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How Do Firms' Political Connections Affect Their Supply Chain Disclosure?

-- An Analysis Based on a Firm's Upstream and Downstream Supply Chain Transparency Perspective

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Abstract: The supply chain is an important lens through which to understand the business, operational and financial behavior of firms. This paper examines in detail its important impact on supply chain information disclosure through the lens of the presence or absence of political affiliation as an important characteristic of a firm. Based on a panel data of Chinese A-share listed companies, the empirical analysis finds that corporate political affiliation significantly increases the level of corporate supply chain disclosure, and this effect persists after a series of robustness tests. Heterogeneity analysis shows that the effect is more pronounced in the eastern and central regions than in the western region, and the effect is greater for firms in the central region, which are mainly present in capital-intensive industries compared to labor-intensive firms. Based on an upstream and downstream perspective, the impact is more pronounced upstream. Further mechanistic analysis reveals that the productivity-enabling effect of political linkages and the weakening of management power are important mechanistic pathways. This paper enriches the research on the influencing factors of corporate supply chain information disclosure and gives corresponding suggestions for enhancing corporate supply chain transparency.

Keywords: Corporate political affiliation; Supply chain information disclosure; Total factor productivity; Management power.

1. Introduction

The current rapid development of Internet technology and the era of high transparency is one of the products it has brought to us. In the background of the era of continuous transparency, the degree of transparency of an enterprise's supply chain is an important factor affecting the subsequent development of the enterprise and even the reputation of the enterprise, and how to make good disclosure of enterprise supply chain information has become an important issue for the development of enterprises in this era. In fact, many relevant departments in China have already promulgated laws or policies on corporate supply chain information disclosure. For example, the report of the 20th Party Congress emphasizes the need to focus on improving the resilience and security of supply chains, and to ensure the security of important supply chains by addressing major issues. In the era of transparency, one of the most important ways to enhance supply chain security is to analyze the important influencing factors affecting supply chain information disclosure and to enhance the visualization of supply chain information. listed companies' information disclosure, which proposes a reasonable guideline strategy for specific steps.

Most of the current academic and existing literature on this issue focuses on the supply chain as an influencing factor, exploring its impact on corporate value (Chen Ke, 2020), investment and financing efficiency and company performance (Gao Di, 2014), etc. There is a lack of discussion on what important influencing factors have an impact on supply chain information disclosure itself. Based on this, this paper focuses directly on the more common phenomenon of corporate political affiliation, and the innovative discovery of this important influencing factor will also bring a new role for improving the transparency of supply chain information disclosure.

This paper discusses in detail the important influence of corporate political affiliation on supply chain disclosure. It is found that corporate political affiliation significantly increases the level of corporate supply chain disclosure regardless of the circumstances. A series of robustness tests are subsequently conducted by replacing the two explanatory variables of supply chain disclosure quantity and supply chain disclosure specific information, and by replacing the corporate political affiliation measure, and this effect persists after the tests. The analysis of heterogeneity in terms of both region and industry shows that the effect is more pronounced in the east and central regions than in the west, and that the effect is greater for firms in the central region, where it is predominantly present in capital-intensive industries compared to labour-intensive firms. Based on an upstream and downstream perspective, the impact is more pronounced upstream. Further mechanistic analysis reveals that political affiliation mediates the effect of total factor productivity and management power on supply chain information disclosure, and that the productivity empowerment effect of political affiliation and the weakening of management power are important mechanistic paths.

Compared with previous studies, the potential marginal contributions of this paper are mainly in the following points: First, the research perspective is innovative. This study takes supply chain information disclosure as the entry point, pinpoints the important influencing factor of corporate political affiliation in order to better solve the problem of corporate supply chain information disclosure, and conducts empirical research and tests closely around the theoretical hypothesis after proposing it; in the current context, whether corporate supply chain information disclosure can enhance total factor productivity or appropriately reduce management power, which in turn leads to corporate supply chain transparency In the current context, whether corporate supply chain information disclosure can increase total factor productivity or appropriately reduce management power,

which in turn leads to increased corporate supply chain transparency, has become an important issue in the development of corporate information disclosure and government-enterprise relations, yet there is little research or literature on the mediating effect and specific impact of two key intermediate factors, total factor productivity and management power, on corporate supply chain transparency. The research in this paper is conducive to both the healthy development of government-business relations and the visualization of corporate supply chain information; secondly, it is an innovation in the literature on the impact of political connections. This paper also enriches the literature on the economic consequences of political connections and greatly enriches the research in this area from an information disclosure perspective; third, it addresses and explains new issues. With the increasing prevalence of corporate political connections and the increased importance of corporate supply chain information disclosure in the age of transparency, many new issues have emerged in the process of supply chain information disclosure upstream and downstream of companies. It is hoped that this will help to guide and promote the solution of such problems.

The paper is organized as follows: Part II presents a review of the relevant literature and the theoretical hypothesis; Part III introduces the data structure and research design of the paper; Part IV presents the basic empirical results; Part V further discusses the mechanism; and finally, the concluding remarks and policy implications of the whole paper.

2. Literature Review and Theoretical Hypotheses

2.1. Literature Review

2.1.1. The impact of corporate political affiliation

There are both positive and negative impacts of political association between business and government. Firstly, many studies have shown that political affiliation helps firms gain resource advantages in various areas (Yu et al., 2012). For example, politically connected firms are more likely to go public (Fan et al., 2007), are more likely to receive various types of financial support from banks and other financial institutions (Yu Minggui and Pan Hongbo, 2008), and can benefit financially from government assistance in their operations (Krueger, 1974). There is a significant positive relationship between executive political affiliation and firm performance, and political affiliation can also contribute to the effectiveness of internal control (Lin and Yun, 2022). And politically connected firms have superior business networks, their businesses are more prosperous and more likely to survive in the long run (Burt Ronald S., Opper Sonja, 2020).

Other studies have argued that corporate political affiliation can have a negative impact on them. Politically connected companies can use their connections and backgrounds to negotiate and communicate with regulators and thus reduce their risk of being penalized after a breach, which can be detrimental to investors' understanding of the true information about the company (Yi, C.H. et al., 2013). In addition, political affiliation has a negative causal effect on CSR (Park SeHyun, 2022).

2.1.2. Influencing factors of supply chain information disclosure

Many scholars have conducted a series of studies on supply chain information disclosure, most of which are focused on its rich influencing factors. Firstly, management personnel is one of the important influencing factors. Most of the listed companies in China have adopted various mechanisms to align the interests of their executives with those of their owners, thus making them take the initiative to reduce self-interest and speculative behaviour and improve the quality of information disclosure (Jin Xiaonan, 2021). Secondly, the quality of information publicly disclosed by customers in the capital market also affects the final supply chain information disclosure (Zhang Yanzhao, 2023). And when customers are geographically or transportationally closer to companies, investors are more likely to access private supply chain information, which in turn enhances supply chain transparency (Peng Xuan and Wang Xiongyuan, 2016).

2.1.3. Literature review

On the one hand, the literature on corporate political affiliation has been reviewed and found that many scholars have mainly discussed the economic consequences of corporate political affiliation, and some of the literature has argued that it can have beneficial effects, while others have argued that it can bring disadvantages. In addition, there is no literature that systematically addresses the issue of political affiliation on corporate disclosure, especially supply chain disclosure; furthermore, a review of the literature on supply chain disclosure reveals that most of the literature focuses on the analysis of factors affecting the quality of corporate supply chain disclosure, while ignoring the important role of corporate political affiliation.

On the other hand, in reviewing the relevant literature, this paper finds that the consequences of corporate political connections and the factors influencing supply chain disclosure all involve the analysis of internal control or internal management personnel. This paper therefore examines the impact of corporate political connections on supply chain information disclosure and the specific mechanisms of influence.

2.2. Theoretical hypothesis

2.2.1. Corporate political affiliation and supply chain information disclosure

Chinese companies often face political and business risks in their business operations, and these risks are often related to the political affiliations of companies. Robust political connections can enhance the network effects of firms and make them more inclined to share supply chain information. Political affiliation as a factor of corporate governance, can link the interests of the firm with those of the government (Han, Peipei, 2018). Politically connected companies are more likely than other companies to disclose important information related to environmental protection, labour protection, quality and safety in accordance with policies, regulations and industry standards, which proves to make these companies more visible to sustainable investors. And political connections often lead to higher innovation performance (Wang Xiaotian, 2021). In the current context of global supply chain change, the influence of political connections on the supply chains of Chinese companies is becoming increasingly important. Taking appropriate measures to establish robust political connections can lead to an invincible position in the evolving competitive environment. However, it is important to note that it is imperative that a company's political connections are legal and compliant, otherwise instead of achieving such an effect, they may have a negative impact on the company (Xiong Jiyu, 2019). In summary, building corporate political connections

is a very important business strategy for companies operating supply chains. Establishing a robust relationship with the government not only improves the transparency of corporate disclosures, but also can win broad policy and social support. Based on this, this paper proposes the following hypothesis H1.

H1: For Chinese firms, corporate political affiliation significantly and robustly increases the level of corporate supply chain information disclosure.

2.2.2. The mediating effect of corporate political affiliation on total factor productivity and management power in supply chain disclosure

In the current era of high transparency, how to improve productivity and disclosure has become a critical issue for Chinese companies. The government is a very important resource and partner for companies. The Chinese government is particularly influential in the economic and business spheres, and the introduction of policies and plans is an important guide to business operations and development. Through cooperation and communication with the government, enterprises can better understand the dynamic changes in policies, regulations and market demand, so that they can formulate policies that are more suitable for their development and create a level playing field for them to survive, which in turn will enable them to improve their productivity and innovate in their operations in order to better survive in the market. In the case of enterprise total factor productivity increase, the enterprise supply chain operation. Based on this, this paper proposes hypothesis H2a.

H2a: For Chinese firms, corporate political affiliation increases supply chain information disclosure through increased total factor productivity subsequently.

Management is at the heart of corporate management, and disclosure of key corporate information cannot be made without management's authorization and manipulation. However, management, motivated by self-interest (Wang Kemin et al., 2018), can use its power to seek personal gain and conceal it through rent-seeking behaviour, reducing the quality of information disclosed (She, 2021). However, as the influence of corporate political connections increases and the government has a certain degree of restraint on the own behaviour and use of power of executives who resign and take up employment with the company, more and more corporate management tend to adopt some measures of decentralization to reduce their own power, which has the advantage of reducing internal power struggles and internal corporate strife, as well as eliminating artificial power to a certain extent The advantage of this behaviour is that it reduces internal power struggles and internal strife, while also eliminating to some extent the element of artificial power interference and enhancing the transparency and fairness of the business. In a highly centralized management structure, information usually flows in one direction only, and this one-way flow usually prevents effective disclosure of corporate information. Once the power of management is reduced, information can be passed on more freely, thus improving the transparency and timeliness of supply chain information disclosure. And increased transparency in corporate supply chain disclosure can lead to a range of sustainable development opportunities for companies. Information on raw material procurement, product manufacturing, logistics and distribution is critical to the sustainable development of an enterprise. By transparently disclosing this information, companies can better identify and address potential environmental and social risks, and thus better meet the needs of the market and society. This is beneficial to the sustainable development of the company, as it enables members of the entire supply network and external stakeholders to be fully and accurately informed of such supply chain information (Yu, 2018), thereby enhancing the company's social image and public trust. In addition, it can reduce internal strife and artificial power sagging, and bring more opportunities for sustainable development, thus driving the company to a better future. Based on this, this paper proposes hypothesis H2b.

H2b: For Chinese firms, corporate political affiliation reduces the power of corporate management which in turn enhances the overall supply chain information disclosure level of the firm.

3. Descriptive statistics and empirical model setting

3.1. Sample selection and data sources

In order to test the theoretical hypothesis proposed in the previous section, and to consider the availability and representativeness of the sample, a panel of all A-share listed companies in Shanghai and Shenzhen from 2009 to 2018 was used as the original sample, and the data of the original listed companies were obtained from the Guotaian CSMAR database and merged. The sample was further screened as follows: firstly, as the financial statements of the financial industry are different from other enterprises, this paper screens by CSMAR industry code and excludes the financial industry industry sample; secondly, excludes the sample of companies that are ST during the study period, and thirdly, excludes the sample of asset-liability ratio greater than 1; finally, in order to eliminate the influence of extreme values on the empirical analysis, this paper conducts the upper and lower 1% for all continuous variables Finally, in order to eliminate the influence of extreme values on the empirical analysis, all continuous variables are subjected to a winsorize treatment.

3.2. Supply chain transparency

Referring to the research paradigm of Gong et al. (2022), this paper constructs a supply chain transparency indicator, which is measured from the percentage of large suppliers and customers disclosing specific names SCT_Raito. The robustness tests also use the perspectives of the detailed number of large suppliers and customers that disclose specific names SCT_Num and whether supplier specific information SCT_Dum is disclosed in the annual report for detailed discussion.

3.3. Corporate political affiliation

There are many useful discussions in the literature on how to identify the existence of linkages between companies and governments. Referring to the standard practice of existing literature (Yu Wei et al., 2012), this paper identifies the association between enterprises and the government from the tenure of listed company executives: if either the chairman or the general manager of a listed company is or has been employed in a government department, the enterprise is considered to have political association and the PC is assigned a value of 1, otherwise it takes Otherwise, the value is 0.

3.4. Empirical model setting

In order to test the theoretical hypothesis proposed earlier,

this paper will use the panel data of listed companies to construct a two-way fixed effects model for empirical analysis to study how this important feature of political affiliation affects the transparency of corporate supply chains. The specific empirical model is shown in equation (1).

$$STC\_ratio_{it} = \alpha_0 + \alpha_1 PC_{it} + \alpha_2 X_{it} + Year\_FE + Industry\_FE + \varepsilon_{it} \quad (1)$$

Where the subscripts i and t represent listed companies and accounting years respectively. The explanatory variable STC_ratio_{it} indicates the transparency of supply chain of listed company i in year t, which reflects the disclosure level of supply chain information of enterprise supply chains as measured by the proportion of big suppliers and customers who disclose specific names.PC is the core explanatory variable of this paper, i.e., whether there is political correlation in the twelfth year of the I enterprise. Therefore, _1 is the core parameter to be estimated. In addition, X_it is a series of control variables to control the financial and governance characteristics of various enterprise levels so as to ensure the accuracy of the core parameters to be estimated. Year_FE and Industry_FE are year fixed effects and sector/industry fixed effects, respectively. It is the perturbation term of the model. In order to prevent the heteroscedasticity problem from affecting the reliability of empirical results, all statistical inferences in this paper are discussed based on heteroscedasticity robust standard error. To sum up, the bidirectional fixed effect model will be used in this paper to make a rigorous empirical analysis of the theoretical hypothesis proposed above.

3.5. Selection of control variables

Table 1. Detailed definitions of variables

type of variable	The variable name and the letter indicate it	Variable definition description
Explained variable	SCT_ Ratio	The proportion of the number of five suppliers and customers disclosing the Ratio
Core explanatory variable	PC	If either chairman or general manager of the enterprise is or has been in the government, the value is 1, otherwise 0.
Enterprise control change	Size	ln (total assets of the enterprise at the end of the current year)
	Leverage	The ratio of total liabilities to total assets of the enterprise in the current year
	Age	Years of listing
	ROA	Return on assets of the enterprise in the current year
	Fix	Proportion of fixed assets in total assets of the enterprise in the current year
	Cash	Ratio of cash held by enterprises in the current year
	Indratio	The proportion of independent directors in the current year
	Boardsize	Shares held by the board of directors of enterprises
	Enterprise ownership concentration Top1	Shareholding ratio of the largest shareholder of the enterprise in that year
	SOE	Virtual variable of enterprise ownership: if the enterprise is a state-owned enterprise, 1, otherwise 0

Table 2. Detailed descriptive statistics of each variable

	N	Mean	SD	Min	Median	Max
SCT Ratio	16146	0.319	0.455	0	0	1
PC	16146	0.372	0.483	0	0	1
Size	16146	22.236	1.280	19.35	22.064	26.231
Leverage	16146	0.434	0.203	0.027	0.429	0.936
Age	16146	10.122	7.045	0	10	26
ROA	16146	0.577	0.464	-0.019	0.498	2.696
Fix	16146	0.223	0.164	0.002	0.19	0.769
Cash	16146	1.077	1.867	0.04	0.549	30.123
Indratio	16146	38.955	10.280	0	37.5	66.667
Boardsize	16146	10.214	18.109	0	0.03	68.606
Top1	16146	0.365	0.152	0.082	0.35	0.758
SOE	16146	0.417	0.493	0	0	1

Considering that other factors of an enterprise may also have a potentially important impact on enterprise innovation, this paper selects a series of enterprise characteristic indicators as control variables in order to prevent the endogeneity problems caused by missing variables. Based on existing literature, control variables at the enterprise level in this paper include: enterprise size (measured by the natural logarithm of total assets of the listed company at the end of the year), leverage (measured by the proportion of total liabilities in total assets of the listed company at the end of the year), age (measured by the number of years the company has been listed), business performance (ROA, measured by the return on assets of the listed company in that year), fixed asset scale (measured by the proportion of fixed assets of the listed company in that year), Cash ratio (Cash, measured by the proportion of cash held by the listed company in that year), independence of the board of directors (Indratio, measured by the proportion of independent directors of the listed company in that year), board size (Boardsize, measured by the shareholding ratio of the board of directors of the listed company in the year), the concentration of ownership (Top1, measured by the shareholding ratio of the largest shareholder of the listed company in the year), and the enterprise ownership (SOE, measured by whether the listed company is

a state-owned enterprise (SOE, measured by whether the listed company is a state-owned enterprise (SOE) Table 1 shows the variable types, names, and detailed definitions. Table 2 shows the descriptive statistics of each variable.

3.6. Correlation coefficient test

Before conducting the empirical regression analysis, correlations between the main study variables also need to be discussed to prevent problems of perfect covariance leading to unidentifiable models. The correlation coefficient matrix of the core explanatory variables and control variables is shown in Table 3. As can be seen from the correlation coefficient matrix in Table 3, the correlation coefficients between the individual control variables and the core explanatory variables, PC, are not large and do not exceed 0.1 at their highest, and therefore do not suffer from the problem of by a high degree of co-linearity, contrary to the Gauss-Markov assumption, which subsequently leads to systematic bias in the statistical inferences made in this paper. That is, the model set up in the previous section is correct.

Table 3. Matrix of correlation coefficients between core explanatory variables and control variables Jiande

	PC	Size	Leverage	Age	ROA	Fix	Cash	Indratio	Boardsize	Top1	SOE
PC	1										
Size	0.03*	1									
Leverage	-0.01	0.52*	1								
Age	-0.09*	0.33*	0.33*	1							
ROA	0.02*	-0.05*	0.10*	-0.06*	1						
Fix	0.01	0.06*	0.03*	0.03*	0.02*	1					
Cash	0.00	-0.25*	-0.51*	-0.22*	-0.07*	-0.14*	1				
Indratio	0.04*	-0.04*	-0.00	-0.06*	0.15*	-0.02*	0.05*	1			
Boardsize	0.03*	-0.29*	-0.29*	-0.52*	-0.04*	-0.12*	0.18*	0.04*	1		
Top1	-0.01	0.19*	0.05*	-0.11*	0.08*	0.05*	0.02*	0.03*	-0.09*	1	
SOE	-0.06*	0.32*	0.28*	0.40*	0.06*	0.18*	-0.13*	-0.03*	-0.46*	0.21*	1

4. Basic Empirical Results

4.1. Benchmark results

Table 4. Benchmark regression: political connections and supply chain transparency

Explained variables:	(1) SCT_Ratio	(2) SCT_Ratio	(3) SCT_Ratio
PC	0.062***	0.072***	0.033***
	(0.007)	(0.007)	(0.007)
Size		-0.067***	-0.038***
		(0.003)	(0.003)
Leverage		0.329***	0.098***
		(0.024)	(0.024)
Age		0.000	0.005***
		(0.001)	(0.001)
ROA		0.040***	-0.010
		(0.008)	(0.010)
Fix		0.208***	0.100***
		(0.023)	(0.025)
Cash		0.021***	0.004*
		(0.003)	(0.002)
Indratio		0.001***	-0.003***
		(0.000)	(0.000)
Boardsize		-0.001***	0.000
		(0.000)	(0.000)
Top1		0.035	0.003
		(0.025)	(0.024)
SOE		0.080***	0.015*
		(0.009)	(0.009)
Constant	0.296***	1.459***	1.131***
	(0.004)	(0.071)	(0.070)
Industry FE	NO	NO	YES
			stepwise regression
Year FE	NO	NO	YES
Observations	16,146	16,146	16,146
R-squared	0.004	0.051	0.158

Note: Observations are at the firm level. ***, **, * denote statistically significant at the 1%, 5% and 10% levels, respectively. Values in parentheses are heteroskedasticity robust standard errors. industry FE, year FE are industry and year fixed effects respectively. "YES" means the fixed effect is controlled for, "NO" means the fixed effect is not controlled for.

First, the impact of firms' political affiliation on supply chain transparency is examined. The results of the benchmark

stepwise regression of the empirical model equation (1) are shown in Table 4. In particular, the explanatory variables in Table 4 are all listed companies' supply chain transparency SCT_Ratio. The core explanatory variables are all listed companies' political affiliation PC. where column (1) does not control for any control variables and fixed effects and is a univariate regression; column (2) further adds control variables and column (3) controls for year and industry fixed effects. As can be seen from the results, the estimated coefficients of all the core explanatory variables of the models are significantly positive at the 1% statistical level and the magnitudes of the coefficients are relatively robust. This suggests that political affiliation significantly and robustly increases the level of corporate supply chain disclosure, regardless of the controls.

4.2. Robustness tests

After drawing the baseline conclusions, in order to verify the robustness of the core results of this paper, various robustness tests are also required for detailed verification.

First, replacing the measures of the explanatory variables, using the number of large suppliers and customers SCT_Num, whose specific names were disclosed by listed companies in the year, as the core explanatory variables for the analysis, the results are shown in Table 5. Again, the core explanatory variables are all listed companies' politically connected PC. where column (1) does not control for any control variables and fixed effects and is a one-variable regression; column (2) further adds control variables and column (3) controls for year and industry fixed effects. the estimated coefficients of PC are all significantly positive at the 1% statistical level, consistent with the benchmark findings.

Table 5. Robustness test I: Replacement of explanatory variable - number of supply chain disclosures

	(1)	(2)	(3)
Explained variables:	SCT_Num	SCT_Num	SCT_Num
PC	0.440***	0.520***	0.310***
	(0.062)	(0.061)	(0.061)
Size		-0.471***	-0.344***
		(0.027)	(0.028)
Leverage		1.940***	0.757***
		(0.197)	(0.205)
Age		0.020***	0.044***
		(0.006)	(0.006)
ROA		0.237***	-0.043
		(0.065)	(0.081)
Fix		1.547***	0.767***
		(0.188)	(0.212)
Cash		0.125***	0.040**
		(0.020)	(0.019)
Indratio		0.006**	-0.023***
		(0.003)	(0.003)
Boardsize		-0.003	0.004*
		(0.002)	(0.002)
Top1		0.222	-0.024
		(0.204)	(0.203)
SOE		0.387***	0.036
		(0.072)	(0.073)
Constant	2.309***	10.658***	9.903***
	(0.037)	(0.575)	(0.589)
Industry FE	NO	NO	YES稳健
Year FE	NO	NO	YES
Observations	16,146	16,146	16,146
R-squared	0.003	0.031	0.095

Note: Observations are at the firm level. ***, **, * denote statistically significant at the 1%, 5% and 10% levels, respectively. Values in parentheses are heteroskedasticity robust standard errors. industry FE, year FE are industry and year fixed effects respectively. "YES" means the fixed effect is controlled for, "NO" means the fixed effect is not controlled for.

Secondly, it further examined whether listed companies disclosed supply chain specific information SCT_Dum in their annual reports to reflect the companies' supply chain information disclosure. The results are shown in Table 6. Again, the core explanatory variables are all listed companies' politically connected PC. where column (1) does not control for any control variables and fixed effects and is a one-variable regression; column (2) further adds control variables and column (3) controls for year and industry fixed effects. the estimated coefficients of PC are all statistically significantly positive at the 1% level and remain consistent with the baseline findings. This indicates that the conclusions of this paper are highly robust.

Third, the measures of the core explanatory variables are replaced. In the baseline regression, a dummy variable is used to measure the political affiliation of firms. In the robustness check, the political affiliation level of the firm is further examined: the PCLevel is constructed for empirical analysis. The results are shown in Table 7. The core explanatory variable is the PCLevel of political affiliation of listed companies, which takes values from 0 to 4. Again, column (1) does not control for any control variables or fixed effects and is a univariate regression; column (2) adds further control variables, and column (3) controls for year and industry fixed effects. In the most tightly controlled column (3), the estimated coefficient on PCLevel is still significantly positive at the 1% statistical level. This suggests that replacing the core explanatory variable replacement still does not affect the

benchmark results.

Table 6. Robustness test II: Replacement of explanatory variable - supply chain disclosure specific information

Explained variables:	(1) SCT_Dum	(2) SCT_Dum	(3) SCT_Dum
PC	0.061***	0.072***	0.031***
	(0.008)	(0.008)	(0.007)
Size		-0.066***	-0.037***
		(0.003)	(0.004)
Leverage		0.334***	0.100***
		(0.025)	(0.025)
Age		0.001	0.006***
		(0.001)	(0.001)
ROA		0.037***	-0.013
		(0.008)	(0.010)
Fix		0.199***	0.091***
		(0.024)	(0.026)
Cash		0.021***	0.004*
		(0.003)	(0.002)
Indratio		0.002***	-0.003***
		(0.000)	(0.000)
Boardsize		-0.001***	0.000
		(0.000)	(0.000)
Top1		0.038	0.003
		(0.026)	(0.025)
SOE		0.079***	0.015*
		(0.009)	(0.009)
Constant	0.322***	1.439***	1.135***
	(0.005)	(0.074)	(0.074)
Industry FE	NO	NO	YES
Year FE	NO	NO	YES
Observations	16,146	16,146	16,146
R-squared	0.004	0.046	0.149

Note: Observations are at the firm level. ***, **, * denote statistically significant at the 1%, 5% and 10% levels, respectively. Values in parentheses are heteroskedasticity robust standard errors. industry FE, year FE are industry and year fixed effects respectively. "YES" means the fixed effect is controlled for and "NO" means the fixed effect is not controlled for.

Table 7. Robustness test III: Measures of political affiliation of replacement firms

Explained variables:	(1) SCT_Ratio	(2) SCT_Ratio	(3) SCT_Ratio
PCLevel	0.016***	0.003	0.008***
	(0.002)	(0.002)	(0.002)
Size			-0.038***
			(0.003)
Leverage			0.097***
			(0.024)
Age			0.005***
			(0.001)
ROA			-0.010
			(0.010)
Fix			0.100***
			(0.025)
Cash			0.004
			(0.002)
Indratio			-0.003***
			(0.000)
Boardsize			0.000
			(0.000)
Top1			0.001
			(0.024)
SOE			0.016*
			(0.009)
Constant	0.300***	0.315***	1.141***
	(0.004)	(0.004)	(0.071)
Industry FE	NO	NO	YES
Year FE	NO	NO	YES
Observations	16,146	16,146	16,146
R-squared	0.003	0.143	0.158

Note: Observations are at the firm level. ***, **, * denote statistically significant at the 1%, 5% and 10% levels, respectively. Values in parentheses are heteroskedasticity robust standard errors. industry FE, year FE are industry and year fixed effects respectively. "YES" means that the fixed effect is controlled for and "NO" means that the fixed effect is not controlled for.

Finally, as the composition of a firm's supply chain is divided into upstream and downstream components. The impact of political affiliation on information transparency upstream and downstream of the supply chain was further considered. The results are shown in Table 8: column (1) is the explanatory variable SCT_Ratio_CU, and column (2) is the explanatory variable SCT_Ratio_SU, the proportion of information disclosed in the downstream supply chain. all columns control for the preorder control variables and two-way fixed effects. The estimated coefficient of the core explanatory variable political affiliation is statistically significant at 0.01,10% level of positivity in column (1). In column (2) it is 0.023, which is statistically significant positive at the 1% level. Thus, while there is a positive effect of political affiliation on both upstream and downstream disclosure, the effect is greater for the upstream supply chain.

Table 8. Impact of corporate political affiliation on information transparency upstream and downstream in the supply chain

	(1)	(2)
Explained variables:	SCT_Ratio_CU	SCT_Ratio_SU
PC	0.010*	0.023***更多
	(0.005)	(0.004)
Size	-0.017***	-0.021***
	(0.003)	(0.002)
Leverage	0.061***	0.037***
	(0.018)	(0.013)
Age	0.003***	0.002***
	(0.000)	(0.000)
ROA	-0.025***	0.015***
	(0.007)	(0.006)
Fix	0.041**	0.058***
	(0.019)	(0.014)
Cash	-0.000	0.004***
	(0.002)	(0.001)
Indratio	-0.001***	-0.001***
	(0.000)	(0.000)
Boardsize	-0.000	0.000***
	(0.000)	(0.000)
Top1	0.011	-0.008
	(0.018)	(0.013)
SOE	0.018***	-0.003
	(0.006)	(0.005)
Constant	0.580***	0.551***
	(0.054)	(0.038)
Industry FE	YES	YES
Year FE	YES	YES
Observations	16,146	16,146
R-squared	0.231	0.063

Note: Observations are at the firm level. ***, **, * denote statistically significant at the 1%, 5% and 10% levels, respectively. Values in parentheses are heteroskedasticity robust standard errors. industry FE, year FE are industry and year fixed effects respectively. "YES" means the fixed effect is controlled for, and "NO" means the fixed effect is not controlled for.

4.3. Heterogeneity analysis

First, industry heterogeneity is considered. Referring to the method of Lu Tong and Dang Yin (2014), this paper further divides the industries to which enterprises belong into labour-intensive industries and capital-intensive industries for heterogeneity discussion. Table 9 presents the empirical results of firm industry heterogeneity. Firms in column (1) are capital-intensive and firms in column (2) are labor-intensive. the estimated coefficient of PC is significantly positive only in column (1). Thus, there is significant heterogeneity in the effect of political affiliation on firms' supply chain disclosure: it is mainly found in capital-intensive industries.

Secondly, China is a vast country with many administrative divisions and an uneven distribution of resources, resulting in significant differences in the level of economic development between regions and significant differences in the economic environment, institutional policies and industrial agglomeration between regions. The economic environment, institutional policies and industrial agglomeration phenomena differ significantly between regions. Therefore, regional dimensions of differences need to be explored. The sub-sample companies in columns (1) to (3) of Table 10 are listed companies with their registered offices in the eastern, central and western regions respectively. The core explanatory variable PC can be seen to be significantly positive only in the eastern and central regions. Therefore, the influence of political affiliation on supply chain information disclosure is mainly found in the eastern and central regions, and the influence is greater for enterprises in the central region.

Table 9. Industry heterogeneity analysis

Explained variables:	(1) SCT_Ratio	(2) SCT_Ratio
	capital-intensive	labor-intensive
PC	0.039***	0.015
	(0.009)	(0.013)
Size	-0.042***	-0.028***
	(0.004)	(0.006)
Leverage	0.159***	0.001
	(0.029)	(0.043)
Age	0.004***	0.008***
	(0.001)	(0.001)
ROA	0.030**	-0.048***
	(0.013)	(0.014)
Fix	0.125***	0.034
	(0.031)	(0.043)
Cash	0.004	0.006
	(0.003)	(0.005)
Indratio	-0.002***	-0.003***
	(0.000)	(0.001)
Boardsize	0.000	0.000
	(0.000)	(0.000)
Top1	0.012	-0.055
	(0.029)	(0.044)
SOE	-0.000	0.048***
	(0.010)	(0.016)
Constant	1.148***	1.035***
	(0.088)	(0.122)
Industry FE	YES	YES
Year FE	YES	YES
Observations	10,948	5,197
R-squared	0.154	0.176

Note: Observations are at the firm level. ***, **, * denote statistically significant at the 1%, 5% and 10% levels, respectively. Values in parentheses are heteroskedasticity robust standard errors. industry FE, year FE are industry and year fixed effects respectively. "YES" means that the fixed effect is controlled for, while "NO" means that the fixed effect is not controlled for.

Table 10. Analysis of regional heterogeneity

Explained variables:	(1) SCT_Ratio	(2) SCT_Ratio	(3) SCT_Ratio
	Eastern Region	Central region	the west area
PC	0.029***	0.045**	-0.010
	(0.009)	(0.019)	(0.019)
Size	-0.036***	-0.068***	-0.007
	(0.004)	(0.009)	(0.009)
Leverage	0.067**	0.157**	0.062
	(0.030)	(0.066)	(0.065)
Age	0.006***	0.005***	0.003*
	(0.001)	(0.002)	(0.002)
ROA	-0.029**	0.005	0.003
	(0.012)	(0.024)	(0.028)
Fix	0.001	0.253***	0.208***
	(0.032)	(0.066)	(0.061)
Cash	0.001	0.011	0.009
	(0.003)	(0.008)	(0.008)
Indratio	-0.002***	-0.004***	-0.002
	(0.000)	(0.001)	(0.001)
Boardsize	0.000	-0.000	0.003***
	(0.000)	(0.001)	(0.001)
Top1	0.039	0.124*	-0.184***
	(0.029)	(0.070)	(0.061)
SOE	-0.025**	0.040*	0.060***
	(0.011)	(0.023)	(0.021)
Constant	1.075***	1.765***	0.465**
	(0.085)	(0.196)	(0.193)
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	10,705	2,284	2,347
R-squared	0.165	0.202	0.191

Note: Observations are at the firm level. ***, **, * denote statistically significant at the 1%, 5% and 10% levels, respectively. Values in parentheses are heteroskedasticity robust standard errors. industry FE, year FE are industry and year fixed effects respectively. "YES" means that the fixed effect is controlled, and "NO" means that the fixed effect is not controlled.

4.4. Mediating effect analysis

In order to verify the influence mechanism of political affiliation on corporate supply chain information disclosure, the following mediating effect model was developed for analysis.

$$Z_{it} = \gamma_0 + \gamma_1 PC_{it} + \gamma_2 X_{it} + Year\_FE + Industry\_FE + \varepsilon_{it} \quad (2)$$

$$STC\_ratio_{it} = \delta_0 + \delta_1 PC_{it} + \rho Z_{it} + \delta_2 X_{it} + Year\_FE + Industry\_FE + \varepsilon_{it} \quad (3)$$

Where Z_{it} is the mediating variable. According to the theory of mediating effect model, if the model if both $\gamma_1$in equation (2) is significant and δ_1 and ρ in equation (3) are significant, it indicates that there is a mediating effect of Z_{it}. Based on the previous theoretical analysis, this paper intends to conduct a detailed empirical discussion from two perspectives: productivity empowerment and managerial power weakening.

4.4.1. Total Factor Productivity of Firms

First, examining firm productivity factors, this paper uses the full factor TFP_op productivity of firms constructed by the op method. Again, the models all control for all control variables as well as for two-way fixed effects. Firstly, the estimated coefficient of the effect of PC on TFP_op expenditure is significantly positive as seen in column (1) of Table 11, i.e. political affiliation increases a firm's TFP. Further, the estimated coefficient of TFP_op is 0.022 as seen in column (2) of Table 11, again significantly positive, i.e. a firm's TFP significantly increases the level of supply chain information disclosure. This finding suggests the existence of a mediating mechanism of firm productivity empowerment: firm political affiliation increases the level of supply chain disclosure by increasing total factor productivity.

Table 11. Intermediary Effects Analysis I: Productivity Empowerment

Explained variables:	(1) TFP_op	(2) SCT_Ratio
TFP_op		0.022***
		(0.007)
PC	0.015*	0.032***
	(0.007)	(0.007)
Size	0.300***	-0.045***
	(0.004)	(0.004)
Leverage	0.444***	0.089***
	(0.027)	(0.024)
Age	-0.001	0.005***
	(0.001)	(0.001)
ROA	0.791***	-0.027**
	(0.010)	(0.011)
Fix	-0.363***	0.108***
	(0.027)	(0.025)
Cash	0.007***	0.004
	(0.002)	(0.002)
Indratio	0.000	-0.003***
	(0.000)	(0.000)
Boardsize	0.000*	0.000
	(0.000)	(0.000)
Top1	-0.054**	0.004
	(0.026)	(0.024)
SOE	-0.140***	0.019**
	(0.009)	(0.009)
Constant	-2.666***	1.191***
	(0.076)	(0.073)
Industry FE	YES	YES
Year FE	YES	YES
Observations	16,138	16,138
R-squared	0.623	0.159

Note: Observations are at the firm level. ***, **, * denote statistically significant at the 1%, 5% and 10% levels, respectively. Values in parentheses are heteroskedasticity robust standard errors. industry FE, year FE are industry and year fixed effects respectively. "YES" means the fixed effect is controlled for and "NO" means the fixed effect is not controlled for.

Second, an important effect of the presence of politically connected firms is that the government may intervene in many of the firms' production and management decisions. For this reason, referring to Liu Jianmin et al. (2019), this paper selects the length of tenure of the general manager (the value is the length of tenure of the general manager in the position), the combination of two positions (whether the chairman and the general manager are the same person), the proportion of inside directors, and the proportion of management's shareholding to measure the source of management's power and the supervision and constraint of management's power by corporate governance, and synthesizes the above indicators into a composite indicator of management's power according to the principal component analysis. The above indicators are

combined into a composite indicator, Managerpower, using principal component analysis.

Table 12 presents an analysis of the mediating effects of weakened management power. Firstly, column (1) of Table 12 shows that the estimated coefficient of the effect of PC on Managerpower is significantly negative, indicating that political affiliation weakens the power of corporate management, as expected. Further, the estimated results in column (2) of Table 12 show that the estimated coefficient of Managerpower is -0.023, which is significantly negative, i.e. the stronger the management power of a firm, the more it tends to conceal information and reduce the level of supply chain information disclosure. This finding suggests that a mediating mechanism exists for the weakening of managerial power in firms: corporate political affiliation reduces managerial power in firms and subsequently increases the overall level of supply chain disclosure in firms.

Table 12. Analysis of intermediary effects II: Weakened management power

Interpreted variable:	(1) Managerpower	(2) SCT_Ratio
Managerpower		-0.023***
		(0.004)
PC	-0.059***	0.035***
	(0.016)	(0.008)
Size	-0.116***	-0.034***
	(0.009)	(0.004)
Leverage	0.032	0.088***
	(0.054)	(0.027)
Age	0.002	0.006***
	(0.002)	(0.001)
ROA	-0.062***	-0.010
	(0.020)	(0.011)
Fix	-0.333***	0.106***
	(0.055)	(0.028)
Cash	0.005	0.005*
	(0.004)	(0.003)
Indratio	0.038***	-0.002***
	(0.001)	(0.000)
Boardsize	0.027***	0.001***
	(0.001)	(0.000)
Top1	0.327***	-0.008
	(0.057)	(0.028)
SOE	-0.373***	0.009
	(0.019)	(0.010)
Constant	0.932***	1.004***
	(0.184)	(0.086)
Industry FE	YES	YES
Year FE	YES	YES
Observations	12,712	12,712
R-squared	0.476	0.165

Note: Observations are at the firm level. ***, **, * denote statistically significant at the 1%, 5% and 10% levels respectively. Values in parentheses are heteroskedasticity robust standard errors. industry FE, year FE are fixed effects for industry and year respectively. "YES" means the fixed effect is controlled for and "NO" means the fixed effect is not controlled for.

5. Conclusion and Policy Implications

Supply chain information disclosure is one of the important strategic decisions for companies. Using a panel of A-share listed companies in Shanghai and Shenzhen from 2009 to 2018 as a sample, this paper examines in detail the impact of corporate political relations on corporate supply chain information disclosure and the specific mechanism paths. The study finds that, first, political affiliation significantly and robustly increases corporate supply chain information disclosure, regardless of the control, and uses mediation effects to conclude that political affiliation can improve corporate supply chain transparency by increasing total factor productivity or reducing management power; second, there is significant heterogeneity in the impact of political affiliation on corporate supply chain information disclosure, both in terms of industry and region. In terms of industry heterogeneity, its impact on supply chain information disclosure is mainly found in capital-intensive industries; in terms of regional heterogeneity, its impact is mainly found in the eastern and central regions, and its impact on enterprises in the central region is greater. Thirdly, based on the analysis from the upstream and downstream perspectives of enterprises, the impact is greater on the upstream supply chain.

Based on the empirical results, this paper has a wealth of policy implications, as follows: Firstly, the "re-employment" of government officials as executives in enterprises can help the government and enterprises to better build a pro-business relationship in the future, further enhance the visualization of information in the supply chain of enterprises, and bring beneficial effects to enterprises in terms of financing and production. On the one hand, government officials can still establish interpersonal networks with the government after taking up employment in enterprises, which will have a certain degree of binding effect on their own behaviour and use of power in enterprises in the future and reduce the cost of government supervision. On the other hand, the

employment of government officials as senior executives in enterprises is conducive to increasing the number of government-enterprise linkages in the future, and deepening the mutual benign dependence between government and enterprises. Secondly, government-enterprise linkage helps the government to better serve enterprises, create a level playing field for enterprises in production and operation, continuously improve the reward and punishment mechanism for enterprise executives, continue to play the leading role of the government without excessive intervention, help enterprises to continuously improve total factor productivity while appropriately reducing the power of the management, which in turn effectively reduces the generation of chaos such as corporate information disclosure falsification, helps to achieve enterprise This will help enterprises to improve the transparency of their supply chains, establish a good corporate image and expand their influence, and help the public to participate in the monitoring of the environment and consumers and investors to understand corporate information, which will help the long-term development of enterprises.

The empirical results of this paper can also provide some important references for future policies: firstly, to establish a sound incentive mechanism for the "re-employment" of government officials who have joined the senior management of enterprises, to clarify the way out for resigned government officials as soon as possible, and to encourage them to continue to play their remaining role in enterprises and bring positive influence to enterprises; secondly, as the level of economic development continues to rise today, the Schumpeterian The Schumpeter effect is gradually increasing. This means that the government should play its role better in the future, constantly create a level playing field for enterprises, create an environment where the winners are the losers, refine and improve the incentive mechanism for total factor productivity, and not just let macroeconomic policies, i.e. monetary and fiscal policies, be used to promote economic growth, but let them return to solving cyclical demand-side problems in the future, and constantly improve the total factor productivity of enterprises; thirdly, for Chinese enterprises Thirdly, for Chinese enterprises, corporate political affiliation is not just a means to access government resources, but an effective way to enhance the visualization of supply chain information and efficient development. In concrete practice, enterprises should grasp the interaction between the government and the market, attach great importance to corporate social responsibility and credibility, and strive to improve the transparency of their own supply chain information.

References

[1] Chen Ke. (2020). The impact of supply chain information disclosure on firm value (Master's thesis, Nanjing University).

https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202101&filename=1021501140.nh.

[2] Gao Di. (2019). Research on the impact of supply chain characteristics of listed companies on investment and financing efficiency and firm performance (Doctoral dissertation, Southwest University of Finance and Economics).

https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFDLAST2021&filename=1021734075.nh.

[3] Yu Wei, Wang Miaojun & Jin Xiangrong. (2012). Political affiliation and financing constraints: Information effects versus resource effects. Economic Studies (09), 125-139.

[4] Yu, Minggui & Pan, Hongbo. (2008). Political relations, institutional environment and bank lending by private enterprises. Management World (08), 9-21+39+187.

doi:10.19744/j.cnki.11-1235/f.2008.08.002.

[5] Lin, Yun. (2022). Research on the impact of executive political affiliation on firm performance (Master's thesis, Xijing College).

https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFDTEMP&filename=1023413719.nh.

[6] Yi, Zhihong, Jiang, Fuxiu & Qin, Yihu. (2010). Product market competition, corporate governance and information disclosure quality. Management World (01), 133-141+161+188.

doi:10.19744/j.cnki.11-1235/f.2010.01.015.

[7] Jin Xiaonan. (2021). Politically connected executives, compensation incentives and corporate disclosure quality in private enterprises (Master's thesis, Yunnan University of Finance and Economics).

https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202102&filename=1021614958.nh

[8] Zhang Yanzhao. (2021). Research on the impact of customer accounting information quality on supplier investment efficiency (Doctoral dissertation, Northeast University of Finance and Economics).

https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFDLAST2023&filename=1022059391.nh

[9] Peng Xuan & Wang Xiongyuan. (2016). Does customer information disclosure reduce the risk of corporate share price collapse. Journal of Shanxi University of Finance and Economics (05), 69-79+89.

doi:10.13781/j.cnki.1007-9556.2016.05.007.

[10] Han Pei Pei. (2018). Private entrepreneurial characteristics, political affiliation and corporate risk-taking (Doctoral dissertation, Liaoning University).

https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CDFDLAST2020&filename=1020718416.nh

[11] Wang Xiaotian. (2021). An empirical analysis of political affiliation and innovation performance of resource-based enterprises (Master's thesis, Shanxi University of Finance and Economics).

https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202102&filename=1021058698.nh

[12] Xiong Jiyu. (2019). Research on political affiliation, media attention and violation behavior of listed companies (Master's thesis, Jiangxi University of Finance and Economics).

https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202001&filename=1019176840.nh.

[13] Wang Kemin, Wang Huajie, Li Dongdong & Dai Xinyun. (2018). Annual report text information complexity and managerial self-interest - Evidence from Chinese listed companies. Management World (12), 120-132+194.

doi:10.19744/j.cnki.11-1235/f.2018.0038.

[14] She, Chip. (2021). A study on the impact of management power on the quality of information disclosure - based on audit quality perspective. Contemporary Accounting (24), 91-93.

[15] Yu Kai. (2018). Exploring the supply chain information disclosure strategy of Chinese enterprises in the context of the era of transparency. Modern Management Science (03), 118-120.

[16] Gong Xiaoyun,Quan Xiaofeng & Liu Xipeng. (2022). Supply chain transparency and corporate tax avoidance. China Industrial Economics (11), 155-173.

doi:10.19581/j.cnki.ciejournal.2022.11.008.

[17] Lu, Tong & Dang, Yin. (2014). Corporate governance and technological innovation: a sub-industry comparison. Economic Research (06), 115-128.

[18] Fan,J.P.H,Wong,T.J.,Zhang,T. Politically-connected CEOs, Corporate Governance and Post-IPO Performance of China's Partially Privatized Firms[J].Journal of Financial Economics, 2007, (2):343-364.

[19] Krueger,A.The Political Economy of the Rent-SeekingSociety [J].American Economic Review,1974,64:291-303.

[20] Burt Ronald S.,Opper Sonja. Political Connection and Disconnection: Still a Success Factor for Chinese Entrepreneurs [J]. Entrepreneurship Theory and Practice, 2020, 44(6).

[21] Park SeHyun. Political connection and CSR: Evidence from Korea[J]. Business Ethics, the Environment & Responsibility, 2022,31(4).