

# The Impact of Corporate Earnings Smoothing on Trade Credit Financing

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**Abstract.** Based on data from A-share listed companies in China between 2008 and 2023, this paper examines the impact of earnings smoothing on trade credit financing and its underlying mechanisms. The findings reveal that earnings smoothing significantly enhances firms' access to trade credit by reducing earnings volatility, mitigating information asymmetry, and signaling operational stability to suppliers. Further analysis indicates that informative earnings smoothing has a positive effect on trade credit financing, whereas opportunistic earnings smoothing shows no significant influence. Additionally, the legal environment and social trust negatively moderate this relationship, suggesting that the positive effect of earnings smoothing weakens in regions with stronger institutional frameworks.

**Keywords:** earnings smoothing, commercial credit financing, legal environment, social trust.

## 1. Introduction

Accompanied by the continuous development of socialist market-oriented economy and increasingly fierce market competition, more and more enterprises begin to pay attention to the establishment of long-term, solid strategic cooperative relationship with the industry's upstream and downstream value chain enterprises, and to enhance the overall competitiveness through the optimisation of supply chain management. In this context, the cooperation between enterprises and upstream and downstream enterprises in the supply chain has become closer, and the commercial credit brought by credit sales business has gradually developed and become more and more important. The formation of commercial credit can be regarded as the balance of supply and demand achieved by the game between enterprises and upstream and downstream (Ge and Qiu, 2007)[1]. Commercial credit is a borrowing and lending relationship generated by enterprises in product sales or raw material procurement, mainly including two forms of deferred payment and early collection, due to the advantages of low financing costs and few restrictive clauses, it has increasingly become a complementary channel for enterprises to carry out external financing, and its essence is the enterprise's use of funds for the upstream and downstream enterprises in the supply chain.

Commercial credit originated in Europe in the Middle Ages, and has been developed continuously since then. In the 1990s, the assets of American enterprises in the form of commercial credit accounted for nearly 18%. In China, since the reform and opening up, despite the continuous development and improvement of the financial market, the problem of financing difficulty still exists widely. Due to the imperfect and unbalanced development of China's financial market, as well as the problem of information asymmetry between banks and enterprises, which has led to the prevalence of commercial credit as a form of financing in China's enterprises. Commercial credit enriches the channels of capital allocation in the credit market (Wang Yanchao, 2014)[2], and the inclusion of commercial credit in the financing portfolio of enterprises helps to optimize the financing tools of enterprises, reduce the cost of enterprise financing, and achieve the dual tasks of cost reduction and deleveraging at the micro enterprise level. In recent years, China's government has attached great importance to the standardisation of the supply chain finance environment, and has continued to improve the relevant laws and regulations to optimise the inter-enterprise trading environment. The Regulations on the Protection of Payment to Small and Medium-sized Enterprises, which was amended and adopted in October 2024, is an administrative statute formulated by the State Council for the purpose of facilitating the timely payment of small and medium-sized enterprises by

institutions, agencies and large-scale enterprises, as well as safeguarding the legitimate rights and interests of small and medium-sized enterprises. regulates the payment of accounts from large enterprises to SMEs. The application of blockchain, electronic contracts and other technologies further improves the transparency and credibility of supply chain transactions.

earnings smoothing, as an embodiment of the quality of accounting information, has been a topic of interest for relevant scholars to study; at the same time, due to the mandatory disclosure requirements of company law and other relevant regulations on the financial information of listed companies, surplus information is also an important source of reference information for the vast number of stakeholders to make decisions, and therefore has received a great deal of attention in practice. As early as the 1960s, Gordon (1964) predicted that as long as managers have discretion over accounting choices, they will be able to smooth the revenue and revenue growth rates of financial reports[3]. And earnings smoothing is a relatively common practice among listed firms in China as a special type of surplus management. A study by Yuxiang Zhong and Wanli Li (2019) found that the mean value of earnings smoothing of listed companies in China is 0.871, indicating that earnings smoothing exists in the Chinese capital market as a whole[4].

In the current economic environment, the financing dilemma faced by small and medium-sized enterprises (SMEs) remains a systemic problem that needs to be solved. The traditional bank credit system sets high thresholds for the asset size, financial indicators and guarantee conditions of enterprises, which makes it difficult for a large number of SMEs in the growth period to obtain the necessary financial support. In this context, commercial credit financing, as an important part of supply chain finance, shows its unique value. This financing method based on real transaction background opens up a relatively flexible financing channel for SMEs through commercial transactions such as accounts receivable and payable between enterprises and advance receipts and payments. The core advantage of commercial credit financing is that it relies on the actual transaction relationship upstream and downstream of the industrial chain, which not only breaks through the rigid requirements of traditional financing on collateral guarantee, but also can better match the operating characteristics and the pace of capital demand of SMEs. The development and improvement of this financing method not only helps optimise the financing structure of SMEs, but also has positive significance in promoting the stable operation of the whole supply chain. From the perspective of accounting information quality, through an in-depth study of the impact of corporate earnings smoothing on commercial credit financing, it can provide SMEs with more effective financing strategy suggestions and promote the healthy development of SMEs.

At this stage, China's academic attention to earnings smoothing is mainly focused on the research of its influencing factors, and the empirical research on earnings smoothing and its motives and ways of economic consequences are still relatively few. There have been different views in the academic community on the quality of corporate surplus information conveyed by earnings smoothing. For a long time, earnings smoothing has been regarded as a form of surplus management that distorts firms' performance and is used to intentionally distort surplus data and make surplus information noisier (Burgstahler et al., 2006)[5], which embodies the opportunity attribute of earnings smoothing; however, more recently, a subset of scholars have found that earnings smoothing is actually associated with an improvement in earnings quality (Ewert and Wagenhofer, 2015)[6], and can be used as a tool to convey information about a firm's future surpluses to outside stakeholders such as investors and analysts, which reflects the informational attribute of earnings smoothing. Studies on the economic consequences of earnings smoothing have focused on the macro level such as the risk of stock price collapse (Zhong Yuxiang and Li Wanli, 2019)[4], asset mispricing (Zhang Jing and Wang Shengnian, 2017)[7], and the micro level such as the stability of research and development (R&D) personnel as well as firms' innovations (Bi Xiaofang et al., 2023)[8]

And the research on the influencing factors of commercial credit financing mainly focuses on macroeconomic policies (Lu Zhengfei and Yang Deming, 2011; Huang Xingtwin et al., 2016)[9, 10], firms' own status and operating conditions (Fabbri and Klapper, 2016)[11], supply chain concentration (Peng Ziqian and Zhou Peng, 2023)[12]. Meanwhile, in recent years, some scholars

have also explored the influencing factors of business credit from the perspectives of executive characteristics such as managerial competence (He Weifeng and Liu Wei, 2018)[13], CEO financial background (Liu Li et al., 2022)[14], and directors and supervisors' liability insurance (Hu Kirtan et al., 2019)[15]. However, few scholars have studied the impact of earnings smoothing on corporate commercial credit financing from the perspective of accounting information quality, taking earnings smoothing as a long-term financial strategy of enterprises. Therefore, it is of great theoretical significance to study the relationship between corporate earnings smoothing and commercial credit financing.

## **2. Literature Review and Research Assumptions**

### **2.1. Literature Review**

#### **2.1.1 Research on the economic consequences of earnings smoothing**

Academics have conducted in-depth research on the economic consequences of earnings smoothing, but there are still controversies until 2006, Tucker and Zarowin divided earnings smoothing into two attributes, one is the informational attribute of earnings smoothing, i.e., the management carries out earnings smoothing in order to transmit the information of the company's future operating cash flow as well as the company's value to outsiders, so as to enable outside investors to have more information in order to better assess the company's value and future development prospects (Chen Bo and Chen Pung, 2013)[16,17]; the other is earnings smoothing with opportunistic attributes, i.e. management purposefully manipulates surplus for self-interested motives, including compensation and job promotion, distorting the company's surplus information and hiding the real situation, which increases the degree of information asymmetry (Leuz, 2003) [18]. earnings smoothing can also be categorised into accrual earnings smoothing and true earnings smoothing based on the mode of operation. Accrual earnings smoothing refers to the management of an enterprise to artificially adjust the recognition time or amount distribution of accruals to reduce inter-period surplus volatility through accounting policy choices and estimation changes, while maintaining the premise of unchanged actual operating activities; real earnings smoothing is manifested in the management's initiative to change the real operating decisions, through the reconfiguration of production resources, and directly change the path of the enterprise's cash flow in order to reduce the surplus volatility (Peter et al. 2020)[19]. Accrual earnings smoothing adjustments mostly target short-term profitability, while true earnings smoothing can be used as a long-term strategy (Inder et al., 2018)[20]. This also provides a variety of ideas for later scholars to study earnings smoothing. For example, Zhong Yuxiang and Li Wanli (2019) investigated the relationship between earnings smoothing and stock crash risk and analysed earnings smoothing according to management's motivation by decomposing it into informationalism and opportunism, and the results showed that the two attributes of earnings smoothing have different effects on stock crash risk, and stock crash risk is mainly due to the opportunistic attribute of earnings smoothing, whereas informational attribute of earnings smoothing can significantly reduce stock crash risk[4].

In earlier studies, most scholars believe that earnings smoothing has negative economic consequences. spagnolo (2005) finds that managers underreport earnings when firms' realised earnings are high enough, or when the year's earnings have reached the upper limit of the performance bonus that can be earned, and overreport earnings when the year's earnings are between the lower and upper limits of the performance bonus that can be earned[21]. Acharya and Lambercht (2015) found that managers adjust the firm's future surplus information to match the expectations of external shareholders through earnings smoothing behaviour, so external shareholders are provided with surplus information that is generated based on the available information rather than the firm's true position, suggesting that earnings smoothing reduces the informational content of surpluses[22]. A study by Rountree et al. (2008) found that there is a potential risk of manipulation by management using accruals and therefore earnings smoothing and reduces firm value[23].

In recent years, more and more scholars have found that earnings smoothing has positive economic consequences. Effective earnings smoothing can, to a certain extent, artificially curb short-term fluctuations in surplus caused by abnormal factors, and represents management's attempt to make reasonable use of discretionary space to eliminate "noise" in surplus. Effective smoothing relies on management's use of techniques, knowledge, and tools to make reasonable forecasts of future economic events based on the current level of revenues, and to adjust future period surpluses to coincide with the firm's goal of normal revenue growth (Beidleman, 1973)[24]. Amiram and Owens (2018) find that earnings smoothing plays a stronger role as an information transmitter in the credit issuance phase, and that it is more useful in the credit issuance phase. plays a stronger role as an information transmitter because firms need to transmit credible financial information to reduce the cost of debt[25]. Lang et al. (2012) decompose earnings smoothing into intrinsic earnings smoothing and manipulative earnings smoothing, where intrinsic earnings smoothing can be predicted by firms' day-to-day business activities and can reflect firms' true operating conditions, and manipulative earnings smoothing reduces firms' information transparency[26]. Bi et al. (2022) found that CEOs with technology backgrounds can better incorporate their judgement on the future development of the enterprise into the surplus information when implementing earnings smoothing financial strategies, enhancing the information attributes of earnings smoothing and improving the future excess returns of the enterprise's stock [27]. Bi Xiaofang et al.'s (2023) study shows that information attribute earnings smoothing can enhance R&D personnel stability, the reasonableness and fairness of corporate monetary compensation, the effectiveness of equity incentives and the development expectations of the enterprise are the specific paths of information attribute earnings smoothing to enhance R&D personnel stability, the positive effect of information attribute earnings smoothing on R&D personnel stability improves the quality of corporate innovation output, and the management in the application of the Information attribute earnings smoothing financial strategy in the process will be more use of real economic activities and transactions in advance of the arrangement of smoothing the performance of the enterprise in each period[8].

### **2.1.2 Research on Influencing Factors of Commercial Credit Financing**

By systematically sorting out the literature, it can be found that the research on the influencing factors of commercial credit can be divided into two aspects: external factors and internal factors.

Some studies have shown that commercial credit is influenced by macro-environmental factors, which include monetary policy, fiscal policy, financial and economic conditions, and the level of social trust, etc. Schwartz (1974) pointed out that when the financial environment is poor, enterprises will seek alternatives to bank credit to alleviate the pressure of the liquidity crunch and the tightening of funds, and this alternative role is more significant in the case of a bad economy significant (Li Zeguang and Qin Jiaqi, 2020)[28, 29]. Lu Zhengfei and Yang Deming (2011) tested the two theories based on China's institutional context and found that during the period of loose and tight monetary policy, the commercial credit financing of Chinese firms applies to the comparative advantage theory and the alternative financing theory respectively[9]. With the tightening of monetary policy, enterprises will choose commercial credit financing as an alternative to bank loan financing (Rao Pingui and Jiang Guohua, 2013)[30], and this trend is especially prominent among private enterprises (Lu Zhengfei et al., 2009)[31], which is because a tightening of monetary policy leads to a decline in the supply of money, which in turn compresses the amount of bank credit and exacerbates the The constraints of "credit discrimination", some enterprises that are already facing financing constraints will be more inclined to increase the amount of commercial credit in order to meet their own financial needs. The increase in the level of social trust will have an important impact on the quantity of business credit, and suppliers are more inclined to choose those enterprises with a higher level of social trust in order to obtain more business opportunities (Li Shuangjian et al., 2020)[32].

The existing literature on the internal influencing factors of commercial credit mainly involves the perspectives of firms' traits and behaviours. In terms of enterprise traits, according to Zhang Xinmin et al. (2012), enterprises that are in a higher position in the market in general can obtain more commercial credit financing[33]. In addition, enterprises with stronger innovation ability will obtain

more commercial credit, and the mechanism analysis shows that innovation activities can enhance the core competitiveness of enterprises and improve their operational and financial performance, which means that enterprises have stronger debt repayment ability, and thus will obtain more upstream and downstream financial support (Zhou Liyuan et al., 2020)[34]. According to Fang Mingyue (2014), business credit should be further divided into accounts receivable and accounts payable, and the study found that in the more competitive market enterprises have more accounts receivable and fewer accounts payable, and at the same time, the study pointed out that the enterprise's own financial constraints will regulate the above relationship[35]. In terms of corporate behaviour, the establishment and operation of more efficient internal control, more active social responsibility and a higher degree of information disclosure are conducive to better control of risk, so that the enterprise establishes a good image to the outside world, as well as a higher level of information transparency, which in turn can obtain more commercial credit (Zhang Zhengyong and Deng Bofu, 2018)[36]. Zheng Chaoyu and Meng Xianghui (2021) explored the influence of corporate reputation on business credit in depth from the perspective of corporate reputation and found that corporate reputation has a constraining and limiting effect on the scale of business credit, which affects the scale of business credit through the signalling mechanism[37]. When Fang Hongxing and Chu Youwei (2019) studied the relationship between corporate strategy and business credit, they found that offensive business strategy positively affects the scale of business credit financing of a company, in which financing constraints act as a mediator of the relationship between the two[38]. Meanwhile, in a related study of corporate financial strategy, Sun Jie and Li Minghui (2021) pointed out that when the financial strategy is significantly different from the normal value of the same type of company, it may cause the company to encounter greater uncertainty, risk, and more ambiguous level of information, which ultimately negatively affects the business credit financing of the company[39]. Gao Lifang et al. (2025) found that visual annual reports can significantly enhance a company's business credit financing, and the disclosure of a company's visual annual report on multiple platforms strengthens this positive effect[40].

## 2.2. Research hypothesis

earnings smoothing is a pre-emptive management behaviour of the inter-period distribution of surpluses, which is a long-term financial strategy of companies and becomes one of the important characteristic dimensions of surplus information. According to the contractually useful nature of accounting information, surplus information has an important impact on key external stakeholders such as customers and suppliers and creditors (Healy and Wahlen, 1999)[41]. earnings smoothing can reflect information about future risks and returns in advance, reduce information asymmetry, can satisfy creditors' information needs for robustness, and help to improve creditors' evaluation of corporate risk. High-quality accounting information can make enterprises have better performance in the debt financing process (Lai Lai Fong et al., 2018)[42]. Meanwhile, earnings smoothing can increase the likelihood of surplus-based terms being used in debt contracts, and can reduce the risk of debt contract default due to the impact of external factors such as the economic environment on corporate surpluses after the contract is signed, which improves the usefulness of surplus information in the design of debt contracts, which in turn affects the formulation and performance of corporate debt contracts (Peter et al., 2020)[19].

Commercial credit arises from supply chain transactions and is a kind of short-term credit financing for enterprises, which has the advantages of low financing costs and few restrictions compared with bank credit financing, and is an important channel for external financing for many enterprises. Whether enterprises can obtain commercial credit financing is closely related to their supply chain governance status, and information sharing among enterprises in the supply chain and suppression of business risks are important guarantees for enterprises to obtain commercial credit financing (Qi Yudong and Xiao Xu, 2020)[43]. High-quality accounting information disclosure can help enterprises obtain commercial credit from suppliers (Chen Hong et al., 2014)[44]. Upstream suppliers are more willing to provide commercial credit to low-risk firms (Hu Yue and Wu Wenfeng,

2022)[45] . Good and smooth surplus information conveys the information that the enterprise itself has lower risk, which can attract more suppliers and customers, improve the bargaining power of the enterprise with suppliers as well as customers, and help the enterprise to obtain commercial credit financing from the supply chain. Smooth surplus information can improve the quality of corporate disclosure, convey more information about the future development prospects of the enterprise, and satisfy the robust information needs of suppliers and customers, thus enabling the enterprise to obtain more commercial credit financing.

From the supplier's perspective, according to the "rational economic man" hypothesis, the supplier is concerned about whether the receivables can be collected in full and in a timely manner, but the information asymmetry between the supplier and the enterprise makes it difficult for the supplier to directly supervise the safety of the receivables. Cunat (2007) found that the supplier is concerned about the risk, and requires the client enterprise to pay insurance premium and default premium, thus increasing the cost of commercial credit and, to a certain extent, the transaction cost. premium with a default premium, thus raising the cost of commercial credit for the firm and, to some extent, the transaction costs for both parties[46]. The better the profit continuity of the enterprise, the smoother the surplus position, the higher the degree of guarantee that the commercial credit provided by the supplier can be fully recovered in time; compared with the net profit, the surplus position has higher continuity and is more stable and more predictive of the enterprise's future surpluses (Bradshaw and Sloan, 2002)[47], so the supplier has an incentive to pay attention to the enterprise's surplus position. In practice, suppliers often have more than one transaction with the enterprise, and the transaction process often adopts the batch payment method, which generates multiple batches of receivables; the enterprise surplus continuity is good, for the suppliers, the receivables are more secure, the risk of forming bad debts is lower, and the suppliers will be more willing to provide them with commercial credit financing. According to the buyer's market theory, the establishment of a trading relationship between suppliers and firms is accompanied by high switching costs, and a stable trading relationship presents more industrial integration effects in China (Wang Xiongyuan et al., 2015)[48], which helps both parties to promote collaborative marketing (Kalwani and Narayandas, 1995)[49]. Firms that engage in earnings smoothing have better surplus sustainability and more stable operations, which are conducive to maintaining long-term stable trading relationships, and therefore suppliers will be more inclined to trade and build customer relationships with these firms. For trading motives, suppliers expand sales and maintain long-term trading relationships by providing commercial credit to firms with good surplus sustainability.

From the perspective of customers, Wang Xiongyuan et al. (2015), after further considering the degree of stability of the relationship between the enterprise and the customer, found that customers with stable relationships with the enterprise have a "sympathetic" effect on the enterprise in terms of commercial credit[48]. Customers also pay costs in the process of establishing a trading relationship with an enterprise, and a stable trading relationship in China is more likely to show the effect of industrial integration, so that the potential benefits of the relationship are greater than the costs, and customers will be "sympathetic" to the enterprise, and will give commercial credit to the enterprise when the enterprise is in trouble, rather than asking for commercial credit from the enterprise. Operating profit is the core data for judging the business status of enterprises, because there is information asymmetry between enterprises and customers, customers in addition to obtaining information related to the business status of enterprises in the transaction process, the use of financial statements in the surplus status is also an important way for customers to judge the business status of enterprises. Zhang Yong (2017) found that enterprises increase core surplus through classification transfer to convey the signal of their stronger and more sustainable core profitability to suppliers and customers in the supply chain, which in turn motivates suppliers and customers to make specialised investments[50]. This indicates that customers pay attention to the firm's surplus information and make investment decisions based on that information. earnings smoothing conveys private information about the firm's future performance and risk to customers, which is conducive to a better assessment of the firm's value and growth prospects, and is an important dimension for measuring the

quality of surplus (Lang et al., 2012)[26], which helps firms establish a stable relationship with their customers, and allows customers to be more "sympathetic" to firms by providing them with Business credit financing for enterprises.

Based on the above, this paper proposes the following hypotheses:

*H1: earnings smoothing positively affects the level of business credit financing of enterprises.*

### 3. Research Design

#### 3.1. Definition of Variables

##### 3.1.1 Explained Variables

The explanatory variable is TC, which reflects the business credit financing of enterprises. Drawing on the study by Shu Wei and Chen Ying (2024),  $TC = (\text{accounts payable} + \text{notes payable} + \text{accounts receivable}) / \text{total assets}$ , which represents the commercial credit financing obtained by the firm after adjusting for the standardisation of total assets[51].

##### 3.1.2 Explanatory variables

The core explanatory variable, earnings smoothing, reflects the extent to which firms engage in earnings smoothing. Drawing on Lang et al. (2006) and Bi (2022), among others, a two-step approach is used to calculate firms' earnings smoothing[27,52]. In the first step, the change in net profit divided by total assets, DNI/TA, is used as the dependent variable to regress six variables that would affect the change in earnings, including: the firm's gearing ratio (LEV), the growth rate of sales revenue (SALESRATE), the rate of change in total liabilities (LIABIRATE), the rate of change in total assets (ARATE), the rate of change in total asset turnover (ASSETTURNOVER), and market value of the firm (MV); in the second step, the variance of the regression residuals rolling five-year window is calculated as VARIABILITY (DNI/TA), which is the variability of earnings or, more accurately, the change in net profit divided by the variability of total assets, which is the earnings smoothing of the firm. As VARIABILITY (DNI/TA) is the variability of earnings, the smaller VARIABILITY (DNI/TA) means the smaller the degree of change in earnings, in order to facilitate the study will be taken as a negative measure of earnings smoothing (ES), at this time, the larger the ES represents the higher the degree of earnings smoothing of the enterprise.

$$\frac{DNI}{TA}_{i,t} = \beta_1 LEV_{i,t} + \beta_2 SALESRATE_{i,t} + \beta_3 LIABIRATE_{i,t} + \beta_4 ARATE_{i,t} + \beta_5 ASSETTURNOVER_{i,t} + \beta_6 MV_{i,t} + \beta_7 YEAR + \beta_8 IND + \varepsilon_{i,t}$$

##### 3.1.3 Control Variables

The selection of control variables in this paper refers to the relevant literature on commercial credit financing and accounting disclosure, and chooses enterprise size, financial leverage, return on net assets, growth capacity, whether it is a loss, two positions, the proportion of sole director, board size, whether the four major, cash flow ratio, proportion of institutional investors as control variables.

**Table 1.** Control variables definition

|                   | Variable Name                             | Variable Symbol | Variable Description                                                      |
|-------------------|-------------------------------------------|-----------------|---------------------------------------------------------------------------|
| Control Variables | Enterprise Size                           | Size            | Natural logarithm of total assets at the end of the period                |
|                   | Financial Leverage                        | LEV             | Average balance of total liabilities/average balance of total assets      |
|                   | Return on Equity                          | Roe             | Net Profit/Average Balance of Net Assets                                  |
|                   | Growth                                    | Growth          | Operating Income Growth Rate                                              |
|                   | Loss                                      | Loss            | Net profit less than 0 is 1, otherwise it is 0.                           |
|                   | Dual                                      | Dual            | 1 if the chairman of the board of directors is also the CEO, 0 otherwise. |
|                   | Ratio of sole director                    | Indep           | Number of Independent Directors / Number of Board of Directors            |
|                   | Board Size                                | Board           | Natural logarithm of board size                                           |
|                   | Big4                                      | Big4            | 1 if audited by a Big 4 accounting firm, 0 otherwise                      |
|                   | Cash Flow Ratio                           | Cashflow        | Cash flow from operating activities/current liabilities                   |
|                   | Institutional Investor Shareholding Ratio | INST            | Number of shares held by institutional investors/total number of shares   |

### 3.2. Model Setting

In order to verify the impact of earnings smoothing on corporate business credit financing, the fixed effects of industry and year are controlled to reduce the impact of endogeneity, and the model constructed in this paper is as follows:

$$TC = \beta_1 Es + \beta_2 LEV + \beta_3 ROE + \beta_4 Growth + \beta_5 Loss + \beta_6 Dual + \beta_7 Indep + \beta_8 Board + \beta_9 Big4 + \beta_{10} Cashflow + \beta_{11} INST + \sum Year + \sum Industry + \varepsilon$$

### 3.3. Sample Selection and Data Source

Selected A-share listed companies in Shanghai and Shenzhen from 2008 to 2023, excluding samples of financial and insurance industry, PT, ST\*, ST-type enterprises and samples with missing or abnormal data. In addition to that, this paper also has a 1% shrinkage treatment for all continuous variables. The data for all variables in this paper come from the CSMAR database and the Dibbo

database, the data on the degree of financial market development and the rule of law environment are derived from the China Marketisation Index - Relative Process in Each Region 2018 Report edited by Fan Gang et al. The data on social trust use the data from the China Entrepreneurship Survey System ("CESS") conducted by Zhang Weiying and Ke Rongzhu through the China Entrepreneurship Survey System (CESS) regional social trust data obtained from questionnaire surveys of 31 provinces, autonomous regions and municipalities directly under the central government across China. In the process of empirical testing, this paper uses STATA 16.0 for analysis.

## 4. Empirical results and analysis

### 4.1. Descriptive statistics

**Table 2.** Descriptive statistics results of main variables

|          | N      | mean    | p50     | sd     | min     | max     |
|----------|--------|---------|---------|--------|---------|---------|
| TC       | 16,051 | 0.1753  | 0.1460  | 0.1197 | 0.0063  | 0.5433  |
| ES       | 16,051 | -0.0346 | -0.0209 | 0.0417 | -0.3294 | -0.0041 |
| Size     | 16,051 | 22.5668 | 22.3939 | 1.3017 | 19.6776 | 26.0969 |
| Lev      | 16,051 | 0.4892  | 0.4937  | 0.1909 | 0.0521  | 0.8956  |
| Roe      | 16,051 | 0.0592  | 0.0653  | 0.1278 | -0.6434 | 0.3542  |
| Growth   | 16,051 | 0.1352  | 0.0876  | 0.3518 | -0.5787 | 2.2668  |
| Loss     | 16,051 | 0.1135  | 0.0000  | 0.3172 | 0.0000  | 1.0000  |
| Dual     | 16,051 | 0.1916  | 0.0000  | 0.3936 | 0.0000  | 1.0000  |
| Indep    | 16,051 | 0.3722  | 0.3333  | 0.0530 | 0.3333  | 0.5714  |
| Board    | 16,051 | 2.1650  | 2.1650  | 0.1995 | 1.6094  | 2.7081  |
| Big4     | 16,051 | 0.0667  | 0.0000  | 0.2494 | 0.0000  | 1.0000  |
| Cashflow | 16,051 | 0.0477  | 0.0456  | 0.0680 | -0.1700 | 0.2480  |
| INST     | 16,051 | 0.4792  | 0.4913  | 0.2190 | 0.0012  | 0.9165  |

Table 2. reports the descriptive statistics of the explanatory variables, the explained variables and the associated control variables. Firms' commercial credit financing (TC) has a mean of 0.1753, a median of 0.1460 indicating a right skewed distribution, and a standard deviation of 0.1197, with a relatively large difference in the degree of commercial description of financing between firms, ranging from 0.0063 and 0.5433, with a significant span of data. The mean value of the degree of enterprise earnings smoothing (ES) is -0.0346, the median is -0.0209, the minimum is -0.3291, the maximum is -0.0041, and the maximum is 80 times the minimum, indicating that earnings smoothing is widespread among enterprises, and there is a large difference in the degree to which enterprises engage in earnings smoothing.

#### 4.2. Test results of earnings smoothing to promote business credit financing

**Table 3.** Regression results of earnings smoothing and enterprise business credit financing

|              | TC                    |
|--------------|-----------------------|
| ES           | 0.077***<br>(4.08)    |
| Size         | -0.012***<br>(-14.42) |
| Lev          | 0.327***<br>(65.88)   |
| Roe          | 0.108***<br>(12.35)   |
| Growth       | 0.004<br>(1.60)       |
| Loss         | -0.000<br>(-0.10)     |
| Dual         | -0.004**<br>(-2.18)   |
| Indep        | -0.045***<br>(-2.83)  |
| Board        | 0.002<br>(0.40)       |
| Big4         | 0.001<br>(0.42)       |
| Cashflow     | 0.100***<br>(8.52)    |
| INST         | 0.046***<br>(11.33)   |
| Constant     | 0.199***<br>(9.85)    |
| Industry FE  | YES                   |
| Year FE      | YES                   |
| Observations | 16,051                |
| R-squared    | 0.412                 |
| r2_a         | 0.411                 |
| F            | 238.86                |

In accordance with the regression results in the table, the modified  $R^2$  is 0.413, indicating a good fit of the model. The regression coefficient of the degree of corporate earnings smoothing is 0.149, which is significant at the 1% level, verifying hypothesis H1 that earnings smoothing positively affects the level of commercial credit financing of enterprises. earnings smoothing as a long-term financial strategy makes the volatility of corporate profits lower, eases information asymmetry, and conveys the signal of low business risk and controllable cash flow to suppliers, who are thus more willing to provide enterprises with loose credit periods and higher credit limits. In addition, stable financial performance is conducive to the establishment of a reliable business partner image, and suppliers will provide more business credit out of their willingness to cooperate in the long term to maintain a stable sales channel.

## 5. Robustness Test

### 5.1. Instrumental variable method

In order to solve the possible endogeneity problem in the model of this paper, this paper refers to the study of Wang Fang et al. (2022), and chooses the average of the earnings smoothing degree (ES) of other firms in the same province in the same industry as the firm, LvES, as an instrumental variable[53]. Firms in the same industry in the same province face similar market environment, regulatory policies, and competitive pressures in the industry and tend to adopt the accounting strategies of their peers. In addition, firms in the region may share information through industry associations, supply chain networks, or talent flows, leading to convergence of financial strategies. Therefore the degree of earnings smoothing of other firms in the same province in the same industry will affect the degree of earnings smoothing of this firm, but this indicator will not directly affect the commercial credit financing of this firm, so this indicator meets the conditions of instrumental variables. At the same time the instrumental variable passes the weak instrumental variable test.

**Table 4.** Regression results of instrumental variable method

|                               | (1)<br>IV-First       | (2)<br>IV-Second      |
|-------------------------------|-----------------------|-----------------------|
| ES                            |                       | 0.459***<br>(5.18)    |
| LvES                          | 0.683***<br>(27.89)   |                       |
| Size                          | 0.005***<br>(14.10)   | -0.015***<br>(-14.65) |
| Lev                           | 0.000<br>(0.17)       | 0.328***<br>(65.18)   |
| Roe                           | 0.058***<br>(16.34)   | 0.086***<br>(8.40)    |
| Growth                        | -0.006***<br>(-6.19)  | 0.006**<br>(2.53)     |
| Loss                          | -0.014***<br>(-10.84) | 0.006<br>(1.57)       |
| Dual                          | -0.000<br>(-0.52)     | -0.004**<br>(-1.99)   |
| Indep                         | -0.002<br>(-0.26)     | -0.043***<br>(-2.68)  |
| Board                         | 0.008***<br>(4.66)    | -0.002<br>(-0.41)     |
| Big4                          | -0.006***<br>(-4.34)  | 0.004<br>(1.21)       |
| Cashflow                      | -0.028***<br>(-5.78)  | 0.110***<br>(9.08)    |
| INST                          | 0.002<br>(1.25)       | 0.044***<br>(10.83)   |
| Constant                      | -0.138***<br>(-16.59) | 0.271***<br>(10.37)   |
| Observations                  | 16,028                | 16,028                |
| Industry FE                   | YES                   | YES                   |
| Year FE                       | YES                   | YES                   |
| R-squared                     | 0.191                 | 0.398                 |
| r2_a                          | 0.189                 | 0.396                 |
| F                             | 80.40                 | 233.03                |
| Weak instrument variable test |                       |                       |
| F-statistic                   |                       | 778.10                |
| F-statistic P-Value           |                       | 0.00                  |

According to the results of the two-stage regression in the table above, the coefficient of the instrumental variable LvES in the first-stage regression is 0.683, which is significant at the 1% level, and the F-value of the first-stage is 80.40, which indicates that the instrumental variable is strongly correlated with the endogenous explanatory variables, while the coefficient of ES in the second-stage regression is 0.459, which is significant at the 1% level, which indicates that the conclusions are still robust after taking into account the endogeneity issue .

## 5.2. Replacement of explanatory variables

Referring to the study of You Jiaying and Li Bin (2007), the ratio of the degree of volatility of cash flow to the degree of volatility of surplus is used to re-measure the degree of earnings smoothing of firms[54].

$$\text{FixES} = \frac{\text{stdev} \sum_{t-4}^t (\text{NCFO}_{i,t} / \text{ASSET}_{i,t})}{\text{stdev} \sum_{t-4}^t (\text{NI}_{i,t} / \text{ASSET}_{i,t})}$$

NCFO denotes net cash flow from operating activities, NI denotes net income, and ASSET denotes total assets at the beginning of the period. The numerator part denotes the 5-year rolling standard deviation of the ratio of cash flow from operating activities to total assets at the end of the period for 5 consecutive years forward from the current year's base period, and the denominator part denotes the 5-year rolling standard deviation of the net interest margin on total assets for 5 consecutive years forward from the current year's base period. FixES replaces the earnings smoothing (ES) indicator measured by the model in the main regression model, and model (1) is tested again.

**Table 5.** Regression results with explanatory variables replaced

|              | TC                    |
|--------------|-----------------------|
| FixES        | 0.002***<br>(12.46)   |
| Size         | -0.012***<br>(-13.64) |
| Lev          | 0.317***<br>(63.04)   |
| Roe          | 0.112***<br>(12.94)   |
| Growth       | 0.004*<br>(1.74)      |
| Loss         | 0.005<br>(1.55)       |
| Dual         | -0.005**<br>(-2.44)   |
| Indep        | -0.052***<br>(-3.31)  |
| Board        | 0.002<br>(0.54)       |
| Big4         | 0.002<br>(0.60)       |
| Cashflow     | 0.107***<br>(9.14)    |
| INST         | 0.045***<br>(11.17)   |
| Constant     | 0.176***<br>(8.90)    |
| Industry FE  | YES                   |
| Year FE      | YES                   |
| Observations | 16,051                |
| R-squared    | 0.417                 |
| r2_a         | 0.416                 |
| F            | 243.87                |

According to the regression results after changing the explanatory variable indicators, the modified  $R^2$  is 0.416, and the regression coefficient of earnings smoothing measured in another way is 0.002, which is significant at the 1% level, which again verifies Hypothesis H1 and indicates that the regression results are robust and reliable.

### 5.3. Replacement of explanatory variables

Referring to the study of Shu Wei and Chen Ying et al. (2024), this paper will use industry-adjusted commercial credit financing (TC\_Adjust), i.e., commercial credit financing minus the average value of commercial credit financing of the industry, instead of the indicator of commercial credit financing (TC) in the main regression model, to test the model (1) again[51].

**Table 6.** Regression results with replacement of explanatory variables

|              | TC_Adjust             |
|--------------|-----------------------|
| ES           | 0.077***<br>(4.08)    |
| Size         | -0.012***<br>(-14.42) |
| Lev          | 0.327***<br>(65.88)   |
| Roe          | 0.108***<br>(12.35)   |
| Growth       | 0.004<br>(1.60)       |
| Loss         | -0.000<br>(-0.10)     |
| Dual         | -0.004**<br>(-2.18)   |
| Indep        | -0.045***<br>(-2.83)  |
| Board        | 0.002<br>(0.40)       |
| Big4         | 0.001<br>(0.42)       |
| Cashflow     | 0.100***<br>(8.52)    |
| INST         | 0.046***<br>(11.33)   |
| Constant     | 0.094***<br>(4.64)    |
| Industry FE  | YES                   |
| Year FE      | YES                   |
| Observations | 16,051                |
| R-squared    | 0.260                 |
| r2_a         | 0.258                 |
| F            | 119.65                |

According to the regression results after changing the indicators of the explanatory variables, the modified  $R^2$  is 0.258, and the regression coefficient of earnings smoothing is 0.077, which is significant at the 1% level, which again verifies the hypothesis H1 and indicates that the regression results are robust and reliable.

## 6. Further Analyses

### 6.1. The effect of earnings smoothing motive on commercial credit financing

earnings smoothing has two types of motives, opportunistic and signalling, and the total earnings smoothing effect can be seen as the sum of the earnings smoothing effect generated by these two types of motives. Information-attributed earnings smoothing refers to the inter-period adjustment of surpluses by firms through sound accounting professional judgement or financial strategies to reduce surplus volatility and to convey valid information related to firms' future performance. The core motivation is to reduce information asymmetry and help stakeholders more accurately assess the value and long-term prospects of the business. Opportunistic earnings smoothing refers to the behaviour of the management of an enterprise to artificially adjust the surplus in order to hide the true operating conditions by abusing accounting estimates or manipulating trading activities out of self-interested motives. Its core motive is to satisfy management's short-term profit needs, which may harm the long-term value of the firm (Dechow et al., 2010)[55]. The two different motives of earnings smoothing will have different effects on business credit financing.

Based on signalling theory, it is argued that internal management has more information about the future value of the firm, and since it is unable to disclose directly to external stakeholders such as suppliers as well as customers, management conveys financial information about the value of the firm to them through earnings smoothing (Sumiadi et al., 2019)[56]. Bi Xiaofang et al. (2022) found that when firms are led by CEOs with technical professional backgrounds, they are able to more accurately present strategic expectations in financial reports during the implementation of earnings smoothing, and this specialised information integration significantly enhances the information value of surplus data, which in turn generates a higher stock market premium[27]. Information attribute earnings smoothing, i.e. earnings smoothing with information transmission function can transmit company-specific information to the outside world, reduce the noise and asymmetry in surplus information, help stakeholders to obtain information on the future development trend of the company, and this kind of forward-looking information can enable suppliers and customers to more accurately assess the solvency of the enterprise, and thus be willing to provide more commercial credit. Information attribute earnings smoothing can promote the realisation of the contracting function of accounting information, which is conducive to stakeholders' evaluation of the implementation effect of the surplus-based contract, and improves the usefulness of surplus information in the design of important contracts of enterprises (Peter et al., 2020)[19], so as to obtain more initiative in the upstream and downstream supply chain. earnings smoothing of information attributes can help enterprises to create a market image of "sound management", enhance the trust of suppliers and customers, and establish a strong partnership to obtain more business credit.

Opportunistic earnings smoothing is usually used to hide true performance, meet market expectations or satisfy management's self-interest, rather than delivering effective information to the market. Management's masking of a firm's true performance volatility through surplus manipulation may lead to suppliers' misjudgment of the firm's actual solvency, and once suppliers identify such opportunistic behaviour through other information such as external audit signals, they may instead tighten their credit policies, offsetting the original positive effect. Rountree et al. (2008), for example, point out that earnings smoothing may be motivated by management's need to manipulate profits, and does not release information about firm value[23]. Opportunistic attribute earnings smoothing usually lacks the information transfer function related to long-term corporate value, which will increase information opacity and cannot effectively alleviate suppliers' concerns about corporate business risks, and therefore cannot positively influence commercial credit financing. Opportunistic earnings smoothing will make the enterprise's reputation damaged and the supply chain relationship deteriorated and tense, making the enterprise unable to obtain commercial credit financing. Accordingly this paper proposes the following hypothesis:

*Hypothesis H2: Information attribute earnings smoothing positively affects business credit financing, while opportunity attribute earnings smoothing cannot positively affect business credit financing.*

Drawing on Lang et al. (2012), the total earnings smoothing effect (Es) is decomposed into information attribute earnings smoothing (Infor) and opportunity attribute earnings smoothing (Oppor), and the decomposition model is as follows[26]:

$$Es_{i,t} = \beta_1 Size_{i,t} + \beta_2 LEV_{i,t} + \beta_3 MB_{i,t} + \beta_4 STDSALES_{i,t} + \beta_5 LOSS_{i,t} + \beta_6 OPCYCLE_{i,t} + \beta_7 Salesrate_{i,t} + \beta_8 OPLEV_{i,t} + \beta_9 AVECFO_{i,t} + \beta_{10} YEAR + \beta_{11} IND + \varepsilon_{i,t}$$

If the earnings smoothing can be predicted by the daily business activities of the company, then the component is Information Attribute earnings smoothing, otherwise it is Machine Attribute earnings smoothing. Information-attribute earnings smoothing is a strategic surplus adjustment based on rational business operations of the firm, and opportunity-attribute earnings smoothing is surplus manipulation for speculative motives. Control variables in the model include: asset size, financial leverage, book-to-market ratio, standard deviation of the firm's sales revenue over the past five years, the proportion of years in which the firm has experienced losses over the past five years, operating cycle, sales revenue growth rate, capital intensity ratio, and average net cash flow from operating activities divided by total assets over the past five years, with regressions controlling for industry and year fixed effects. The predicted value of ES in the model is used to measure information attribute earnings smoothing (Infor) and the residuals are used to measure opportunity attribute earnings smoothing (Oppor).

**Table 7.**Impact of earnings smoothing motives on business credit financing

|              | (1)<br>TC             | (2)<br>TC             |
|--------------|-----------------------|-----------------------|
| Infor        | 0.225***<br>(6.00)    |                       |
| Oppor        |                       | 0.027<br>(1.29)       |
| Size         | -0.015***<br>(-15.21) | -0.012***<br>(-13.62) |
| Lev          | 0.335***<br>(65.40)   | 0.326***<br>(65.02)   |
| Roe          | 0.108***<br>(12.36)   | 0.112***<br>(12.81)   |
| Growth       | 0.004*<br>(1.91)      | 0.003<br>(1.41)       |
| Loss         | 0.007**<br>(2.10)     | -0.002<br>(-0.66)     |
| Dual         | -0.004**<br>(-2.23)   | -0.004**<br>(-2.21)   |
| Indep        | -0.043***<br>(-2.72)  | -0.045***<br>(-2.85)  |
| Board        | 0.002<br>(0.52)       | 0.002<br>(0.52)       |
| Big4         | 0.002<br>(0.61)       | 0.001<br>(0.27)       |
| Cashflow     | 0.105***<br>(8.90)    | 0.098***<br>(8.34)    |
| INST         | 0.047***<br>(11.63)   | 0.046***<br>(11.34)   |
| Constant     | 0.249***<br>(11.02)   | 0.181***<br>(9.07)    |
| Industry FE  | YES                   | YES                   |
| Year FE      | YES                   | YES                   |
| Observations | 16,051                | 16,051                |
| R-squared    | 0.413                 | 0.412                 |
| r2_a         | 0.411                 | 0.410                 |
| F            | 239.56                | 238.32                |

The results in column (1) of the above table show that the modified  $R^2$  is 0.413 and the regression coefficient of Information Attribute earnings smoothing (Infor) is 0.225, which is significant at 1% level, indicating that Information Attribute earnings smoothing positively affects commercial credit financing. The results in column (2) show that the regression coefficient of opportunity attribute earnings smoothing (Oppor) is 0.027, and the regression coefficient is not significant, indicating that opportunity attribute earnings smoothing has nothing to do with commercial credit financing, and hypothesis H2 is established.

## 6.2. Moderating role of rule of law environment

Rule of law environment refers to the degree of perfection of laws and regulations, the strictness of law implementation and the popularity of legal services in a country or region. A good rule of law environment can provide clear legal rules and efficient judicial protection, reduce transaction costs and information asymmetry, thus promoting the healthy development of commercial activities. The rule of law environment is an important foundation for commercial credit financing, and a good rule of law environment can reduce transaction costs, enhance market trust, optimise financing conditions, and thus promote the development of commercial credit. A perfect rule of law system punishes breach of trust and provides a credit repair mechanism to help enterprises restore their financing ability. Pan Yue et al. (2022) use the evaluation index of smart court construction released by the Supreme People's Court to confirm that the construction of smart courts significantly improves the level of commercial credit financing for enterprises in the region[57].

Regions with a better rule of law environment usually have a more complete legal system and various regulatory agencies are relatively more developed, and these legal systems as well as regulatory agencies provide stronger legal protection for creditors. In case of default, creditors can recover debts through legal channels to protect their own rights and interests, and the default cost of enterprises increases. At the same time firms' disclosure requirements are usually more stringent, market participants have more trust in information, and earnings smoothing makes a smaller marginal contribution to facilitating commercial credit financing by improving the quality of financial information. Because of external regulation and legal protection, commercial credit providers can place more trust in the financial information provided by firms, thus reducing the need for additional credit enhancement measures. A good rule of law environment can itself provide a degree of credit assurance that reduces the positive impact of corporate earnings smoothing on commercial credit financing and the signalling effect of earnings smoothing.

On the contrary, in regions where the rule of law environment is not sound, information disclosure may be less transparent, various professional institutions related to corporate information analysis are less available and provide a limited level of professional analyses (Brown et al., 2013)[58], and market participants have less trust in corporate information. A study by Meini Han and Fusheng Wang (2016) found that there is an alternative relationship between the rule of law environment and financial information in influencing innovation performance[59]. In this case, earnings smoothing can be used as a financial signal to reduce information asymmetry and improve the credit rating of the enterprise, which produces alternative effects. At this time, earnings smoothing provides suppliers as well as customers with a larger increment of marginal information, and better quality of financial information has a higher impact on firms' external financing and promotes commercial credit financing to a greater extent. Thus, the positive impact of earnings smoothing on commercial credit financing is more pronounced in a poor rule of law environment.

The weaker positive impact of earnings smoothing on commercial credit financing in a better rule of law environment is mainly due to the improvement of information transparency, legal protection and the increase of default costs. These factors work together to reduce the ability of enterprises to obtain commercial credit financing by means of earnings smoothing in markets with a favourable rule of law environment. When the external legal environment is difficult to effectively protect the contract performance, enterprises face the risk of default rises. At this time, firms are more likely to

send more signals to stakeholders through earnings smoothing to reduce the possibility of contract breakdown. Accordingly this paper proposes the following hypothesis:

*Hypothesis H3: The better the rule of law environment, the weaker the positive impact of earnings smoothing on the level of corporate commercial credit financing.*

This paper adopts the index of "the development of market intermediary organisations and the legal institutional environment" in the "China's Provincial Marketisation Index Report 2018" compiled by Fan Gang et al. to measure the degree of perfection of the rule of law environment (IPD).

**Table 8.** The moderating role of the rule of law environment

|              | TC                    |
|--------------|-----------------------|
| ES           | 0.343***<br>(6.41)    |
| IPDXES       | -0.024***<br>(-5.25)  |
| IPD          | 0.001***<br>(2.83)    |
| Size         | -0.012***<br>(-14.46) |
| Lev          | 0.328***<br>(65.97)   |
| Roe          | 0.105***<br>(11.98)   |
| Growth       | 0.004*<br>(1.71)      |
| Loss         | -0.000<br>(-0.06)     |
| Dual         | -0.005***<br>(-2.67)  |
| Indep        | -0.038**<br>(-2.44)   |
| Board        | 0.003<br>(0.71)       |
| Big4         | -0.001<br>(-0.16)     |
| Cashflow     | 0.100***<br>(8.53)    |
| INST         | 0.048***<br>(11.80)   |
| Constant     | 0.193***<br>(9.47)    |
| Industry FE  | YES                   |
| Year FE      | YES                   |
| Observations | 16,051                |
| R-squared    | 0.415                 |
| r2_a         | 0.413                 |
| F            | 231.25                |

The results of the above table show that the modified  $R^2$  is 0.413, the regression coefficient of earnings smoothing is 0.343, and the coefficient of the cross-multiplier term IPDES is -0.024, which is significant at the 1% level, indicating that the rule of law environment plays a negative moderating role in the positive impact of earnings smoothing on commercial credit financing, and hypothesis H3 is established.

### 6.3. Moderating role of social trust

Social trust refers to the mutual trust relationship between individuals, organisations or groups based on common norms, systems or long-term interaction, which is an important informal system and social capital. It reflects the general confidence of social members in the predictability of others' behaviour and willingness to cooperate, and is a foundational element in maintaining social and economic relations. In commercial credit financing, social trust can be used as an informal system to replace the formal system, reduce information asymmetry and improve the credibility of enterprises, thus reducing financing costs and increasing the likelihood of enterprises obtaining commercial credit. The increase in the level of social trust will have an important impact on the enterprises' access to commercial credit financing, and suppliers are more inclined to choose those enterprises with a higher level of social trust to obtain more business opportunities (Li Shuangjian et al., 2020)[32].

In an environment with a low level of social trust, the lack of trust often leads to fragile supply chain relationships, increased transaction costs, and even triggers risks such as the interruption of cooperation. When the informal system is difficult to effectively protect the rights and interests of both partners, firms may prefer earnings smoothing to play its information transfer role to build and maintain relationships with suppliers and customers, because suppliers and customers may be sceptical about the financial status and future cash flows of the firm, and firms need to enhance the confidence of external partners and further gain business credit through smoothed surpluses. Earnings smoothing actually acts as an alternative trust mechanism in low-trust environments, where firms communicate their commitment credibility by proactively demonstrating stable financial performance, and this signalling can partially compensate for the trust gap brought about by trust deficit. In environments with low levels of social trust, business relationships rely more on long-term interactions than on one-off transactions. Earnings smoothing reduces short-term fluctuations in earnings, making suppliers more willing to enter into long-term relationships with firms rather than frequently adjusting their credit policies. This long-term orientated financial strategy helps to reduce transactional friction and improve supply chain stability.

In an environment with a high level of social trust, where relationships between firms and between firms and their suppliers and customers may be more based on mutual trust, the reputation and historical performance of firms may be sufficient to support their financing activities, and firms may not need to increase the attractiveness of their financing through the strategy of earnings smoothing, which reduces the signaling role that earnings smoothing can play. In addition, excessive earnings smoothing may be interpreted by the market as dishonest corporate management, especially in regions with high levels of social trust, and such behaviour may damage the long-term credibility of the firm. In a market environment with a high level of social trust, suppliers are less sensitive to corporate surplus adjustments because the market as a whole has a lower risk of default, and suppliers are willing to extend commercial credit even if there is some volatility in corporate earnings. In contrast, in a low-trust environment, suppliers are highly sensitive to financial information and earnings smoothing plays a more prominent role.

In a high-trust environment, a firm's reputation and transparency are themselves important factors in obtaining financing, and the need for earnings smoothing is relatively reduced. In this case, firms may rely more on their true financial position and market reputation to attract commercial credit financing rather than obtaining commercial credit financing through surplus management techniques. Accordingly this paper proposes the following hypothesis:

*Hypothesis H4: The better the social trust, the weaker the positive effect of earnings smoothing on the level of business credit financing.*

Referring to the study of Gu Leilei and Wang Hongyu (2020), this paper adopts the regional social trust data obtained from the questionnaire survey of 31 provinces, autonomous regions and municipalities directly under the central government through the China Entrepreneurship Survey System (CESS) by Zhang Weiying and Ke Rongzhu to measure social trust[60].

**Table 9.** Moderating role of social trust

|              | TC                    |
|--------------|-----------------------|
| ES           | 0.189***<br>(2.94)    |
| TRUSTXES     | -0.031*<br>(-1.79)    |
| TRUST        | 0.002*<br>(1.76)      |
| Size         | -0.013***<br>(-14.64) |
| Lev          | 0.330***<br>(65.97)   |
| Roe          | 0.108***<br>(12.29)   |
| Growth       | 0.004<br>(1.63)       |
| Loss         | -0.000<br>(-0.11)     |
| Dual         | -0.005**<br>(-2.39)   |
| Indep        | -0.041***<br>(-2.62)  |
| Board        | 0.003<br>(0.67)       |
| Big4         | 0.000<br>(0.01)       |
| Cashflow     | 0.100***<br>(8.50)    |
| INST         | 0.046***<br>(11.49)   |
| Constant     | 0.193***<br>(9.45)    |
| Industry FE  | YES                   |
| Year FE      | YES                   |
| Observations | 16,051                |
| R-squared    | 0.413                 |
| r2_a         | 0.411                 |
| F            | 229.7                 |

The results of the above table show that the modified  $R^2$  is 0.413, the regression coefficient of earnings smoothing is 0.189, and the coefficient of the cross-multiplier term TRUSTES is -0.031, which is significant at the level of 10%, which indicates that social trust plays a negative moderating role in the positive impact of earnings smoothing on commercial credit financing, and hypothesis H4 is valid.

## 7. Research Conclusion and Implications

Through empirical research, this paper finds that earnings smoothing, as a long-term financial strategy, can significantly enhance the level of business credit financing, and its mechanism is to reduce surplus volatility, alleviate information asymmetry, and convey the signal of business stability to suppliers. Further analyses show that earnings smoothing with information attributes has a

significant positive effect on commercial credit financing, while earnings smoothing with opportunity attributes has no significant effect. In addition, the rule of law environment and the level of social trust have a negative moderating effect on the relationship, i.e., the facilitating effect of earnings smoothing is more pronounced in regions with poorer rule of law environment or lower level of social trust. Based on the findings, this paper suggests that corporate management should reasonably use earnings smoothing strategies and focus on financial disclosure of information attributes. Policymakers need to improve the rule of law environment and promote social trust building to optimise the business credit financing environment. Suppliers and financial institutions should pay attention to the quality of corporate surplus information and strengthen the innovation of supply chain finance. This study not only enriches the theoretical results in related fields, but also provides important references for enterprise practice and policy making, which helps to promote the healthy development of supply chain finance.

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