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The impact of accounting conservatism on the credit availability of agricultural companies: evidence from China

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Abstract

Based on the sample of 11666 company-year observations from A-share companies in the stock markets of Shanghai and Shenzhen during the period of 2007 to 2014 in China, the paper examines the impact of accounting conservatism on the credit availability of agricultural companies. According to the empirical results, we find accounting conservatism improves the credit availability of companies significantly, and the industry heterogeneity between agricultural companies and non-agricultural ones enhances the positive impact of accounting conservatism on the credit availability of companies. Therefore, the positive impact of accounting conservatism on the credit availability of agricultural companies is stronger than the impact of accounting conservatism on the credit availability of non-agricultural ones. The empirical results are robust when we eliminate the outliers of dependent variable or control the heteroscedasticity of regression.

Keywords: Accounting conservatism. Credit availability. Agricultural companies.

1. Introduction

Agricultural companies face serious credit constraints in formal financial markets in China. Failing to get enough credit funds from formal financial institutions is one of the important factors of affecting the scale expansion and industry leading role of Chinese agricultural companies for a long time. From the perspective of financial reports' information

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quality, we research the impact of accounting conservatism on the credit availability of agricultural companies.

Former studies analyze the main factors which affect the companies' credit availability from different angles. Stiglitz and Weiss (1981) point out that the information asymmetry between debtors and creditors leads to adverse selection and moral hazard; therefore, formal financial institutions take credit rationing policy towards debtors. Financing constraints caused by imperfect capital markets are common problems in developing countries (Freedman, Click, 2006). Market concentration of financial institutions affects companies' credit availability (Petersen, Rajan, 1994; Chong, Lu, and Ongena, 2013). The banks withdrawing its branches from rural China have significant negative impact on the credit availability of agricultural companies (Han, Hare, 2013).

Introducing accounting conservatism into debt contracts deepens the studies of the influence factors of companies' credit availability. Accounting conservatism is an important index used to reflect the earnings quality of companies' financial reports, and generally refers to the asymmetric timeliness of earnings reflecting "bad news" more quickly than "good news" (Basu, 1997). If companies delay the confirmation of gains or speed up the confirmation of losses, accounting conservatism will increase. On the contrary, if companies speed up the confirmation of gains or delay the confirmation of losses, accounting conservatism will decrease. Because the demand of debt contracts is one of the important reasons that lead to accounting conservatism (Watts, Zimmerman,1986; Watts, 2003a, 2003b; Qiang, 2007; Li, 2013; Tan, 2013), many scholars believe that accounting conservatism has an important impact on the debt contracts (Ball, Shivakumar, 2005; Ball, Robin and Sadka, 2008).

Nevertheless, although some former studies have focused on the impact of companies' accounting conservatism on debt contracts, these studies all neglect the industry heterogeneity between agricultural companies and non-agricultural ones, and neglect the difference between the impact of accounting conservatism on the credit availability of agricultural companies and the impact of accounting conservatism on the credit availability of non-agricultural ones.

Therefore, we research the impact of accounting conservatism on the credit availability of agricultural companies based on the sample of 11666 company-year observations from A-share companies in the stock markets of Shanghai and Shenzhen during the period of 2007 to 2014 in China. We put forward and confirm two hypotheses. Firstly, accounting conservatism improves the credit availability of companies. Secondly, industry characteristics enhance the

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positive impact of accounting conservatism on the credit availability of agricultural companies. This indicates that the positive impact of accounting conservatism on the credit availability of agricultural companies is stronger than the impact of accounting conservatism on the credit availability of non-agricultural ones.

Our contributions to the literatures can be concluded as follows. Firstly, the study shows the impact of accounting conservatism on the credit availability of companies in Chinese situation. Secondly, the study reveals accounting conservatism plays a unique active role in improving the credit availability of Chinese agricultural companies. The study is beneficial for agricultural companies to raise debt financing ability through reasonable accounting policy choice.

The rest of the paper is organized as follows: Section 2 reviews the related literatures and develops two hypotheses, Section 3 constructs the empirical model, Section 4 describes the data, Section 5 reports the empirical results of model estimation, and Section 6 concludes our research results and reveals the policy implications.

2. Literature Review and Hypotheses Development
2.1 Incomplete contracts and credible commitment

The existence of transaction costs makes it impossible for contracting parties to stipulate all the rights and responsibilities for every possible contingency in advance, which will result in that various contracts are all incomplete in reality (Williamson, 1985; Grossman, Hart, 1986; Hart, Moore, 1988, 1990). Incompleteness of contracts leads to that specific investment of contracting parties can't be written in contracts; in the process of renegotiation that both sides of the transaction are locked, the party who has accomplished specific investment will face the risk of being held up by the other party, In other words, part of the marginal revenue of investor's investment will be shared by the other party; In anticipation of the externality and hold-up behavior, investors will reduce investment in advance, which is against the fulfillment of contracts (Klein, Crawford, and Alchian, 1978). Therefore, forming credible commitment through proper mechanism is helpful for the fulfillment of contracts.

The contracting parties of debt contracts are companies (borrowers) and financial institutions (lenders). When companies and financial institutions conclude debt contracts, they can't agree on every possible contingency in the contracts, thus, the debt contracts between companies and financial institutions have the characteristics of incomplete contracts. After the

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formation of debt contracts, financial institutions have no chance to share the extra revenue from companies' business success, but have the possibility to bear the loss from companies' business failure. What is more, because of the existence of information asymmetry, financial institutions, as the external stakeholders of the companies, have difficulty in monitoring companies' business activities directly and effectively. Therefore, financial institutions may require companies to prevent its downside risk through credible commitment in the debt contracts.

In the mechanisms used by financial institutions to prevent the downside risk, mortgage terms attract wide attentions from the academic field and practice field because of its importance. Williamson (1983) point out that creating and setting up collateral is helpful to form the credible commitment, increase the cost of opportunism and promote the implementation of debt contracts. Collateral prompts companies to operate in accordance with the requirements of the debt contracts. Thus, setting up mortgage terms become the business practices when financial institutions issue commercial loans. However, not all companies can fully meet the requirements of the financial institutions about collateral. In case of lack of collateral, companies can effectively restrain the downside risk of financial institutions through providing the financial reporting information with downside earnings and reminding default risk as soon as possible (Zhang, 2008).

2.2. The impact of accounting conservatism on the credit availability

Watts and Zimmerman (1986) firstly notice that accounting conservatism is a kind of mechanism used to alleviate the lenders' downside risk. Watts (2003) detailedly interprets the impact mechanism of accounting conservatism: on the one hand, accounting conservatism can limit the managers' opportunism behaviors in financial reporting, and offset the possible upward management deviation through the downward conservative deviation when mangers report the helpful accounting information for implementation of contracts; on the other hand, accounting conservatism can reduce the possibility that companies pay liquidating dividends to shareholders and refuse the investment projects with positive net present value, can also raise the possibility of technical default of debt contracts. Therefore, accounting conservatism can limit the incentive and ability of manager exaggerating the data in financial reports, reduce the agency cost which derives from information asymmetry between debtors and creditors, and improve the efficiency of debt contracts (LaFond, Roychowdhury, 2008; LaFond, Watts, 2008).

A former study finds accounting conservatism improves the borrower's debt rating (Ahmed, *et al*. 2002), and a later study find accounting conservatism reduce the information

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asymmetry in the cost of debt (Wittenberg-Moerman, 2008). Therefore, as different kinds of mechanisms to alleviate the lenders' downside risk, accounting conservatism and mortgage mechanism can replace each other (Chen, *et al*. 2013). Some studies about Chinese listed companies indicate that improving accounting conservatism is beneficial to alleviating companies' credit constraints (Zhang, Wang, 2013). The stronger the accounting conservatism is, the bigger the companies' single loan amount is (Zhao, Liang, and Wang, 2014). Accordingly, our first hypothesis is described as follows:

H$_1$: Accounting conservatism improves the credit availability of companies.

2.3 The adjusting impact of agricultural industry characteristics on the relation between accounting conservatism and the credit availability of companies

Agriculture is a special industry that takes biological assets as the object of labor (Qi, Zhang, 2006). Agricultural producing activities not only have significant biological characteristics (unearned increment, diversity, periodicity, locality, etc), but also have the limitations of natural conditions (climate, water, soil, natural disasters, etc). As the market participants that take the biological assets as the main production material, agricultural companies are deeply affected by agricultural industry characteristics, and show obvious industry heterogeneity which is different from non-agricultural companies.

Firstly, the characteristics of biological assets make agricultural companies to suffer the dual effects of natural risk and market risk, and lead to the low level and volatility of earnings (Cheng, 2011). This increases the risk of uncollectible loans of financial institutions, consequently increases the difficulty of agricultural companies obtaining loans.

Secondly, the characteristics of biological assets lead to the particularity of agricultural companies' accounting recognition, measurement and disclosure (Qi, Zhang, 2006). As a consequence, agricultural companies face more serious credit rationing than non-agricultural ones.

Agricultural companies need to take effective measures to reduce the downside risk of financial institutions. Accounting conservatism and mortgage mechanism, as the different mechanisms to alleviate the lenders' downside risk, can replace each other (Chen, *et al*. 2013), Agricultural companies can form credible commitment through providing required collateral or showing good accounting conservatism to financial institutions, and reduce the information asymmetry between companies and financial institutions, consequently enhance companies' ability of obtaining loans from financial institutions.

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However, because agricultural companies have high percentage of biological assets and low asset tangibility, and its assets condition of available for collateral is relatively poor than non-agricultural ones, it is difficult for agricultural companies to meet the requirements of financial institutions about collateral (Ayyagari, Demirg-Kunt, and Maksimovic, 2010; Cheng, Degryse, 2010). The lack of collateral leads to the results that the function of accounting conservatism restraining the downward risk of financial institutions becomes more important in the debt contracts between agricultural companies and financial institutions. Therefore, the positive impact of accounting conservatism on the credit availability of agricultural companies is more obvious than the impact of accounting conservatism on the credit availability of non-agricultural ones. Accordingly, our second hypothesis is described as follows:

H$_2$: Industry characteristics enhance the positive impact of accounting conservatism on the credit availability of agricultural companies.

3. Model
3.1 Measure accounting conservatism at company-year level

Accurate measurement of accounting conservatism at company-year level is the necessary conditions for accomplishing empirical test using Chinese annual data. Based on the market value of companies, Basu (1997) constructs asymmetric timeliness model to indicate the accounting conservatism through examining the asymmetric timeliness of earnings reflecting "good news" and "bad news", which is widely used in many following studies (LaFond, Watts, 2008; García Lara, García Osma, and Penalva, 2009; Chen, *et al*. 2010; Aier, Chen, and Pevzner, 2014). Based on the study of Basu (1997), Khan and Watts (2009), considering the SIZE, LEVERAGE and MTB (the ratio of market value to book value), construct a company-year index of accounting conservatism ($C\_Score_{i,t}$), which is one of the most popular measurement methods of accounting conservatism at company-year level (Ball, Kothari, and Nikolaev, 2013; Kim, *et al*. 2013). The bigger $C\_Score_{i,t}$ is, the higher accounting conservatism is.

The basic form of asymmetric timeliness model is showed as follows:

$$EPS_{i,t} / P_{i,t-1} = a_0 + a_1 DR_{i,t} + a_2 R_{i,t} + a_3 R_{i,t} \acute{} \ DR_{i,t} + e_{i,t} \qquad (1\text{-A})$$

Where: $EPS_{i,t}$ is the earnings per share of company i in the fiscal year t; $P_{i,t-1}$ is the price per share of company i in the fiscal year t; $R_{i,t}$ is the stock return of company i from May of year t to April of year $t+1$; $DR_{i,t}$ is a dummy variable, $DR_{i,t} = 1$ when $R_{i,t} < 0$, and

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$DR_{i,t} = 0$ otherwise; $e_{i,t}$ is residual error.

Let:

$$G\_Score_{i,t} = a_2 = m_1 + m_2 SIZE_{i,t} + m_3 MTB_{i,t} + m_4 LEV_{i,t} \qquad (1\text{-}B)$$

$$C\_Score_{i,t} = a_3 = l_1 + l_2 SIZE_{i,t} + l_3 MTB_{i,t} + l_4 LEV_{i,t} \qquad (1\text{-}C)$$

Where: $SIZE_{i,t}$ is company size, which equals the natural logarithm of total assets; $MTB_{i,t}$ is the ratio of market value to book value; $LEV_{i,t}$ is the leverage of company.

We substitute formula 1-B and 1-C into formula 1-A, and get the following

$$
\begin{aligned}
EPS_{i,t}/P_{i,t\text{-}1} = {} & a_0 + a_1 DR_{i,t} \\
& + R_{i,t}(m_1 + m_2 SIZE_{i,t} + m_3 MTB_{i,t} + m_4 LEV_{i,t}) \\
& + R_{i,t}{'}\, DR_{i,t}(l_1 + l_2 SIZE_{i,t} + l_3 MTB_{i,t} + l_4 LEV_{i,t}) + \\
& + d_1 SIZE_{i,t} + d_2 MTB_{i,t} + d_3 LEV_{i,t} + d_4 DR_{i,t}{'}\, SIZE_{i,t} \\
& + d_5 DR_{i,t}{'}\, MTB_{i,t} + d_6 DR_{i,t}{'}\, LEV_{i,t} + e_{i,t}
\end{aligned}
$$

model: (1-D)

Firstly, we estimate model 1-D separately using different industry data in different years, and get the different industry values of l_1, l_2, l_3, l_4 in different years. Then, we substitute companies' $SIZE_{i,t}$, $MTB_{i,t}$ and $LEV_{i,t}$ in different years into model 1-C, and get different values of $C\_Score_{i,t}$ in different years.

3.2 Measure the impact of accounting conservatism on the credit availability of agricultural companies

To test the impact of accounting conservatism on the credit availability of agricultural companies, we construct an empirical model as follows.

$$
\begin{aligned}
LOAN_{i,t} = {} & b_0 + b_1 C\_Score_{i,t} + b_2 AGRP_{i,t} + b_3 AGRP_{i,t}*C\_Score_{i,t} + b_4 REV_{i,t} \\
& + b_5 GROW_{i,t} + b_6 ROS_{i,t} + b_7 OR_{i,t} + b_8 SIZE_{i,t} + b_9 TPPE_{i,t} + b_{10} MTB_{i,t} \\
& + b_{11} TTB_{i,t} + b_{12} OWEN_{i,t} + b_{13} OSPR_{i,t} + b_{14} PPCQ_{i,t} \qquad (2\text{-}A) \\
& + b_{15} CEOC_{i,t} + b_{16} OPIN_{i,t} + b_{17} BIG\_4_{i,t} \\
& + YEAR_{i,t} + INDUSTRY_{i,t} + AREA_{i,t} + e_{i,t}
\end{aligned}
$$

Where, dependent variable is asset-liability ratio ($LOAN_{i,t}$), which represents companies' credit availability. Since some former literature usually applies leverage (asset-liability ratio) to measure companies' credit availability. However, because liabilities include accounts payable, leverage exaggerates companies' credit ability to some degree. Therefore, we believe that asset-loan ratio is more proper to measure companies' credit availability than leverage. The bigger $LOAN_{i,t}$ is, the higher credit availability is.

$AGRP_{i,t}$ is a dummy variable, which equals 1 if the company is an agricultural

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company and 0 otherwise. According to Chinese Industry Classification Guidance of Listed Companies (revised in 2012) issued by China Securities Regulatory Commission (CSRC), we take six kinds of companies as agricultural companies, which include "A01 Farming", "A02 Forestry", "A03 Animal Husbandry", "A04 Fishery", "A05 Services of Farming, Forestry, Animal Husbandry and Fishery" and "C13 Farm and Sideline Food Processing Industry".

Independent variable is accounting conservatism ($C\_Score_{i,t}$) and its interaction variable ($AGRP_{i,t}*C\_Score_{i,t}$). The other variables are control variables. $e_{i,t}$ is residual error. All the variables are defined in table 1.

Table 1: Variable definition

Variable	Description
$LOAN_{i,t}$	Asset-loan ratio, which equals the quotient of dividing final total loans (including final short-term loans and final long-term loans) by final total assets.
$C\_Score_{i,t}$	Accounting conservatism, which is calculated by means of C_score method constructed by Khan and Watts (2009).
$AGRP_{i,t}$	A dummy variable, which equals 1 if the company is an agricultural company and 0 otherwise.
$REV_{i,t}$	Revenue, which equals the natural logarithm of total revenue.
$GROW_{i,t}$	The growth rate of revenue, which equals the quotient of dividing total amount of increased revenue in current year by the total amount of revenue in last year.
$ROS_{i,t}$	Return on sales, which equals the quotient of dividing total profit by total revenue.
$QR_{i,t}$	Quick ratio, which equals the quotient of the dividing the difference between current assets and inventory by current liabilities.
$SIZE_{i,t}$	Size, which equals the natural logarithm of the final total assets.
$TPPE_{i,t}$	Asset tangibility, which equals the quotient of dividing the total amount of tangible assets (including fixed assets and inventory) by total assets.
$MTB_{i,t}$	The ratio of market value to book value.
$TTB_{i,t}$	Total tax burden, which equals the quotient of dividing total tax (including business tax and surcharges and income tax expense) by total revenue.
$OWEN_{i,t}$	Ownerships, which equals 1 if the company is a SOE and 0 otherwise.
$OSPR_{i,t}$	The shareholding ratio of first major shareholder.
$PPCQ_{i,t}$	The ratio of independent directors in the board.
$CEOC_{i,t}$	CEO duality, which equals 1 if the chairman of board is also CEO and 0 otherwise.
$OPIN_{i,t}$	Audit opinion, which equals 1 if the company receives a qualified audit opinion and 0 otherwise.
$BIG\_4_{i,t}$	Big four, which equals 1 if the company financial reports are audited by one of the biggest four audit firms in the world and 0 otherwise.
$YEAR_{i,t}$	The year effect
$INDUSTRY_{i,t}$	The industry effect.
$AREA_{i,t}$	The area effect.

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4. Data
4.1 Sample selection

This study apply sample from A-share companies in the stock markets of Shanghai and Shenzhen during the period of 2007 to 2014 in China. China has gone through twice great accounting system reforms separately in 2006 and 2014. Chinese companies' financial reporting data from 2007 to 2014 don't involve important change about accounting system. Therefore, we select the data from 2007 to 2014 to research companies' credit availability to rule out the effect of unexpected accounting system change and ensure data comparability.

The data of ownership is derived from China Center for Economic Research Database (CCER), and the other data is derived from China Stock Markets and Accounting Research Database (CSMAR). CCER and CSMAR databases are widely used in Chinese accounting research, like COMPUSTAT/CRSP in US (Lennox, Wu, and Zhang, 2016). We process the data through the software of SPSS20 and Stata12.0.

According to the need of this study, we eliminate 859 observations of B shares, 333 observations in financial industry, 1010 observations in ST (Special Treatment) companies, and 3960 observations with missing data to calculate the variables. The final sample consists of 11666 observations. The sampling procedure is described in table 2.

Table 2: Sampling procedure

Sampling Procedure	Observations
All observations from 2007 to 2014	17828
Less observations of B share companies	(859)
Less observations in financial industries	(333)
Less observations of ST companies*	(1010)
Less observations with missing data to calculate variables	(3960)
Observations in the final sample	11666

* ST is the abbreviation of Special Treatment, which means a listed company has abnormal financial position or other abnormalities.

4.2 Descriptive statistics

In the sample, the number of observations of agricultural companies is 381, and accounts for 3.27% of the total observations. The final total loans of agricultural companies are ￥883 million and asset-liability ratio is 44.46%. however, the final total loans of non-agricultural companies are ￥2,760 million and asset-liability ratio is 48.86%. Therefore, the total loans and leverage of agricultural companies are all lower than non-agricultural companies. The descriptive statistics of variables are reported in table 3

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Table 3: Descriptive statistics

Variable	N	Mean	Std. Dev.	Min	Max
$LOAN_{i,t}$	11666	0.1929	0.1458	0.0000	1.4970
$C\_Score_{i,t}$	11666	0.0607	0.1346	-6.5740	8.4032
$AGRP_{i,t}$	11666	0.0327	0.1778	0.0000	1.0000
$REV_{i,t}$	11666	21.4093	1.4766	12.8008	28.6889
$GROW_{i,t}$	11666	13.0751	1253.8360	-0.9861	134607.1000
$ROS_{i,t}$	11666	0.0621	0.4333	-26.2470	8.8928
$QR_{i,t}$	11666	1.3974	2.1568	0.0272	90.5148
$SIZE_{i,t}$	11666	22.0175	1.2831	17.8787	28.5087
$TPPE_{i,t}$	11666	0.4299	0.1807	0.0000	0.9746
$MTB_{i,t}$	11666	3.6428	11.7904	-273.1739	781.5579
$TTB_{i,t}$	11666	0.0386	0.1098	-0.4248	7.6053
$OWEN_{i,t}$	11666	0.5172	0.4997	0.0000	1.0000
$OSPR_{i,t}$	11666	0.3633	0.1559	0.0135	0.8941
$PPCQ_{i,t}$	11666	0.3689	0.0546	0.0909	0.8000
$CEOC_{i,t}$	11666	0.2063	0.4047	0.0000	1.0000
$OPIN_{i,t}$	11666	0.0256	0.1580	0.0000	1.0000
$BIG\_4_{i,t}$	11666	0.0678	0.2514	0.0000	1.0000

5. Empirical Results
5.1 The impact of accounting conservatism on the credit availability

We use the whole sample to estimate model 2-A. To get a general conclusion about the relation between accounting conservatism and the credit availability of companies, we regress the model 2-A firstly without the variables of the industry characteristic of agricultural companies ($AGRP_{i,t}$) and its interaction variable with accounting conservatism ($AGRP_{i,t}*C\_Score_{i,t}$). We control the effects of year ($YEAR_{i,t}$), industry ($INDUSTRY_{i,t}$) and area ($AREA_{i,t}$). The estimated results are listed in the left columns of table 4.

Accounting conservatism ($C\_Score_{i,t}$) has significant positive impact on the credit availability of companies ($LOAN_{i,t}$), which indicates that accounting conservatism improves the credit availability of companies. The hypothesis H_1 is supported by the sample data.

Furthermore, some control variables, such as $REV_{i,t}$, $QR_{i,t}$, $SIZE_{i,t}$, $TPPE_{i,t}$, $MTB_{i,t}$, $TTB_{i,t}$, $OWEN_{i,t}$, $OSPR_{i,t}$, $CEOC_{i,t}$, $OPIN_{i,t}$ and $BIG\_4_{i,t}$, have significant impact on $LOAN_{i,t}$. The other control variables, such as $GROW_{i,t}$, $ROS_{i,t}$ and $PPCQ_{i,t}$, have no significant impact on $LOAN_{i,t}$.

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Table 4: The estimated results of the whole sample

Variable	Pred.	$LOAN_{i,t}$			$LOAN_{i,t}$		
		Coef.	t	P>|t|	Coef.	t	P>|t|
$C\_Score_{i,t}$	+	**0.0879**	**8.24**	**0.000**	**0.0843**	**7.88**	**0.000**
$AGRP_{i,t}*C\_Score_{i,t}$	+				**0.4037**	**3.98**	**0.000**
$AGRP_{i,t}$	-				-0.0050	-0.37	0.715
$REV_{i,t}$	?	-0.0046	-2.93	0.003	-0.0047	-3.02	0.002
$GROW_{i,t}$	?	0.0000	-0.03	0.974	0.0000	-0.03	0.976
$ROS_{i,t}$	?	-0.0050	-1.69	0.090	-0.0050	-1.70	0.090
$QR_{i,t}$	?	-0.0093	-15.01	0.000	-0.0093	-14.94	0.000
$SIZE_{i,t}$	+	0.0269	14.84	0.000	0.0270	14.93	0.000
$TPPE_{i,t}$	+	0.1578	20.51	0.000	0.1576	20.49	0.000
$MTB_{i,t}$	-	-0.0004	-3.52	0.000	-0.0004	-3.38	0.001
$TTB_{i,t}$	-	-0.0638	-5.27	0.000	-0.0642	-5.31	0.000
$OWEN_{i,t}$	+	0.0063	2.29	0.022	0.0063	2.29	0.022
$OSPR_{i,t}$	-	-0.0597	-7.22	0.000	-0.0600	-7.26	0.000
$PPCQ_{i,t}$	?	0.0155	0.69	0.487	0.0160	0.72	0.473
$CEOC_{i,t}$	-	-0.0069	-2.23	0.026	-0.0070	-2.24	0.025
$OPIN_{i,t}$	?	0.0444	5.63	0.000	0.0433	5.48	0.000
$BIG\_4_{i,t}$	?	-0.0558	-10.50	0.000	-0.0557	-10.50	0.000
Observations			11666			11666	
F			97.40			95.05	
Adjusted R^2			0.2091			0.2101	

5.2 The adjusting impact of agricultural industry characteristics on the relation between accounting conservatism and the credit availability of companies

To test the adjusting impact of agricultural industry characteristics on the relation between accounting conservatism and the credit availability of companies, based on the first estimation, we introduce the industry characteristic of agricultural companies ($AGRP_{i,t}$) and its interaction variable with accounting conservatism ($AGRP_{i,t}*C\_Score_{i,t}$) into model, and use the whole sample to estimate model 2-A again. The estimated results are listed in the right columns of table 4.

Accounting conservatism ($C\_Score_{i,t}$) still has significant positive impact on the credit availability of companies ($LOAN_{i,t}$). What is more, the interaction variable of the industry characteristic of agricultural companies and accounting conservatism ($AGRP_{i,t}*C\_Score_{i,t}$) also has significant positive impact on the credit availability of companies ($LOAN_{i,t}$). This indicates that accounting conservatism and the industry characteristics of agricultural companies have positive interaction impact on the credit availability of company, which is consistent with the expectation of hypothesis H₂.

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In order to further test if the interaction impact of accounting conservatism and the industry characteristics of agricultural companies is the result of industry characteristics ($AGRP_{i,t}$) adjusting the impact of accounting conservatism ($C\_Score_{i,t}$) on the credit availability of companies ($LOAN_{i,t}$), we divide the whole sample into two subsamples with different industries. One sample includes agricultural companies ($AGRP_{i,t}=1$), another one includes non-agricultural companies ($AGRP_{i,t}=0$). Adopting the two subsamples, we rerun the empirical model 2-A without the variables of $AGRP_{i,t}$ and $AGRP_{i,t}*C\_Score_{i,t}$. We show the estimated results in table 5.

Table 5: The estimated results of subsamples with different industries

Variable	Pred.	Agricultural Companies ($AGRP_{i,t}=1$)			Non-agricultural Companies ($AGRP_{i,t}=0$)		
		Coef.	t	P>|t|	Coef.	t	P>|t|
$C\_Score_{i,t}$	+	**0.5067**	**4.39**	**0.000**	**0.0837**	**7.83**	**0.000**
$REV_{i,t}$	?	-0.0017	-0.22	0.822	-0.0045	-2.83	0.005
$GROW_{i,t}$	?	-0.0060	-0.89	0.374	0.0000	-0.02	0.981
$ROS_{i,t}$	?	0.0110	0.48	0.634	-0.0053	-1.75	0.080
$QR_{i,t}$	?	-0.0056	-1.60	0.111	-0.0093	-14.82	0.000
$SIZE_{i,t}$	+	0.0399	3.59	0.000	0.0268	14.58	0.000
$TPPE_{i,t}$	+	0.2185	4.63	0.000	0.1560	20.00	0.000
$MTB_{i,t}$	-	0.0012	0.47	0.641	-0.0004	-3.41	0.001
$TTB_{i,t}$	-	0.0806	0.25	0.802	-0.0641	-5.30	0.000
$OWEN_{i,t}$	+	0.0477	3.22	0.001	0.0047	1.67	0.095
$OSPR_{i,t}$	-	-0.0819	-1.67	0.096	-0.0598	-7.14	0.000
$PPCQ_{i,t}$	?	-0.1817	-1.60	0.111	0.0254	1.11	0.266
$CEOC_{i,t}$	-	0.0170	1.02	0.307	-0.0077	-2.42	0.016
$OPIN_{i,t}$	?	0.0003	0.01	0.993	0.0454	5.59	0.000
$BIG\_4_{i,t}$	?	-0.2031	-1.51	0.133	-0.0553	-10.42	0.000
Observations		381			11285		
F		8.29			96.84		
Adjusted R^2		0.2458			0.2084		

In the two subsamples of agricultural companies ($AGRP_{i,t}=1$) and non-agricultural companies ($AGRP_{i,t}=0$), the coefficients of $C\_Score_{i,t}$ change from 0.5067(P=0.000) to 0.0837(P=0.000). Thus it can be seen, compared with non-agricultural companies, accounting conservatism of agricultural companies has a bigger impact on the credit availability. Therefore, the industry characteristics enhance the positive impact of accounting conservatism on the credit availability of agricultural companies. The hypothesis H$_2$ is supported by the sample data too.

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6. Robustness Tests
6.1 Eliminate the outliers of dependent variable

From table 3, we can see that some companies have abnormally high (low) asset-loan ratio. Therefore, we winsorize asset-loan ratio at 2.5% and 97.5% levels to eliminate the effect of outliers, and rerun the regression. The estimated results are listed in table 6. The impact of accounting conservatism ($C\_Score_{i,t}$) and its interaction variable ($AGRP_{i,t}*C\_Score_{i,t}$) on the credit availability of companies ($LOAN_{i,t}$) is consistent with the estimated result above.

Table 6: The estimated results of eliminating the outliers of dependent variable

Variable	Pred.	$LOAN_{i,t}$				$LOAN_{i,t}$		
		Coef.	t	P>| t |		Coef.	t	P>| t |
$C\_Score_{i,t}$	+	0.0844	8.22	0.000		0.0817	7.93	0.000
$AGRP_{i,t}*C\_Score_{i,t}$	+					0.3096	3.16	0.002
……								
Observations		11666				11666		
F		96.10				93.56		
Adjusted R^2		0.2069				0.2075		

6.2 Control the heteroscedasticity of regression

Due to the unbalanced data and explanatory variable missing, there may be heteroscedasticity in the regression, which reduces the effectiveness of the regression. We control the heteroscedasticity and rerun the regression again. The estimated results are listed in table 7. The impact of accounting conservatism ($C\_Score_{i,t}$) and its interaction variable ($AGRP_{i,t}*C\_Score_{i,t}$) on the credit availability of companies ($LOAN_{i,t}$) is consistent with the estimated result above too.

Table 7: The estimated results of controlling the heteroscedasticity of regression

Variable	Pred.	$LOAN_{i,t}$				$LOAN_{i,t}$		
		Coef.	t	P>| t |		Coef.	t	P>| t |
$C\_Score_{i,t}$	+	0.0879	2.20	0.028		0.0843	2.16	0.030
$AGRP_{i,t}*C\_Score_{i,t}$	+					0.4037	3.10	0.002
……								
Observations		11666				11666		
F		82.72				81.16		
Adjusted R^2		0.2113				0.2124		

7. Conclusion

Adopting the sample of 11666 company-year observations from A-share companies in

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the stock markets of Shanghai and Shenzhen during the period of 2007 to 2014 in China, we examine the impact of accounting conservatism on the credit availability of agricultural companies.

According to the empirical results, we find accounting conservatism improves the credit availability of companies significantly, and the industry heterogeneity between agricultural companies and non-agricultural ones enhances the positive impact of accounting conservatism on the credit availability of companies. Therefore, the positive impact of accounting conservatism on the credit availability of agricultural companies is stronger than the impact of accounting conservatism on the credit availability of non-agricultural ones.

The empirical results are robust when we eliminate the outliers of dependent variable or control the heteroscedasticity of regression.

The study shows the impact of accounting conservatism on the credit availability of companies in Chinese situation, and reveals accounting conservatism plays a unique active role in improving the credit availability of Chinese agricultural companies, which is beneficial for agricultural companies to raise debt financing ability through reasonable accounting policy choice.

The policy implications of this study are as follows. Firstly, financial institutions should give full attention to agricultural companies' accounting conservatism, and take it as the alternative mechanisms of collateral to control its own downside risks in the credit contract. Secondly, agricultural companies should take cautious attitude to its accounting conservatism and improve its financing ability through the reasonable choice of accounting policies.

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