tests. First, we include observations in 2015. Second, we employ an alternative indicator to measure accounting conservatism, which uses earnings per share after extraordinary gains and losses to calculate *Conserv*. Finally, we use alternative indicators to divide the treatment group: (1) We use different intervals to compare the changes in



**Figure 1.** Kernel density plot.



**Figure 2.** Distribution of coefficients and corresponding P-values.

the mean of leverage before and after the deleveraging policy; (2) We use different quantiles to divide the sample, including the third percentile, the fourth percentile, and the second percentile by industry; (3) We use whether firms are over-indebted in 2014 to construct the treatment group (Lu et al., 2015). Since Xu et al. (2020) find that over-indebted firms are more likely to deleverage, we use the short- and long-term solvency of

firms in 2014 to construct treatment and control groups (Chen & Tian, 2021; Yang, 2000).<sup>8</sup> The risk of leverage in China's deleveraging policy is more about the mismatch of leverage and the decline in resource allocation efficiency caused by leverage than the leverage itself (Zhang & Wen, 2018).

### 4.3. Mechanism test

First, creditors demand that firms provide conservative accounting information to reduce losses and enhance the efficiency of debt contracts. The implementation of a deleveraging policy improves the value of collateralizable assets and debt repayment ability (Liu et al., 2022) and enhances firm performance and capital utilisation efficiency (Qi et al., 2018). Therefore, a deleveraging policy can reduce default risk, reducing creditors' demand for accounting conservatism. To examine this mechanism, we use *Z-Score* to measure a firm's default risk (Gao et al., 2020). The larger the *Z-Score* is, the lower the default risk is. Two models, Models (4) and (5), are constructed:

$$Z - Score_{i,t} = \beta_0 + \beta_1 Treat_{i,t} \times Post_{i,t} + \beta_2 Control_{i,t} + \Sigma Firm + \Sigma Year + \varepsilon_{i,t}, \quad (2)$$

$$Conserv_{i,t} = \beta_0 + \beta_1 Treat_{i,t} \times Post_{i,t} + \beta_2 Z - Score_{i,t} + \beta_3 Control_{i,t} + \Sigma Firm + \Sigma Year + \varepsilon_{i,t}. \quad (3)$$

Column (1) of Table 7 shows that the coefficient of *Treat* × *Post* is significantly positive at the 1% level. Column (2) of Table 7 shows that the coefficient of *Treat* × *Post* is significantly negative at the 1% level, whereas the coefficient of *Z-Score* is significantly positive at the 5% level. The Sobel Z-value is -8.23 and significant at the 1% level. These results support the mechanism that a deleveraging policy can reduce accounting conservatism by reducing firm's default risk.

Second, debt financing leads to interest conflicts between shareholders and creditors, resulting in inefficiencies in investment and operational decision-making, affecting the firm's ability to repay debts on time and ultimately damaging the interests of creditors. To alleviate this agency conflict, creditors protect their interests by requiring firms to enhance their accounting conservatism. However, after implementing the deleveraging policy, the natural decrease in the debt ratio of firms inherently mitigates agency conflict between creditors and shareholders, reducing the monitoring motivation of creditors towards shareholders and lowering the demand for conservatism. To test this mechanism, we use *Spread* to measure agency conflicts between creditors and shareholders (Anderson et al., 2003). The larger the *Spread* is, the greater the agency conflict between creditors and shareholders is. Two models are constructed, Models (6) and (7):

$$Spread_{i,t} = \beta_0 + \beta_1 Treat_{i,t} \times Post_{i,t} + \beta_2 Control_{i,t} + \Sigma Firm + \Sigma Year + \varepsilon_{i,t}, \quad (4)$$

$$Conserv_{i,t} = \beta_0 + \beta_1 Treat_{i,t} \times Post_{i,t} + \beta_2 Spread_{i,t} + \beta_3 Control_{i,t} + \Sigma Firm + \Sigma Year + \varepsilon_{i,t}. \quad (5)$$

<sup>8</sup>Measured using cash flow interest coverage multiples.

**Table 7.** Mechanism test.

	(1)	(2)	(3)	(4)
Depvar= <b>Treat×Post</b>	<i>Z-Score</i> <b>2.390***</b> (14.04)	<i>Conserv</i> <b>-0.009***</b> (-3.33)	<i>Spread</i> <b>-0.433***</b> (-3.17)	<i>Conserv</i> <b>-0.014*</b> (-1.68)
<b>Z-Score</b>		<b>0.000**</b> (1.96)		
<b>Spread</b>				<b>0.004**</b> (2.13)
Constant	32.447*** (7.65)	0.059 (1.02)	6.819** (2.12)	0.119 (0.64)
Control	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.157	0.670	0.286	0.699
N	11484	11484	1790	1790
Sobel Z		-8.93		-4.17

Column (3) of Table 7 shows that the coefficient of *Treat×Post* is significantly negative at the 1% level. Column (4) of Table 7 shows that the coefficient of *Treat×Post* is significantly negative at the 10% level, and the coefficient of *Spread* is significantly positive at the 5% level. The Sobel Z-value is -4.17, significant at the 1% level. These results support the mechanism that a deleveraging policy can reduce accounting conservatism by reducing agency conflicts between creditors and shareholders.

## 5. Further analysis

### 5.1. Differentiation analysis of policy implementation intensity

Since 2015, the central government has emphasised control on the leverage of state-owned firms, mentioning that evaluations of state-owned firms' operations should focus on leverage. Policy pressure is a key factor driving firms to deleverage (X. F. Xu et al., 2020). From the perspective of property rights, the operating goals of state-owned firms are more likely to be influenced by the government than non-state-owned firms (C. Wang et al., 2018). Moreover, state-owned firms' executives serve as 'managers' and 'political figures'. To advance career development, executives in state-owned firms tend to engage in 'political catering'. Therefore, the impact of a deleveraging policy on accounting conservatism may be more significant for state-owned firms.<sup>9</sup> The sample firms are further divided into state-owned and non-state-owned firms. Columns (1) and (2) of Table 8 report the results. In Column (1), the coefficient of *Treat×Post* is not significant for non-state-owned firms. In Column (2), the coefficient of *Treat×Post* is significantly negative at the 1% level for state-owned firms. These results indicate that the impact of the deleveraging policy on accounting conservatism is mainly present in state-owned firms, where policy implementation intensity is higher.

<sup>9</sup>In the unreported tables, we distinguish the changes in leverage observed in state-owned and non-state-owned firms based on property, industry, and annual observations. The results preliminarily suggest that the deleveraging policy mainly reduces the leverage of state-owned firms, with a relatively lesser impact on the leverage of non-state-owned firms. We find that most industries within state-owned firms are influenced by the deleveraging policy.



Table 8. Further analysis.

	(1) Non-State-Owned Firms	(2) State-Owned Firms	(3) High NPL Regions	(4) Low NPL Regions	(5) Firms With Political Connections	(6) Firms Without Political Connections	(7) Zombie Firms	(8) Non-Zombie Firms	(9) Zombie Firms	(10) Non-Zombie Firms
DepVar =	Conserv	Conserv	Conserv	Conserv	Conserv	Conserv	Conserv	Conserv	Conserv	Conserv
TreatxPost	<b>-0.002</b> (-0.86)	<b>-0.015</b> (-3.41)	<b>-0.006</b> (-1.59)	<b>-0.009</b> (-2.46)	<b>-0.003</b> (-0.83)	<b>-0.004</b> (-1.76)	<b>-0.025</b> (-1.05)	<b>-0.008</b> (-3.18)	<b>-0.016</b> (-0.68)	<b>-0.007</b> (-2.84)
Constant	0.100 (1.51)	-0.036 (-0.33)	0.240*** (2.94)	-0.174** (-2.05)	-0.245** (-2.54)	-0.090* (-1.75)	-1.286** (-2.49)	0.106* (1.92)	-0.109 (-0.36)	0.076 (1.32)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.700	0.663	0.731	0.521	0.258	0.222	0.788	0.677	0.717	0.672
N	6751	4733	5813	5671	3819	5751	452	11032	490	10994

### 5.2. Differentiation analysis of creditor characteristics

Firm accounting information disclosure quality is crucial in a healthy credit market; it depends on supply and demand. For creditors with a high proportion of bad debt, the correlation between debtors' repayment ability and whether they can obtain credit funds is weak, and their ability to identify debtors' financial risks is poor; thus, their demand for high-quality accounting information is low. Banks, as crucial creditors of firms, have their credit management level reflected in the NPL. Therefore, in regions with high-NPL ratios, the impact of a deleveraging policy on accounting conservatism should be weaker. This study divides the sample into high- and low-NPL ratio groups based on the annual median and examines the impact of a deleveraging policy on accounting conservatism. Columns (3) and (4) of Table 8 report the results. In Column (3), the coefficient of *Treat*×*Post* is not significant for the high-NPL regions. In Column (4), the coefficient of *Treat*×*Post* is significantly negative at the 5% level for the low-NPL regions. These results indicate that the impact of the deleveraging policy on accounting conservatism is mainly observed in low-NPL regions.

### 5.3. Differentiation analysis of firm characteristics: political connections

Political connections can facilitate a company's financing (Faccio, 2006), allowing it to obtain excess credit funds without undergoing formal procedures or extending the repayment period (Yu & Pan, 2008). Political connections have a specific impact on the debt contract relationship between creditors and debtors under normal market conditions, reducing the constraints of debt contracts on accounting conservatism and the demand for accounting conservatism by the capital market. Thus, the impact of a deleveraging policy on the accounting conservatism of politically connected firms may be weaker. This study examines the effect of political connections on the relationship between a deleveraging policy and accounting conservatism. Columns (5) and (6) of Table 8 report the results. In Column (5), the coefficient of *Treat*×*Post* is not significant for politically connected firms. In Column (6), the coefficient of *Treat*×*Post* is significantly negative at the 10% level for non-politically connected firms. These results indicate that the impact of the deleveraging policy on accounting conservatism is more significant for firms without political connections.

### 5.4. Differentiation analysis of firm characteristics: zombie firms

Massive government-led investments and substantial government subsidies are essential factors contributing to the formation of zombie firms. Under government intervention, zombie firms continuously receive government subsidies and low-cost debt financing (Chernobai & Yasuda, 2013), weakening their motivation to provide high-quality external accounting information. Moreover, zombie firms may lower the quality of their disclosed accounting information to conceal poor operational conditions (Lin, 2011). Therefore, the impact of a deleveraging policy on the accounting conservatism of zombie firms may be weaker. This study employs the two methods proposed by Fukuda and Nakamura (2011) and Jin et al. (2019) to measure zombie firms and examine their influence on the relationship between deleveraging policies and

accounting conservatism. Columns (7)–(10) of Table 8 report the regression results. Columns (7) and (8) present the results based on Fukuda and Nakamura (2011) measurement, whereas Columns (9) and (10) report the results based on Jin et al. (2019) measurement. In Columns (7) and (9), the coefficient of *Treat*×*Post* is not significant for the zombie firms. In Columns (8) and (10), the coefficient on *Treat*×*Post* is significantly negative at the 1% level for non-zombie firms. These results suggest that the impact of the deleveraging policy on accounting conservatism is more significant for non-zombie firms.

## 6. Conclusion

This study uses data from Chinese A-share listed firms during 2012–2018 and the DID model to empirically investigate the impact of a deleveraging policy on accounting conservatism. After implementing the deleveraging policy, the accounting conservatism of firms facing a greater impact of the policy significantly decreases compared to firms facing a lesser policy impact. The impact of the deleveraging policy mainly stems from the reduction of long-term leverage and bank loan leverage. The effect primarily stems from firms with high initial leverage. The mechanism tests show that a deleveraging policy reduces accounting conservatism by mitigating a firm's default risk and weakening agency conflict between creditors and shareholders. Further analyses shows that the impact of the deleveraging policy on accounting conservatism is more pronounced among firms with stronger policy implementation, in regions with low NPL, without political connections, and non-zombie firms. These findings remain robust after the parallel trend test, propensity score matching test, placebo test, and variations to the sample period and other variables.

We acknowledge that the construction of the treatment group may be improved. Although this paper adopt various methods to construct treatment groups to ensure the robustness of conclusions, possible shortcomings exist. Whether other, more suitable metrics for measurement exist remains to be investigated in future studies.

## Disclosure statement

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

## Funding

Shangkun Liang appreciates financial support from China's National Natural Science Foundation [72272164, 71872196], National Social Science Foundation [23&ZD060, 21&ZD145, 19ZDA098]. Nan Lin appreciates financial support from China's National Natural Science Foundation [72472027].

## ORCID

Shangkun Liang  <http://orcid.org/0000-0001-5049-1686>

## References

- Aghamolla, C., & Li, N. (2018). Debt contract enforcement and conservatism: Evidence from a natural experiment. *Journal of Accounting Research*, 56(5), 1383–1416. <https://doi.org/10.1111/1475-679X.12238>
- Ahern, K. R., & Dittmar, A. K. (2012). The changing of the boards: The impact on firm valuation of mandated female board Representation. *Quarterly Journal of Economics*, 127(1), 137–197. <https://doi.org/10.1093/qje/qjr049>
- Ahmed, A. S., Billings, B. K., Morton, R. M., & Stanford-Harris, M. (2002). The role of accounting conservatism in mitigating bondholder-shareholder conflicts over dividend policy and in reducing debt costs. *The Accounting Review*, 77(4), 867–890. <https://doi.org/10.2308/accr.2002.77.4.867>
- Aier, J. K., Chen, L., & Pevzner, M. (2014). Debtholders' demand for conservatism: Evidence from changes in directors' fiduciary duties. *Journal of Accounting Research*, 52(5), 993–1027. <https://doi.org/10.1111/1475-679X.12062>
- Anderson, R. C., Mansi, S. A., & Reeb, D. M. (2003). Founding family ownership and the agency cost of debt. *Journal of Financial Economics*, 68(2), 263–285. [https://doi.org/10.1016/S0304-405X\(03\)00067-9](https://doi.org/10.1016/S0304-405X(03)00067-9)
- Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics*, 24(1), 3–37. [https://doi.org/10.1016/S0165-4101\(97\)00014-1](https://doi.org/10.1016/S0165-4101(97)00014-1)
- Biddle, G. C., Ma, M. L. Z., & Song, F. M. (2022). Accounting conservatism and bankruptcy risk. *Journal of Accounting, Auditing & Finance*, 37(2), 295–323. <https://doi.org/10.1177/0148558X20934244>
- Bonetti, P. (2016). Renegotiation and the properties of accounting information: Evidence from a bankruptcy reform. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2887944>
- Callen, J. L., Chen, F., Dou, Y., & Xin, B. (2016). Accounting conservatism and performance covenants: A signaling approach. *Contemporary Accounting Research*, 33(3), 961–988. <https://doi.org/10.1111/1911-3846.12208>
- Chen, D., Kim, J. B., Li, O. Z., Liang, S. (2018). China's closed pyramidal managerial labor market and the stock price crash risk. *The Accounting Review*, 93(3), 105–131. doi:<http://doi.org/10.2308/accr-51867>
- Chen, G. F., & Tian, J. (2021). Reforms of company capital system and creditor protection: Based on solvency. *Nankai Economic Studies*, 03, 3–16. (in Chinese). <https://doi.org/10.14116/j.nkes.2021.03.001>
- Chernobai, A., & Yasuda, Y. (2013). Disclosures of material weaknesses by Japanese firms after the passage of the 2006 financial instruments and exchange Law. *Journal of Banking and Finance*, 37(5), 1524–1542. <https://doi.org/10.1016/j.jbankfin.2012.02.011>
- Christensen, H. B., & Nikolaev, V. V. (2012). Capital versus performance covenants in debt contracts. *Journal of Accounting Research*, 50(1), 75–116. <https://doi.org/10.1111/j.1475-679X.2011.00432.x>
- Djankov, S., Hart, O., McLiesh, C., & Shleifer, A. (2008). Debt enforcement around the world. *Journal of Political Economy*, 116(6), 1105–1149. <https://doi.org/10.1086/595015>
- Dong, F., Shen, G. J., & Jiao, Y. (2020). Firm debt and labor share—the distributional effect of de-leverage. *China Economic Quarterly*, 19(2), 451–472. (in Chinese). <https://doi.org/10.13821/j.cnki.ceq.2020.01.04>
- Faccio, M. (2006). Politically connected firms. *The American Economic Review*, 96(1), 369–386. <https://doi.org/10.1257/000282806776157704>
- Feng, G., & Yan, W. B. (2017). Bond covenants and their protection for bondholders. *Modern Law Science*, 39(4), 40–53. (in Chinese). <https://kns.cnki.net>
- Francis, B., Hasan, I., Park, J. C., & Wu, Q. (2015). Gender differences in financial reporting decision making: Evidence from accounting conservatism. *Contemporary Accounting Research*, 32(3), 1285–1318. <https://doi.org/10.1111/1911-3846.12098>
- Fukuda, S. I., & Nakamura, J. I. (2011). Why did 'zombie' firms recover in Japan? *World Economy*, 34(7), 1124–1137. <https://doi.org/10.1111/j.1467-9701.2011.01368.x>

- Gao, H., Wang, J., Wang, Y., Wu, C., & Dong, X. (2020). Media coverage and the cost of debt. *The Journal of Financial and Quantitative Analysis*, 55(2), 429–471. <https://doi.org/10.1017/S0022109019000024>
- Gormley, T. A., Kim, B. H., & Martin, X. (2012). Do firms adjust their timely loss recognition in response to changes in the banking industry? *Journal of Accounting Research*, 50(1), 159–196. <https://doi.org/10.1111/j.1475-679X.2011.00429.x>
- Guay, W. R., & Verrecchia, R. E. (2018). Conservative disclosure. *Journal of Financial Reporting*, 3(1), 73–92. <https://doi.org/10.2308/jfir-52051>
- Hou, L., Liang, Y., & Basu, S. (2023). Bank competition and borrower conservatism. *The Accounting Review*, 98(2), 247–275. <https://doi.org/10.2308/TAR-2021-0222>
- Huang, J., Jiang, F. (2015). Product market competition and the adjustment speed of capital structure. *The Journal of World Economy*, 38(7), 99–119. (in Chinese). <https://doi.org/10.19985/j.cnki.cassjwe.2015.07.007>
- Huang, W. (2021). Does banking deregulation affect accounting conservatism? *Journal of Accounting and Public Policy*, 40(6), 106876. <https://doi.org/10.1016/j.jaccpubpol.2021.106876>
- Jin, X. R., Li, X. C., & Lu, J. K. (2019). Zombie firms' negative externality on normal firms: Higher tax rates and more tax avoidance. *Economic Research Journal*, 54(12), 70–85. (in Chinese). <https://kns.cnki.net>
- Johnson, S., Boone, P., Breach, A., & Friedman, E. (2000). Corporate governance in the asian financial crisis. *Journal of Financial Economics*, 58(1–2), 141–186. [https://doi.org/10.1016/S0304-405X\(00\)00069-6](https://doi.org/10.1016/S0304-405X(00)00069-6)
- Khan, M., & Watts, R. L. (2009). Estimation and empirical properties of a firm-year measure of accounting conservatism. *Journal of Accounting and Economics*, 48(2–3), 132–150. <https://doi.org/10.1016/j.jacceco.2009.08.002>
- Kim, J. B., & Zhang, L. (2016). Accounting conservatism and stock price crash risk: Firm-level evidence. *Contemporary Accounting Research*, 33(1), 412–441. <https://doi.org/10.1111/1911-3846.12112>
- Li, L. F., Zhang, W. H., & Lu, Q. R. (2018). How does quality of accounting information impact debt financing in private enterprises? The Role of monetary policy. *Accounting Research*, 04, 66–72. (in Chinese). <https://kns.cnki.net>
- Liang, S. K., Chen, D., Fu, B., & Fang, K. (2017). Network centrality of independent directors and accounting conservatism. *China Journal of Accounting Studies*, 5 (2), 173–195. <https://doi.org/10.1080/21697213.2017.1339430>
- Lin, Y. P. (2011). *Zombie lending, financial reporting opacity and contagion*. National University of Singapore.
- Liu, X. G., & Liu, Y. C. (2019). Leverage, short-term debt for long-term use and firm performance. *Economic Research Journal*, 54(7), 127–141. (in Chinese). <https://kns.cnki.net>
- Liu, X. G., Liu, Y. C., & Wang, J. (2018). Leverage, economic growth and recession. *Social Sciences in China*, 06, 50–70. (in Chinese). <https://kns.cnki.net>
- Liu, Z. G., Wang, Y. H., & Zhang, L. (2022). Does deleveraging reduce labor income share. *Journal of Central University of Finance and Economics*, 07, 87–99. (in Chinese). <https://doi.org/10.19681/j.cnki.jcufe.2022.07.007>
- Lu, M. F., & Ge, H. P. (2016). The causes of high corporate leverage in China and the means of de-leveraging measures. *Financial Regulation Research*, 12, 63–73. (in Chinese). <https://doi.org/10.13490/j.cnki.frr.2016.12.005>
- Lu, Z. F., He, J., & Dou, H. (2015). Whose leverage is more exceeded: SOEs or non-soes? *Economic Research Journal*, 50(12), 54–67. (in Chinese). <https://kns.cnki.net>
- Ma, C. Y., & Zhu, Y. F. (2020). Deleveraging, optimal capital structure and real-economy enterprise productivity. *Finance & Trade Economics*, 41(7), 99–113. (in Chinese). <https://doi.org/10.19795/j.cnki.cn11-1166/f.20200702.001>
- Ma, Y., & Chen, Y. L. (2017). Financial leverage, leverage volatility and economic growth. *Economic Research Journal*, 52(6), 31–45. (in Chinese). <https://kns.cnki.net>
- Ma, Y., Tian, T., Ruan, Z. Y., & Zhu, J. J. (2016). Financial leverage, economic growth, and financial stability. *Journal of Financial Research*, 06, 37–51. (in Chinese). <https://kns.cnki.net>

- Martin, X., & Roychowdhury, S. (2015). Do financial market developments influence accounting practices? Credit default swaps and borrowers' reporting conservatism. *Journal of Accounting and Economics*, 59(1), 80–104. <https://doi.org/10.1016/j.jacceco.2014.09.006>
- Mendoza, E. G. (2010). Sudden stops, financial crises, and leverage. *The American Economic Review*, 100(5), 1941–1966. <https://doi.org/10.1257/aer.100.5.1941>
- Petersen, M. A., & Rajan, R. G. (1997). Trade credit: Theories and evidence. *Review of Financial Studies*, 10(3), 661–691. <https://doi.org/10.1093/rfs/10.3.661>
- Qi, H. D., Liu, H., & Zhu, W. (2018). Research on deleveraging performance of over-indebted enterprises. *Accounting Research*, 12, 3–11. (in Chinese). <https://kns.cnki.net>
- Rao, P. G., & Jiang, G. H. (2011). Monetary policy changes, bank credits and accounting conservatism. *Journal of Financial Research*, 03, 51–71. (in Chinese). <https://kns.cnki.net>
- Shen, H., Cheng, X., Yang, M. (2021). Deleverage, stabilization of leverage and corporate capital structure—Based on implementation effects and paths. *Collected Essays on Finance and Economics*, 1, 75–84. (in Chinese). <http://doi.org/10.13762/j.cnki.cjlc.2021.01.008>
- Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *Journal of Finance*, 52(2), 737–783. <https://doi.org/10.1111/j.1540-6261.1997.tb04820.x>
- Smith, J. K. (1987). Trade credit and informational asymmetry. *Journal of Finance*, 42(4), 863–872. <https://doi.org/10.1111/j.1540-6261.1987.tb03916.x>
- Sun, Z., Li, Z. Q., & Wang, J. B. (2006). Nature of ownership, accounting information and debt covenants. *Journal of Management World*, 10, 100–107. (in Chinese). <https://doi.org/10.19744/j.cnki.11-1235/f.2006.10.012>
- Wang, C., Xie, F., & Xin, X. (2018). CEO inside debt and accounting conservatism. *Contemporary Accounting Research*, 35(4), 2131–2159. <https://doi.org/10.1111/1911-3846.12372>
- Wang, Z. J., & Wang, Z. Q. (2018). Leverage misestimation of listed companies in China and its correlation effect—a thought of “deleveraging” policy. *Business & Management Journal*, 40(4), 20–35. (in Chinese). <https://doi.org/10.19616/j.cnki.bmj.2018.04.002>
- Watts, R. L. (2003). Conservatism in accounting Part I: Explanations and implications. *Accounting Horizons*, 17(3), 207–221. <https://doi.org/10.2308/acch.2003.17.3.207>
- Xin, F., Dong, T. Y., & Xu, G. Y. (2018). Bank competition and accounting conservatism. *Accounting and Economics Research*, 32(5), 80–98. (in Chinese). <https://doi.org/10.16314/j.cnki.31-2074/f.2018.05.005>
- Xu, X. F., Zhou, Q., & Lu, Z. F. (2020). Deleveraging in over-indebted firms: Degree, sustainability and policy effect. *Economic Research Journal*, 55(8), 89–104. (in Chinese). <https://kns.cnki.net>
- Xu, X., & Shen, H. B. (2010). Bank loan's monitoring and the earnings conservatism: The empirical evidence from Chinese listed companies. *Journal of Financial Research*, 02, 102–111. (in Chinese). <https://kns.cnki.net>
- Yang, X. S. (2000). Initial studies in the principles of working funds and cash flow. *Journal of Nanjing University (Philosophy, Humanities and Social Sciences)*, 5, 32–39. (in Chinese). <https://kns.cnki.net>
- Yang, Y. L., Wang, M. Q., & Xu, Y. P. (2020). Deleveraging, bank-enterprise relationship and enterprises' debt structure. *Journal of Finance and Economics*, 46(9), 138–152. (in Chinese). <https://doi.org/10.16538/j.cnki.jfe.20190715.101>
- Yu, M. G., & Pan, H. B. (2008). The relationship between politics, institutional environments and private enterprises' access to bank loans. *Journal of Management World*, 8, 9–21. (in Chinese). <https://doi.org/10.19744/j.cnki.11-1235/f.2008.08.002>
- Zhang, J. (2008). The contracting benefits of accounting conservatism to lenders and borrowers. *Journal of Accounting and Economics*, 45(1), 27–54. <https://doi.org/10.1016/j.jacceco.2007.06.002>
- Zhang, W., Zhou, L., Gu, Q. (2003). The mechanism of firm exit in economic transition: An empirical analysis for Zhongguancun science park of Beijing. *Economic Research Journal*, 10, 3–14+90. (in Chinese). <https://kns.cnki.net/>
- Zhang, X. J., & Wen, F. (2018). Policy evolution, theoretical logic and realization path of structural deleveraging. *Reform*, 08, 5–14. (in Chinese). <https://kns.cnki.net>
- Zhao, G., Liang, S. K., & Wang, Y. T. (2014). Accounting conservatism and bank loan contract: Evidence from China. *Accounting Research*, 12, 18–24. (in Chinese). <https://kns.cnki.net>

- Zheng, M. N., & Li, W. J. (2018). Research on deleveraging of excess leverage enterprises in China-empirical evidence based on dynamic adjustment of capital structure of listed companies in China. *Studies of International Finance*, 10, 87–96. (in Chinese). <https://doi.org/10.16475/j.cnki.1006-1029.2018.10.009>
- Zhou, Q., Xu, X. F., & Lu, Z. F. (2020). Deleveraging: Who is more positive and conservative. *Journal of Financial Research*, 36(8), 127–148. (in Chinese). <https://doi.org/10.19744/j.cnki.11-1235/f.2020.0123>
- Zhu, J. G. (2011). Accounting conservatism and protection of creditors' Interests-A research based on lawsuits between banks and listed companies. *Accounting Research*, 5, 50–57. (in Chinese). <https://kns.cnki.net>