

Supplier Concentration Information Content for Future Earnings -- Empirical Evidence from Chinese Listed Companies

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Abstract

The impact of the supply chain relationship on operation efficiency, as well as some incremental info regarding how profitable it will be. Using sample data from 2015-2024 for a-share manufacturing companies in China and looking at whether or not supplier concentration predicts their earnings in the future. Findings: Supplier concentration has a positive and significant relationship with future earnings which does not change much after doing many checks for robustness. And we do heterogeneity analysis that shows the predictive power is concentrated within non-state-owned firms, those industries where competition is fierce and firm's agency costs are less. These findings provide new empirical evidence concerning financial information content contained by supply chain structures, carrying important implications for investor decisions making process, supply chains' management and policies.

Keywords

Supplier Concentration; Future Earnings Prediction; Information Content; Ownership Nature; Agency Conflict.

1. Introduction

Global supply chains were more volatile in recent times than ever before. Just looking at the first half of 2023, there was over 8k recorded worldwide events of disrupted supply chain activities, this is up by about 3% compared to last year. Trade friction, geopolitics – managing your supply relationships has turned into something really important for companies now. The report from the twentieth national congress of the communists party of china said that it wanted its “industrial and supply chain resilience and safety” improved; in 2022, when the central economic work conference talked about industrial policy having to be balanced with both development and security, they also pointed out that we needed to pay attention to our most fragile parts of industry: strengthening those areas would help us get stronger as an economy. Supply chain management changed from being a little problem with operations to something very big about making good money.

In the company's supply chain network, suppliers take on an upstream role in value generation and their form and firmness greatly impact buying expenses, making efficiency, and running danger. Supplier concentration is by far the easiest and most informative way to describe a company's supplier structure. In recent years after China Securities Regulatory Commission required that all public companies disclose purchases/sales proportion with top 5 supplier/customer since 2012, economic consequences from supplier concentrations start drawing more scholars' & practitioners' interest. To find if supplier concentration will predict future earnings has much theoretical and real worth.

Existing studies on the economic results of supplier concentration mostly gather around 2 opposing views: dark side (risk view) or bright side (benefit view). The dark side treats supplier

concentration not as a simple commercial decision but rather as a strategic risk requiring attention. By decreasing their bargaining power and increasing supply chain disruption dangers, they can straightaway lessen how much money is made and damage whether it's possible for that income to last over time [1- 3]. On the contrary, the bright side claims that setting up long-term, steady relational transactions with just few suppliers could lower information searching and negotiating expenditures, obtain economy-of-scale advantages through large-volume buying, enhance stock keeping efficiency, make sure supplying steadiness [4, 5]. And these effects would probably end up making us more profitable. But no one looked at it from an info-prediction standpoint.

Earlier work has mainly concentrated on earning constancy; it is still unclear if supplier crowding offers extra info for guessing future earnings. Indicators like ROA and ROE that show how well the business runs directly, these are what investors, those who lend money, and managers care most about financially. To make good choices when giving out money to invest or decide whether someone should get more money from their loans, we have to guess what will happen with how much they can earn in the future. Testing this question within China's context holds particular worth. On one hand there is relational transaction which is a main trait of Chinese market, trust reciprocity relationship specific investment between supplier and purchasing firm might play greater part compared to developed markets[6]. On the contrary, Chinese public firms own various sorts of ownership structure as well as different scale heterogeneity so that economic consequence brought by supplier concentration could be changed systematically among each firm. So does supplier concentration predict our company's income ahead of time? If yes, then why do we need all these other stuff around here anyway? And also when does such prediction become true?

We use financial data from A-share manufacturing listed companies in China between 2015 and 2024 based on supplier concentration indices and earnings persistence theories to see if it can be used for future prediction of the company's earnings through return on total assets(ROA). The boundaries under which these relations are valid. We find out three things. One is that supplier's concentration has a very strong positive relationship with future earnings, which still stands after taking into account current earnings, whether or not there was an ongoing loss situation at present time as well as interactions among them all together so therefore there must have been additional value provided by suppliers' amounting levels beyond those figures currently available today already; secondly robustness checks indicate even when using different prediction windows such as looking further than just one period ahead instead two times more than originally specified along with substituting another measure like ROE rather than our usual go-to option known commonly enough amongst professionals ROA plus controlling joint industry year fixed effects and leaving aside any observations made during the pandemic year namely 2020 etc. And finally third heterogeneity analysis shows us where exactly does that good predictive ability of supplier being concentrated actually show up? Non-state-owned firms, highly competitive ones, firms having less problems regarding representatives acting according to someone else.

The contribution is threefold: Firstly it adds another layer of understanding, based upon an information prediction point-of-view as opposed to the current one that deals with whether or not there are benefits from supplier concentration vs increased risk; Secondly by adding both losses status and earnings conditions in our model we can get more detailed about how much predictive power does having a lot suppliers give us under different types of income situation. Thirdly, it gives empirical findings and explanations on what institutional and resource limitations exist around economic transmissions through relational exchanges when taking into account ownership nature, industry rivalry and agency conflicts regarding supplier concentrations' capacity for making money predictions.

2. Theoretical Analysis and Hypotheses

2.1. Supplier Concentration and Future Earnings Prediction

As critical upstream stakeholders, suppliers and their purchasing firms are both mutually dependent as well as having a cooperative basis for creating value together. Thus supplier concentration carries signals about predicting future earnings in two ways. Firstly transaction cost theory says making stable long term relationship with few main suppliers will decrease searching for information, talking over deals, and keeping promises which helps make money better [7- 9]. Second, steady supply chains relationships encourage investment and interest match by joint learning and cooperation to create something new. Good relational governance increases how much each side wants to put things into the mix and give stuff up so they can get more from being related (relational rents) and make more cash (earnings)[10].

But when supplier concentration keeps increasing, the company becomes more reliant on just a few suppliers and those signals about how much we can predict about future income from it might get stronger as they become harder to ignore because there are so many similar ones together. On one hand upstream firms compete with downstream firms over economic profits;supplier's bargaining power has an effect on industry profit.On another side is that resource dependence theory claims major resources provider could make influence in business operation decisions via controlling of key sources[11]. While higher customer concentrations increase both the cost of equity capital as well as overall firm risk, which shows us how financial markets have priced-in supply chain risks (or concentrated risks) into their valuations[12]. Financial institutions too express worry for dependency danger in supply chains: companies whose supplies depend heavily on fewer people usually pay extra money if they borrow cash from banks[13].

2.2. Boundary Condition: Ownership Nature

Private enterprises are mainly driven by minimizing costs and maximizing profits. The discounts from buying in bulk, the reductions in transaction fees, and the supply chain synergies resulting from supplier concentration have all been realized through operations; hence there is an improvement in profit[14]. Also, private business encounters fierce market rivalry and a higher demand for survival and development, leading them to desire more actively optimizing their supply chains as well as strengthening partnerships with main suppliers to get maximum favorable outcomes due to this situation. SOEs on the contrary look for more than just economic benefits like keeping jobs safe, making sure we still have our things coming in and doing what we think we should do for the nation[15]. Procurements choices and Supply Chain set ups often impacted by administrative factors. With soft budget constraints coupled up with it, SOEs tend not too concerned about cost reduction from suppliers' cooperation efficiency thus significantly weakening those positive impacts of concentrated suppliers which was based upon market mechanism. And also some kind of administrative coordination or implicit guarantees between SOEs & upstream suppliers can further erode these kinds of beneficial synergies that one would normally expect when you go centralize your procurement efforts.

2.3. Boundary Condition: Industry Competition

Industry competition makes firms more or less sensitive about costs, have more or less operating pressure and want to optimize supply chains more or not, all these things make it an important context that changes how much information there is in supplier concentration.

In case when there is much more competition among industries and products become very similar then companies have no option but to lower their prices. And as a result of this situation the profit margin keeps getting smaller, thus making any change in how much we spend for

supplies affect profits even stronger, and what happens with our supply lines gives away some clues about whether or not things will be good next year[16]. In addition, intense market competition also functions as an external governance mechanism forcing managers to enhance operational efficiency and actively improve supplier management models. The depth of cooperation, amount of information shared, and relationship stability with key suppliers better represent a company's operating effectiveness and upcoming earnings potential[17], so having too many suppliers means that it has extra info on future earnings.

Contrarily, in the less competitive market segment, firm's market power tends to be stronger. Even if there is an increase in raw material costs, it will be passed on to downstream customers by increasing prices, so procurement cost changes have less effect on their own profit margins. In such situations, supplier concentration usually points towards something like market power or administrative factors instead of operational performance itself. Also because they do not need as much discipline from other competitors and depend heavily upon just a few suppliers, this relationship can easily become one-sided. Opportunistic behaviors or supply stoppages of suppliers carry more hidden dangers for earnings. So in low competition industry, prediction about future earning based on supplier concentration isn't strong.

2.4. Boundary Condition: Agency Conflict

The level of agency conflict is very important; if there's no will or capability for management to make any changes that could possibly result in a noticeable financial outcome from the cost saving and synergy brought by supplier concentration. It therefore becomes a critical boundary condition for future earnings prediction via supplier concentration. Agency Conflict can create 3 different outcomes.

First, the resource dissipation effect. In companies with strong agency conflict problems, managers and shareholders don't have similar operation objectives. The manager will be more interested in their own private benefits (such as too much consumption, building empires, and related-party transactions), rather than trying to improve supply chains or reduce costs. As a result there is no stable predictable future earning signal [18, 19]. On the contrary, for firms having lessening of agency conflicts: here management and shareholder interest lines are broadly parallel; managers would not unnecessarily dissipate savings from optimizing their supply chain; cost-cutting advantages would also truthfully show up within financial accounts. Second, the efficiency revelation effect. For companies with less agency problems there is a better standard for internal control and so it would be more likely that management will take full advantage of the benefits offered by working closely with suppliers. Financial statements capture operationally efficient benefit of supplier concentration honestly and this makes signal quality from supplier's concentrated status to predict future earning stronger.

Third, the information noise effect: firms having lower levels of agency conflict have a better general governance setting. Results from supply chains operations appear honestly on financial statements so that supplier concentration becomes trustworthy as far as predicting how profitable something will be in the future goes. But if there is too much agency problems for the firm then managers' rent seeking activities and related party deals would make it hard to tell what kind of operating efficiency really exists by looking at how suppliers are concentrated because this makes more confusing stuff (information noise) around the signal we get about supplier concentration.

According to the above analysis, here are some hypothesis that can be made:

H1a: Supplier's concentration has a positive correlation to their earning in the future, it also have a positive predictive power.

H1b: Supplier concentration has a negative relationship to the following period's earnings, meaning it also has no predictive ability.

H2: Compared with SOEs, suppliers' concentration has a higher predicting ability on the future of private firms than it does for SOEs.

H3: Compared with low-competition industries, supplier concentration has more predictive power over future earnings in high-competition industries.

H4: Compared to companies facing serious agency problems, suppliers' level of concentration is more predictive about a company's earnings in the future when there aren't too many problems with authority.

3. Research Design

3.1. Sample and Data

The sample contains all A-shares manufacturing companies in China that have been listed between 2015 and 2024. We use the data provided by CSMAR and Tonghuashun databases. In order to guarantee the truth of our empirical result, we do this kind of screening work: first is to leave out financial firms which have very different finance structure than other ones; second one does not allow those labeled ST, *ST or PT to be included as well; thirdly, every single continuous number will get winzorized at both ends (top and bottom) where it reaches 1st & 99th percentile respectively so as to reduce any impact caused due to too extreme numbers present there. And then I end up with a total of about 22 thousand plus firm year observations on around two thousand five hundred non-financial public limited liability entities after these filters have been put through. Some variables have missing values, some models need one period ahead and lagged data, so how many observations actually enter each regression varies and they are reported separately.

3.2. Variables

3.2.1. Dependent Variable: Future Earnings

Future period's earnings are taken up as the variable for prediction. Based on Sloan(1996)and Cheng et al.(2019), but not based on whether or not there is any persistence with respect to future-period earnings per se; rather, it focuses more closely upon what might be an incremental predictive power from supplier concentration towards this sort of measure where we could perhaps take some kind of return over total assets at time $t+1$ in terms of net profit divided by all these different sorts of asset categories that make up such things like total assets [20].

3.2.2. Core Explanatory Variable: Supplier Concentration

As per Patatoukas (2012) and Zhao & Bao (2015), Supplier Concentration is defined by the ratio of purchase amount from top 5 suppliers to total purchase [21, 22].

3.2.3. Dummy Variables

Drawing on Hayn (1995), shareholders possess a liquidation option[23]. Compared with profitable firms, loss-making firms exhibit weaker earnings persistence and lower predictive power of current earnings for future earnings; the earnings-return relation displays pronounced asymmetry between profits and losses. We therefore introduce a loss-status dummy variable (LOSS, equal to 1 if $\text{Earn} < 0$) to control for the structural damage of loss status to earnings persistence and prevent the supplier concentration coefficient from absorbing this nonlinear effect.

3.2.4. Control Variables

Following Cheng et al. and Li Shu et al., we control for firm size (SIZE), leverage (LEV), growth (GROWTH), ownership concentration (TOP1), audit quality (AUDIT1), and board size (BOARD). Variable definitions are summarized in [Table 1](#)

Table 1. Variable definitions

variable name	Symbols	Definition
Future Earnings	F_Earn	ROA in year t+1
Current Earnings	Earn	ROA in year t
Supplier concentration	SC	Purchases from the first five suppliers; enter as a percentage (0-100)
Loss Dummy	LOSS	1 if current-year Earn < 0, 0 otherwise
Firm Size	SIZE	Natural logarithm of the total assets at year end
Leverage	LEV	Total liabilities / Total assets at year end
Corporate growth potential	GROWTH	The current year's operating income minus the previous year's operating income divided by the previous year's operating income---Output only the rewritten version. No other content is allowed.
Ownership Concentration	TOP1	Shares held by the largest shareholder / Total shares outstanding
Audit quality	AUDIT1	If the firm is a member of Big Four or not, 1 if yes, 0 if no
Board size	BOARD	Number of board members' natural logarithm

3.3. Model Specification

Testing H1 is as follows, we have a base line model:

$$F_Earn_{i,t} = \alpha_0 + \alpha_1 * Earn_{i,t} + \alpha_2 * SC_{i,t} + \alpha_3 * LOSS_{i,t} + \alpha_4 * LOSS_{i,t} * Earn_{i,t} + \alpha_5 * Controls + \mu_i + \lambda_t + \varepsilon_{i,t}$$

Where i and t denote firm and year, respectively; $F_Earn_{i,t}$ is future earnings; $Earn_{i,t}$ is current earnings; $SC_{i,t}$ is supplier concentration; μ_i represents firm fixed effects; λ_t represents year fixed effects; $\varepsilon_{i,t}$ is the error term; and Controls denotes the control variables listed in [Table 1](#). Coefficient α_1 captures earnings persistence, and coefficient α_2 on the core explanatory variable SC is the focus of our analysis. If α_2 is significantly positive, H1a is supported—that is, supplier concentration conveys significant incremental predictive information about future earnings.

4. Empirical Results

4.1. Descriptive statistics

[Table 2](#) presents the descriptive statistics. The mean of future earnings is 0.037, and the mean of current earnings is 0.039, with medians of 0.038 and 0.041, respectively. The medians slightly exceed the means, indicating that sample firms are generally profitable at a normal level of around 4%, with a slight left skew. Supplier concentration, expressed as a percentage, has a mean of 33.99%, a median of 29.90%, a minimum of 6.25%, a maximum of 89.90%, and a standard deviation of 18.08, indicating substantial cross-sectional variation. Loss-making firms account for approximately 13.3% of the sample. The descriptive statistics for the remaining variables all fall within reasonable ranges. Because some variables have missing values and future earnings are measured one period ahead, the number of observations varies slightly across variables. To avoid multicollinearity-induced estimation bias, we conduct a variance inflation factor (VIF) test on the baseline model. All VIF values are far below the critical threshold of 10, with a maximum of 1.61 and a mean of 1.25, indicating no serious multicollinearity.

Table 2. Summary Statistics

VarName	Obs	Mean	SD	Min	Median	Max
F_Earn	19541	0.037	0.066	-0.381	0.038	0.243
Earn	22992	0.039	0.065	-0.376	0.041	0.240
SC	22909	33.993	18.076	6.250	29.900	89.900
LOSS	22992	0.133	0.339	0	0	1
LOSS_Earn	22992	-0.010	0.036	-0.376	0	0
SIZE	22992	22.158	1.157	19.900	22.000	26.000
LEV	22992	0.380	0.187	0.049	0.371	0.897
GROWTH	21763	0.133	0.315	-0.541	0.090	2.500
TOP1	22991	0.326	0.140	0.079	0.304	0.770
AUDIT1	22991	0.053	0.225	0	0	1
BOARD	22990	2.087	0.189	1.610	2.200	2.560

Note: There is different degree of missing value on both the dependent and controlled variables for every model. Actual regression observation like this in N table

4.2. Correlation Analysis

Table 3 reports the Pearson correlation matrix. All correlation coefficients among explanatory variables are below 0.5, indicating that our model does not suffer from severe multicollinearity.

Table 3. Correlation analysis of variables

	F_Earn	Earn	SC	LOSS	LOSS_Earn	SIZE	LEV	GROWTH	TOP1	AUDIT1	BOARD
F_Earn	1										
Earn	0.600***	1									
SC	0.003	0.014*	1								
LOSS	-0.363***	-0.656***	0.014*	1							
LOSS_Earn	0.302***	0.736***	-0.005	-0.684***	1						
SIZE	0.024***	0.046***	-0.211***	-0.057***	0.074***	1					
LEV	-0.270***	-0.352***	-0.174***	0.195***	-0.163***	0.461***	1				
GROWTH	0.171***	0.265***	0.036***	-0.193***	0.167***	0.057***	0.068***	1			
TOP1	0.158***	0.159***	-0.016**	0.110***	0.108***	0.075***	-0.036***	0.000	1		
AUDIT1	0.048***	0.045***	-0.064***	-0.012	0.012*	0.303***	0.083***	0.004	0.115***	1	
BOARD	0.020***	0.014*	-0.065***	-0.024***	0.028***	0.245***	0.117***	0.007	-0.054***	0.073***	1

Note: ***, **, * indicate significant levels at 1%, 5%, and 10%, respectively.

4.3. Baseline Regression

Table 4 reports the baseline regression results. Column (1) controls only for firm and year fixed effects; the estimated coefficient on SC is 0.00034, significant at the 1% level, indicating that supplier concentration is significantly positively associated with next-period earnings even without additional controls. Column (2) adds current earnings (Earn) to control for earnings inertia; the SC coefficient decreases slightly to 0.00027 but remains significant at the 1% level, demonstrating that after stripping out the strongest confounding factor-earnings persistence-the predictive effect of supplier concentration remains significantly positive. Columns (3)-(4) further add control variables and the loss dummy (LOSS) and its interaction with current earnings (LOSS_Earn) to control for the profit-loss asymmetry in earnings persistence. The estimated SC coefficient is 0.00014, significant at the 5% level, supporting H1a: supplier concentration possesses significant positive predictive power for future earnings. Because SC enters the model as a percentage (0-100), the economic interpretation is that a one-percentage-point increase in supplier concentration is associated with an expected increase of

0.014 percentage points in next-period ROA. Measured in standard deviations, a one-standard-deviation increase in SC corresponds to an expected increase of approximately 0.25 percentage points in future ROA.

Table 4. Benchmark regression

variable	(1)	(2)	(3)	(4)
SC	0.00034***	0.00027***	0.00016***	0.00014**
	(5.09)	(4.63)	(2.64)	(2.33)
Earn		0.21864***	0.18668***	0.40268***
		(14.06)	(11.01)	(21.72)
SIZE			-0.02973***	-0.02779***
			(-13.14)	(-12.40)
LEV			0.01890***	0.02299***
			(2.75)	(3.26)
GROWTH			0.02185***	0.01823***
			(11.14)	(9.25)
TOP1			0.02637**	0.02946***
			(2.31)	(2.66)
AUDIT1			0.00895*	0.00707
			(1.87)	(1.43)
BOARD			0.00135	-0.00065
			(0.25)	(-0.12)
LOSS				-0.00644**
				(-2.47)
LOSS_Earn				-0.43889***
				(-11.75)
_cons	0.02579***	0.01854***	0.66023***	0.60822***
	(11.56)	(8.82)	(12.87)	(12.01)
N	19249	19249	18042	18042
Adj. R2	0.45	0.48	0.49	0.50

Note: ***, **, * indicate significant levels at 1%, 5%, and 10% respectively; Definition and dimensions of SC are given in the table.

4.4. Robustness Check:

4.4.1. Extended Prediction Window.

The predictive power of supplier concentration could be short-lived and decay over time. Therefore, we extend the dependent variable window by two more periods ahead and redo our regressions. And if you take away that earnings from right now but go to what's gonna happen in those next 2 years after this period ends then there will still be some good news coming your way when it comes down to making decisions on suppliers.

4.4.2. Alternative Dependent Variable.

ROA is another measure of how well a company does, but if you use supplier concentration to make predictions about what will happen next might depend on which one we pick. So let's try changing the thing that we're predicting using something from the future period's ROE and see what happens when we do this regression all over again. After making this swap supplier's concentrations still have strong positive powers in forecasting coming earnings.

4.4.3. Industry-Year Joint Fixed Effects.

The basic regression includes company and year fixed effect. But there might be other unobserved things happening across industries over time like policy changes specific to an industry, which can also have some effects on supplier concentration and how much money will come in later, so we need to worry about it as well. In order to exclude such alternative explanations, I add industry-year joint FE to the baseline model. Supplier Concentration continues to show strong positive predictive power for future Earnings after controlling for these factors as well, this is very close to what our base result said.

4.4.4. Excluding 2020 Observations.

The 2020 covid-19 outbreak created an important worldwide economic jolt, possibly messing up how supply lines relate. Excluding 2020 observations and redoing the regression. The result shows that supplier's concentration keeps having a strong positive predicting power over future earnings which means those base line findings do not rely on extreme pandemic data.

Table 5. Robustness check

	(1)	(2)	(3)	(4)
	F2_Earn	F_ROE	F_Earn	F_Earn
Earn	-0.02823		0.38909***	0.44199***
	(-1.36)		(20.93)	(21.91)
SC	0.00014*	0.00034**	0.00013**	0.00014**
	(1.90)	(2.36)	(2.21)	(2.16)
LOSS	-0.00905***	-0.01278**	-0.00668**	-0.00764***
	(-3.26)	(-1.97)	(-2.57)	(-2.73)
LOSS_Earn	-0.05892*		-0.44273***	-0.47310***
	(-1.77)		(-11.75)	(-11.38)
Controls	Yes	Yes	Yes	Yes
ROE		0.40849***		
		(14.32)		
LOSS_ROE		-0.38808***		
		(-8.16)		
N	14874	18042	17990	15955

Note: ***, **, * indicate significant levels at 1%, 5%, and 10%, respectively.

4.5. Endogeneity

Reverse causality is a potential concern: firms with higher earnings may be more capable of building concentrated supplier relationships. To mitigate this concern, we lag the core explanatory variable supplier concentration by one period, using historical supply chain structure to predict future earnings. The regression results, reported in Column (1) of [Table 6](#), are consistent with the baseline.

In addition, supplier concentration and earnings may be jointly affected by unobservable time-varying factors, leading to omitted-variable bias. We therefore adopt an instrumental variable (IV) approach. We use the mean supplier concentration of other firms in the same industry in the same year as the instrumental variable for supplier concentration. As shown in Column (2) of [Table 6](#), the IV estimates are highly consistent with the baseline OLS estimates. Taken together, these results indicate that the positive predictive relation between supplier concentration and future earnings is not driven by reverse causality or significant omitted variables, and our core conclusions are robust.

Table 6. Endogeneity Tests

	(1)	(2)
	Lagged SC	IV-2SLS
L_SC	0.000115*	
	(0.000065)	
Earn	0.365739***	0.402820***
	(0.019841)	(0.018550)
LOSS	-0.005536*	-0.006430**
	(0.002834)	(0.002611)
LOSS_Earn	-0.434644***	-0.438994***
	(0.038713)	(0.037362)
Controls	Yes	Yes
SC		0.000128**
		(0.000061)
N	15885	18042
r2	0.594776	0.110870

Note: ***, **, * indicate significant levels at 1%, 5%, and 10% respectively; The first-stage Kleibergen-Paap rk Wald F statistic is 992.22 which is much bigger than the Stock-Yogo 10% critical value 16.38.

5. Further Analysis: Heterogeneity Test

5.1. Ownership Heterogeneity

State-owned enterprises (SOEs) and private enterprises differ significantly in operating objectives, financing constraints, and supply chain decision-making logic. [Table 7](#) shows that the positive predictive power of supplier concentration is significant in private enterprises but not in SOEs, consistent with existing literature on the non-market characteristics of SOEs.

5.2. Heterogeneity of Industry Competition

We measure industry competition using the Herfindahl-Hirschman Index (HHI), calculated from firm operating revenues within each industry. A lower HHI indicates more intense competition. We divide the sample into high- and low-competition groups based on the annual industry median HHI. Columns (3)-(4) of [Table 7](#) report the results. In both high- competition and low-competition industries, the coefficients are significantly positive, indicating that the predictive power of supplier concentration is generally present across industries. However, the coefficient in the high-competition group is approximately 2.6 times that in the low-competition group, suggesting that in more fiercely competitive markets, supply chain management efficiency is a critical competitive advantage, and changes in supplier concentration release more abundant information about profitability.

5.3. Heterogeneity of agency conflicts

We measure agency conflict using the ratio of administrative expenses to operating revenue (the management expense ratio); a higher ratio indicates more severe agency problems. We divide the sample into high- and low-agency-conflict groups based on the annual median. Columns (5)-(6) of [Table 7](#) report the results. The positive predictive power of supplier concentration is significant in firms with light agency conflicts but not in firms with severe agency conflicts. This indicates that effective internal governance is indispensable for realizing the informational role of the supplier concentration indicator.

Table 7. Heterogeneity tests

	(1)	(2)	(3)	(4)	(5)	(6)
	SOE	Non-SOE	High Competition	Low competition	High Agency Conflict	Low Agency Conflict
Earn	0.49318*** (14.03)	0.37412*** (17.02)	0.36976*** (11.09)	0.37624*** (16.12)	0.37015*** (11.52)	0.37445*** (13.69)
SC	0.00008 (0.80)	0.00020*** (2.77)	0.00040** (2.15)	0.00015** (2.09)	0.00001 (0.06)	0.00018** (2.47)
LOSS	-0.00052 (-0.12)	-0.00548* (-1.75)	-0.00513 (-1.30)	-0.00319 (-0.88)	-0.00406 (-1.15)	-0.00620 (-1.29)
LOSS_Earn	-0.37351*** (-5.29)	-0.43967*** (-10.43)	-0.41289*** (-7.82)	-0.42269*** (-7.35)	-0.46212*** (-9.31)	-0.39654*** (-3.92)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	4284	13726	6485	11018	8716	8818
Adj. R2	0.59	0.49	0.50	0.53	0.48	0.55

Note: ***, **, * indicate significant levels at 1%, 5%, and 10%, respectively.

6. Conclusion and Implications

Using 22,992 unbalanced observations on A-share manufacturing listed firms from 2015-2024, we look into how supplier concentration predicts future earnings and see if these results change depending on the situation. And here's what I found out: Supplier Concentration has quite a bit of positive predictive power when it comes to Future Earnings (there is more info there that can be used than just Current Earnings) which holds up through all sorts of checks for making sure things are true – pretty solid stuff! The second point about prediction by supplier's degree for coming in takes place depends greatly according to surroundings; strong with non-state owned business entity, fierce competition industry, small agency conflict firm but weak or no at state-owned business entities', low competition industries and big agency conflicts company.

Based on what I found, here is what I recommend. First of all since suppliers contain incremental info about future earning investors & creditors have to factor that in their financial analyses & credit assessment frames as another info source predicting how profitable something will be. Private enterprises need to pay more attention to the signal value which comes from changes of supply chain structure and use supply chain relationship improvement to get better financial results. And then because industry competition makes supplier concentration more informative, when making policies around supplies they should consider different kinds of industries with different levels of competition instead of using one solution for everything. Fourthly, firm's internal governance mechanism has got to improve so that those decisions relating to its supply chain wouldn't become warped by management agency disputes thus enabling us to truthfully represent our operational capability through our supply network thereby improving predictive capabilities.

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