The Impact of Common Institutional Ownership on Financialization in Non-Financial Enterprise: Exacerbation or Inhibition?

Zihao Ning[a,†], Pengju Zheng[a] and Zhibo Xu[a]

[a]*Solbridge International School of Business, Woosong University, Daejeon 34613, Republic of Korea*

ARTICLE INFO

Keywords:
Common institutional ownership
Enterprise financialization
Information asymmetry
Financing constraints
JEL: G11; G32; G34

ABSTRACT

This paper proposes that common institutional ownership positively affects the non-financial firm financialization by using data from Chinese listed firms from 2007 to 2022. The findings reveal that information asymmetry and financial constraints emerge as significant transmission mechanisms between common institutional ownership and firm financialization. Moreover, this positive relationship is more pronounced in state-owned enterprises, firms audited by non-Big 4 auditors, and those facing weaker market competition.

1. Introduction

Common institutional ownership (henceforth, CIO) occurs when institutional investors hold overlapping stakes in multiple firms within the same industry. By the end of 2022, CIO affected nearly 31% of listed firms in China, compared to a global average of approximately 30% (Wang et al., 2024a). Given the widespread prevalence of CIO, it is not surprising that it has inspired extensive research. Some studies examine the benefit of CIO on standardized corporate operating behaviors (Ramalingegowda et al., 2021), managerial opportunism (He et al., 2019; Park et al., 2019), and innovation efficiency (Li et al., 2023). However, another strand of literature demonstrates that CIO can lead to anti-competitive effects (Azar et al., 2018), exacerbate market monopolization (He and Huang, 2017), increase information asymmetry (Hansen and Lott, 1996; Gilo et al., 2006), and result in conspiracy tort (Chen et al., 2021). While existing research highlights the mixed impact of CIO on business decision-making, its effect on enterprise financialization remains unexplored.

Enterprise financialization, typically characterized by active participation in financial market investments, has become a common financing model (Yang et al., 2020). However, since the 2008 global financial crisis, market demand has declined. This, coupled with China's economic transformation, has led to outdated overcapacity, further compressing the profits of entity enterprises. Consequently, Chinese firms have shown a clear trend towards financialization.[1]

Financial investments offer the potential for significant profits and rapid returns. This can help businesses improve their short-term performance and somewhat reduce financial expenses (Demir, 2009; Su and Liu, 2021). While not all financialization investments are bad, substantial evidence suggests they crowd out firms' primary operations (Zheng et al., 2024), inhibit corporate innovation (Seo et al., 2012), reduce total factor productivity (Lyu et al., 2023), and result in industrial hollowing (Zheng et al., 2024). Ignoring this phenomenon may lead to instability in the real sector. Therefore, constraining non-financial firm financialization has become crucial for safeguarding the real economy and enhancing capital market resource allocation. Our study extends the existing literature on financialization determinants by incorporating the role of CIO.

How might CIO impact financialization? Based on the synergistic governance theory, CIO can aggregate industry expertise and achieve economies of scale by owning equity blocks in multiple firms within the same

[†]Corresponding author
nzh950721@gmail.com (Z. Ning); zhengpj008@126.com (P. Zheng)

[1]According to CSMAR database, in 2022, the total financial assets held by China's A-share listed companies exceeded 1.69 trillion yuan, representing an approximately eightfold increase since 2007.

industry. This aggregation facilitates the development of sound management and investment practices in enterprises, helping them identify and inhibit detrimental financialization.

On the contrary, the conspiracy tort hypothesis posits that CIO may reduce firms' incentives to compete and exacerbate adverse selection problems for controlling shareholders. This could lead to higher levels of financialization. Clearly, these competing viewpoints underscore the need for empirical investigation.

This paper tests these contrasting perspectives using data from Chinese A-share listed firms over the period 2007 - 2022, revealing a significantly positive relationship between CIO and enterprise financialization. Our analysis identifies information asymmetry and financing constraints as the primary mechanisms driving this relationship. Furthermore, this effect is more pronounced in state-owned enterprises, firms with non-Big 4 auditors, and those facing weaker market competition.

Our contributions are threefold. First, we expand the literature evaluating the economic consequences of CIO, particularly that documenting the theory of conspiracy tort. While previous studies have examined CIO impact on product market competition (Kini et al., 2023), credit fraud (Sun, 2024), and earnings management (Ramalingegowda et al., 2021), there is a paucity of literature regarding its relationship with enterprise financialization. Second, we enrich the research on determinants of enterprise financialization. Whereas the existing literature has focused on economic policy uncertainty (Zhao and Su, 2022), corporate ESG performance (Huang and Li, 2024), and CEO background (Wang et al., 2024b). By taking CIO as the entry point, we provide more decisive evidence regarding financialization. Third, on a practical level, we reveal that information asymmetry and financing constraints are potential channels through which CIO affects enterprise financialization. This contributes to a deeper understanding of the impact CIO and provides policymakers with new theoretical foundations.

2. Hypothesis development

Theoretically, there are two competing views on the effect of CIO on enterprise financialization.

One view, based on the conspiracy tort theory, argues that CIO are concerned with maximizing returns on their investment portfolios rather than the value of investments, which hinders the flow of governance information to the market, leading to the failure of monitoring mechanisms (Hansen and Lott, 1996; He and Huang, 2017; Azar et al., 2018). Furthermore, CIO is typically able to exert influence over the appointment and dismissal of relevant managers to a certain extent (Koch et al., 2021). Consequently, management may be compelled to alter capital allocation strategies to align with CIO's investment objectives. This potential effect may lead to management opportunism, intensify agency costs, and ultimately accelerate the process of enterprise financialization.

Based on the above discussions, we posit that CIO can exacerbate enterprise financialization through both information asymmetry and financing constraints. Firstly, the information asymmetry mechanism refers to how CIO intervention may lead to collusion with corporate management, consequently increasing information asymmetry within enterprises. This implies a reduction in monitoring of risky investments (Cheng et al., 2022; Liu and He, 2023). Hence, financial assets offering higher short-term returns and strong liquidity may become investment targets for CIO and management in order to achieve a synergy of interests (Xie et al., 2022).

Secondly, the aggregation effect of industry resources brought by CIO can effectively broaden a company's financing channels, thus reducing corporate financing constraints (Brooks et al., 2018). In light of investment substitution theory and the profit-maximizing characteristics of CIO, the managerial opportunism caused by reduced financial pressure may increase financialization (Azar et al., 2018).

The other view, according to synergy governance theory, suggests that CIO can leverage their information and resource advantages to exert collaborative governance effects on various aspects of a company, thereby inhibiting enterprises financialization. Specifically, as important bridges connecting different companies, CIO tend to internalize positive governance externalities. That is, they enhance mutual cooperation by establishing network connections and strategic alliances among companies, improving the quality of information disclosure within the investment portfolio (Park et al., 2019; He et al., 2019). This information sharing provides an incentive for identifying and restraining management's excessive allocation of financial assets, thus improving companies to focus on long-term development and value investing (Zhu et al., 2024).

Therefore, we propose two competing hypotheses as follows.

H1a: *The CIO can exacerbate enterprise financialization.*

H1b: *The CIO can inhibit enterprise financialization.*

3. Data and methodology

Our analysis focuses on Chinese A-share listed companies from 2007 to 2022, with data sourced from the CSMAR and CNRDS databases. In line with existing research, we excluded data from the financial industries and removed ST or *ST firms during the sample period. Additionally, we dropped missing variables and winsorized continuous variables at the 1% level, resulting in a final sample of 43,155 unbalanced panel observations.

To explore the correlation and underlying mechanisms between CIO and the financialization of non-financial enterprises, we use the following regression model:

$$Fio_{i,t} = \alpha_0 + \alpha_1 Cio_{i,t} + \alpha_2 Controls_{i,t} + \mu_c + \gamma_t + \varepsilon_{cit} \tag{1}$$

$$Mediating_{i,t} = \beta_0 + \beta_1 Ciodum_{i,t} + \beta_2 Controls_{i,t} + \mu_c + \gamma_t + \varepsilon_{cit} \tag{2}$$

$$Fio_{i,t} = \theta_0 + \theta_1 Ciodum_{i,t} + \theta_2 Mediating_{i,t} + \theta_3 Controls_{i,t} + \mu_c + \gamma_t + \varepsilon_{cit} \tag{3}$$

Where i, t, and c represent the enterprise, year, and industry, respectively. $Fio_{i,t}$ is the core dependent variable in this paper, which represents the degree of financialization of the enterprises (Zhang and Zheng, 2024). $Cio_{i,t}$ is the proxy variable for CIO of listed companies, measured by $Ciodum$, $Numcio$, and $Ratiocio$, based on research by He and Huang (2017) and Li and Liu (2023). $Mediating_{i,t}$ represents the mediating variables, while $Controls_{i,t}$ includes control variables that may influence enterprise financialization. μ_c represents industry fixed effects, γ_t represents time fixed effects, and ε_{cit} represents the random disturbance term. The definition of the variables involved in this paper are presented in Appendix A, Table A.1.

4. Empirical results

4.1. Descriptive statistics

Table 1 presents descriptive statistics for the variables used in this study. The dependent variable, Fio, has a mean value of 0.0765 and a standard deviation of 0.1084, indicating significant variations in financialization levels across companies. Additionally, 10.3% of sample firms exhibit CIO, consistent with the findings of Wang et al. (2024a).

4.2. Baseline results

Table 2 presents the results of model (1). Columns (1) - (3) examine only CIO and financialization, while columns (4) - (6) considers further control variables. The coefficients of the three primary independent variables are all significantly positive. Adding further control variables only marginally changes the effect size, indicating that CIO exacerbate the financialization of non-financial enterprises, as we hypothesized in H1a.

4.3. Robustness checks

This paper introduces the following robustness checks: (1) Replacement of Dependent Variable. Following the approach of Zhang and Zheng (2024), we use the natural logarithm of financial assets ($Lnfin$) as a proxy for financialization. (2) Inclusion of Lagged Variables. Considering that institutional investors may decide whether to hold shares based on the firm's disclosed financialization status, we followed the research of Li and Liu (2023) and tested the inclusion of lagged independent variables. (3) Subsample Regression. Given that the financial crisis might affect the results, we exclude data from 2008 to 2009. The regression results are shown in Table 3, which confirms our baseline evidence.

Table 1
Descriptive statistics.

Variable	N	SD	Mean	Min	Median	Max
Fio	43,155	0.1084	0.0765	0.0000	0.0325	0.5520
Ciodum	43,155	0.3047	0.1036	0.0000	0.0000	1.0000
Numcio	43,155	0.1902	0.0616	0.0000	0.0000	0.8109
Ratiocio	43,155	7.8356	2.0938	0.0000	0.0000	48.1425
Size	43,155	1.6445	20.9921	17.5253	20.8895	25.5900
Age	43,155	0.3977	2.7822	1.3863	2.8332	3.4965
Roa	43,155	0.0656	0.0385	-0.2612	0.0397	0.2066
Growth	43,155	0.3788	0.1673	-0.5559	0.1107	2.2761
Invest	43,155	1.5314	0.3380	-1.0986	0.0329	12.5962
Lev	43,155	0.1397	0.2506	0.0377	0.2230	0.6798
Agency	43,155	0.3226	0.1467	-0.5402	0.1020	1.6600
Indepen	43,155	5.3299	37.4521	30.0000	33.3300	57.1400
Asym	43,155	1.6076	18.7362	14.4426	18.7235	22.8610
SA	43,155	0.2668	-3.7754	-4.4274	-3.7758	-3.0807
SOE	43,155	0.4762	0.3475	0.0000	0.0000	1.0000
Big4	43,155	0.2315	0.0568	0.0000	0.0000	1.0000
HHI	43,155	0.0881	0.0738	0.0107	0.0450	0.5398

Table 2
Results of the baseline regression.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	Fio	Fio	Fio	Fio	Fio	Fio
Ciodum	0.0032*			0.0053***		
	(0.0016)			(0.0017)		
Numcio		0.0047*			0.0077***	
		(0.0026)			(0.0027)	
Ratiocio			0.0002***			0.0003***
			(0.0001)			(0.0001)
Size				-0.0002	-0.0001	-0.0002
				(0.0004)	(0.0004)	(0.0004)
Age				0.0347***	0.0347***	0.0346***
				(0.0015)	(0.0015)	(0.0015)
Roa				0.0266***	0.0268***	0.0269***
				(0.0091)	(0.0091)	(0.0091)
Growth				-0.0120***	-0.0120***	-0.0119***
				(0.0018)	(0.0018)	(0.0018)
Invest				-0.0053***	-0.0053***	-0.0053***
				(0.0002)	(0.0002)	(0.0002)
Lev				-0.1111***	-0.1111***	-0.1110***
				(0.0047)	(0.0047)	(0.0047)
Agency				-0.0125***	-0.0125***	-0.0124***
				(0.0020)	(0.0020)	(0.0020)
Indepen				0.0002**	0.0002**	0.0002**
				(0.0001)	(0.0001)	(0.0001)
Constant	0.0762***	0.0762***	0.0760***	0.0081	0.0078	0.0100
	(0.0005)	(0.0005)	(0.0005)	(0.0096)	(0.0096)	(0.0096)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
N	43155	43155	43155	43155	43155	43155
adj. R^2	0.1005	0.1005	0.1007	0.1372	0.1372	0.1374

Notes: *,**, and *** denote significance at 10%, 5%, and 1% significance levels, respectively. Year FE means time effect, and Industry FE means industry effect. The numbers in the parenthesis correspond to robust standard errors are clustered by firm. (This also applies to the tables below).

Table 3
Results of robust checks.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Replace the dependent variable			Adding lagged variables			Subsample regression		
	Lnfin	Lnfin	Lnfin	Fio	Fio	Fio	Fio	Fio	Fio
Ciodum	0.3674***						0.0043**		
	(0.0743)						(0.0017)		
Numcio		0.5598***						0.0068**	
		(0.1121)						(0.0028)	
Ratiocio			0.0120***						0.0003***
			(0.0026)						(0.0001)
L.Ciodum				0.0043**					
				(0.0018)					
L.Numcio					0.0069**				
					(0.0029)				
L.Ratiocio						0.0003***			
						(0.0001)			
Constant	24.2004***	24.2050***	24.2785***	0.0265***	0.0266***	0.0293***	0.0136	0.0137	0.0159
	(0.5114)	(0.5117)	(0.5090)	(0.0103)	(0.0103)	(0.0103)	(0.0100)	(0.0100)	(0.0100)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	43155	43155	43155	37586	37586	37586	40315	40315	40315
adj. R^2	0.2528	0.2528	0.2527	0.1443	0.1443	0.1445	0.1367	0.1367	0.1369

Notes: This table reports the results of robustness checks. Controls represents a set of control variables, identical to those used in table 2.

4.4. Endogeneity

Institutional investors often have specific investment preferences, which may lead to a situation where their active shareholding is a result of high corporate financialization rather than its cause. This scenario could potentially introduce reverse causality and sample selection bias.

First, we employ the Heckman two-stage method to address potential sample selection bias. A Probit model is employed to calculate the Inverse Mills Ratio (IMR), which is then incorporated as a control variable in Model (1) for regression analysis. Column (1) of Table 4 showing a significant coefficient for IMR, which suggests the presence of sample selection bias. Notably, the coefficient for $Ciodum$ remains significantly positive, confirming the robustness of our main findings.

Second, we also performed a PSM-OLS test. Companies with common institutional ownership were designated as the treatment group, while previously used control variables served as matching variables. We employed a one-to-one nearest neighbor matching method to identify the control group. Column (2) of Table 4 presents these results, showing a significant and positive average treatment effect on the treated (ATT). The coefficient of $Ciodum$ retains the same interpretation as in the main regression.

Finally, we used the firms' membership in the CSI 500 Index as an instrumental variable, employing two-stage least squares (2SLS) estimation. This instrument was selected because the CSI 500 Index, being size-weighted based on market capitalization, is unrelated to firms' financialization scale. However, institutional investors may consider a company's inclusion in the CSI 500 Index when deciding on stock holdings (Zhu et al., 2024). Columns (3) and (4) of Table 4 report the results of this instrumental variable method. These findings align with those observed in our baseline regression.

4.5. Underlying transmission mechanisms

4.5.1. Information asymmetry

Drawing from Kim and Zhang (2014), we use the degree of earnings management in firms as a proxy for information asymmetry ($Asym$). Greater earnings management implies higher information asymmetry within the firm. As shown in Table 5, the regression coefficients of $Ciodum$ are all significantly positive at the 1% level in columns (1) and (2), demonstrating that CIO exacerbates information asymmetry in firms, and $Asym$ plays a partial mediating role.

Table 4
Results of endogeneity tests.

Variables	(1)	(2)	(3)	(4)
	Heckman test	PSM-OLS	IV-First stage	IV-Second stage
	Fio	Fio	Ciodum	Fio
Ciodum	0.0051***	0.0053***		0.2890***
	(0.0017)	(0.0017)		(0.0836)
iv_In500			-0.0166***	
			(0.0028)	
IMR	-0.0714***			
	(0.0023)			
ATT		0.0857***		
		(0.0025)		
Cragg-Donald Wald F statistic			27.795	
LM statistic(*P-value*)			34.352	
			(0.0000)	
Constant	0.1138***	-14.6793***	-1.091***	0.3316***
	(0.0116)	(0.27289)	(0.0311)	(0.0966)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
N	43115	43115	43,115	43,115
adj. R^2	0.1432	0.1182	0.1437	0.4010

Notes: This table reports the results of endogeneity tests. Controls represents a set of control variables, identical to those used in table 2.

4.5.2. Financing constraints

We also examine the financing constraints channel. Following Hadlock and Pierce (2010), we use the SA index to measure firms' financial constraints. This indicator exhibits negative value, with a larger coefficient indicating smaller financing constraints. Columns (3) and (4) of Table 5 present the results. The coefficient of $Ciodum$ on the SA index is 0.0521, which is significantly positive at the 1% level, while the SA index is significantly negative at the 1%, validating this potential channel.

Table 5
Result of mechanism analysis.

Variables	(1)	(2)	(3)	(4)
	Information Asymmetry		Financing constraints	
	Asym	Fio	SA	Fio
Ciodum	0.1173***	0.0050***	0.0521***	0.0061***
	(0.0208)	(0.0017)	(0.0026)	(0.0017)
Asym		0.0020***		
		(0.0004)		
SA				-0.0149***
				(0.0043)
Sobel Z		3.663***		-3.390***
Constant	4.3823***	0.0105	-2.1355***	-0.0249*
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
N	43155	43155	43155	43155
adj. R^2	0.4715	0.1435	0.8217	0.1378

Notes: This table reports the results of mechanism analysis. Controls represents a set of control variables, identical to those used in table 2.

4.6. Cross-sectional heterogeneity

We conduct cross-sectional tests utilizing variations in property rights nature (SOE), external supervision ($Big4$), and market competition (HHI) to examine heterogeneous effects of these potentially confounding variables.

In columns (1) - (2) of Table 6, the coefficients of $Ciodum * SOE$ are all significantly positive, indicating that state-owned enterprises experienced more significant effects from CIO in financialization. This may be attributed to the higher information opacity of state-owned enterprises, which is more likely to facilitate interest collusion (Zhu et al., 2024). Columns (3) - (4) of Table 6 demonstrate that companies audited by Big4 firms experience a slower acceleration of financialization. This finding suggests that effective external monitoring mitigates the conspiracy tort effects associated with CIO (Yao et al., 2024). Columns (3) and (4) of Table 6 also suggest that the effect of CIO on financialization is more pronounced in weaker competitive markets. This finding is consistent with Chen et al. (2021), implying that CIO decreases competition within an industry, thereby promoting financialization activities.

Table 6
Cross-sectional heterogeneity analysis.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	Nature of property rights		External supervision		Market competition	
	Fio	Fio	Fio	Fio	Fio	Fio
CioDum*SOE	0.0070**	0.0065**				
	(0.0032)	(0.0031)				
SOE	0.0066***	0.0081***				
	(0.0012)	(0.0013)				
CioDum*Big4			-0.0145***	-0.0111**		
			(0.0044)	(0.0044)		
Big4			0.0093***	0.0134***		
			(0.0030)	(0.0031)		
CioDum*HHI					-0.0065**	-0.0065**
					(0.0031)	(0.0031)
HHI					-0.0010	-0.0009
					(0.0011)	(0.0011)
Ciodum	-0.0028	0.0000	0.0046**	0.0061***	0.0070***	0.0091***
	(0.0023)	(0.0023)	(0.0018)	(0.0019)	(0.0025)	(0.0025)
Controls	No	Yes	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.0741***	0.0210**	0.0758***	0.0156	0.0768***	0.0087
	(0.0007)	(0.0100)	(0.0005)	(0.0100)	(0.0008)	(0.0096)
N	43155	43155	43155	43155	43155	43155
adj. R^2	0.1013	0.1383	0.1008	0.1377	0.1006	0.1373

Notes: This table reports the results of heterogeneity analysis. Controls represents a set of control variables, identical to those used in table 2.

5. Conclusion

This study examines the relationship between CIO and non-financial firms' financialization, combining the conspiracy fraud hypothesis and investment substitution theory. Our findings reveal that CIO increase firms' level of financialization, with results remaining significant after a series of robustness checks. Mechanism analyses identified information asymmetry and financing constraints as underlying channels through which this effect occurs. Furthermore, we document that the positive relationship is more pronounced in state-owned enterprises, firms with non-Big 4 auditors, and under weaker market competition.

Based on these findings, we propose the following recommendations: (1) Regulatory authorities should strengthen supervision of CIOs to curb their potential market misconduct. (2) Governments should increase support for the real economy and encourage non-financial firms to focus on their core businesses.

Acknowledgments

We are grateful to Laura Ballester (Editor-in-Chief) and an anonymous referee for their helpful comments and discussions, which improved the quality of our paper considerably. Any remaining errors are ours.

Appendix A. Variable definitions

Table A.1
Variables definitions and measurement.

Variables	Definitions
Fio	Ratio of financial assets. The ratio of the combined value of trading financial assets, derivative financial assets, loans and advances issued, available for sale financial assets, held to maturity financial assets, long-term equity investments, and investment real estate to total assets.
Lnfin	Financial asset size. The natural logarithm of financial assets.
Ciodum	Whether there are common institutional ownership. If there are common institutional investors holding shares in any quarter of the year (Holding no less than 5% of the shares in two companies within a certain industry simultaneously), the value is 1; otherwise, it is 0.
Numcio	Number of common institutional ownership. The natural logarithm of the number of common institutional ownership plus 1.
Ratiocio	The ratio of common institutional ownership shareholding. The ratio of the number of shares held by common institutional ownership to the total number of shares
Size	Firm scale. The natural logarithm of total assets.
Age	Firm age. The natural logarithm of the number of years since the firm went public plus 1.
Roa	Firm performance. The ratio of net profit to total assets.
Growth	Revenue growth rate. The ratio of the change in operating income from the previous period to the previous operating income.
Invest	Return on investment. The ratio of investment returns to long-term equity investments, held to maturity investments, trading financial assets, available for sale financial assets, and derivative financial assets.
Lev	Firm leverage. The ratio of total liabilities to total assets.
Agency	Agency cost. The ratio of management expense growth rate to management expense divided by current revenue.
Indepen	Ratio of independent directors. The ratio of independent directors divided by the total number of directors.
Asym	Information asymmetries. Accrual-based earnings management, estimated using the modified Jones model.
SA	Financing constraints. Calculate as $$SA = -0.737 * Size + 0.043 * size^2 - 0.040 * Age$$ The model constructed by Hadlock and Pierce (2010). This index is negatively correlated with the size of corporate financing constraints.
SOE	Nature of property rights indicator. 1 for state-owned firms, 0 for non-state-owned firms.
Big4	Big4 auditors. A dummy variable that equals 1 if the firm hires an international Big 4 accounting firm in year t and 0 otherwise.
HHI	Industry Competition Index. Calculate as $$HHI = \sum_{i}^{N} (X_i/X)^2$$ Where X represents the total industry size, X_i denotes the size of the i enterprise, and N is the number of enterprises in the industry. This index correlates negatively with the level of industry competition. We convert it into a binary variable, assigning 0 to industries above the market average and 1 to those below.

References

Azar, J., Schmalz, M.C., Tecu, I., 2018. Anticompetitive effects of common ownership. The Journal of Finance 73, 1513–1565. doi:https://doi.org/10.1111/jofi.12698.

Brooks, C., Chen, Z., Zeng, Y., 2018. Institutional cross-ownership and corporate strategy: The case of mergers and acquisitions. Journal of Corporate Finance 48, 187–216. doi:https://doi.org/10.1016/j.jcorpfin.2017.11.003.

Chen, Y., Li, Q., Ng, J., Wang, C., 2021. Corporate financing of investment opportunities in a world of institutional cross-ownership. Journal of Corporate Finance 69, 102041. doi:https://doi.org/10.1016/j.jcorpfin.2021.102041.

Cheng, X., Wang, H.H., Wang, X., 2022. Common institutional ownership and corporate social responsibility. Journal of Banking & Finance 136, 106218. doi:https://doi.org/10.1016/j.jbankfin.2021.106218.

Demir, F., 2009. Financial liberalization, private investment and portfolio choice: Financialization of real sectors in emerging markets. Journal of development economics 88, 314–324. doi:https://doi.org/10.1016/j.jdeveco.2008.04.002.
Gilo, D., Moshe, Y., Spiegel, Y., 2006. Partial cross ownership and tacit collusion. The Rand journal of economics 37, 81–99. doi:https://doi.org/10.1111/j.1756-2171.2006.tb00005.x.
Hadlock, C.J., Pierce, J.R., 2010. New Evidence on Measuring Financial Constraints: Moving Beyond the KZ Index. The Review of Financial Studies 23, 1909–1940. doi:https://doi.org/10.1093/rfs/hhq009.
Hansen, R.G., Lott, J.R., 1996. Externalities and corporate objectives in a world with diversified shareholder/consumers. Journal of Financial and Quantitative Analysis 31, 43–68. doi:10.2307/2331386.
He, J.J., Huang, J., 2017. Product Market Competition in a World of Cross-Ownership: Evidence from Institutional Blockholdings. The Review of Financial Studies 30, 2674–2718. doi:10.1093/rfs/hhx028.
He, J.J., Huang, J., Zhao, S., 2019. Internalizing governance externalities: The role of institutional cross-ownership. Journal of Financial Economics 134, 400–418. doi:https://doi.org/10.1016/j.jfineco.2018.07.019.
Huang, Y., Li, S., 2024. Female directors, esg performance and enterprise financialization. Finance Research Letters 62, 105266. doi:https://doi.org/10.1016/j.frl.2024.105266.
Kim, J.B., Zhang, L., 2014. Financial reporting opacity and expected crash risk: Evidence from implied volatility smirks. Contemporary Accounting Research 31, 851–875. doi:https://doi.org/10.1111/1911-3846.12048.
Kini, O., Lee, S., Shen, M., 2023. Common institutional ownership and product market threats. Management Science doi:https://doi.org/10.1287/mnsc.2023.4830.
Koch, A., Panayides, M., Thomas, S., 2021. Common ownership and competition in product markets. Journal of Financial Economics 139, 109–137. doi:https://doi.org/10.1016/j.jfineco.2020.07.007.
Li, J., Liu, L., 2023. Common institutional ownership and corporate innovation: Synergy of interests or grabs of interests. Finance Research Letters 52, 103512. doi:https://doi.org/10.1016/j.frl.2022.103512.
Li, X., Liu, T., Taylor, L.A., 2023. Common ownership and innovation efficiency. Journal of financial economics 147, 475–497. doi:https://doi.org/10.1016/j.jfineco.2022.12.004.
Liu, L., He, J., 2023. Does financialization affect firm'r&d investment? evidence from china. Finance Research Letters 58, 104311. doi:https://doi.org/10.1016/j.frl.2023.104311.
Lyu, Y., Zhang, J., Qing, X., Bai, Y., 2023. The influence of non-financial enterprises' financialization on total factor productivity of enterprises: Promotion or inhibition? International Journal of Finance & Economics doi:https://doi.org/10.1002/ijfe.2912.
Park, J., Sani, J., Shroff, N., White, H., 2019. Disclosure incentives when competing firms have common ownership. Journal of Accounting and Economics 67, 387–415. doi:https://doi.org/10.1016/j.jacceco.2019.02.001.
Ramalingegowda, S., Utke, S., Yu, Y., 2021. Common institutional ownership and earnings management. Contemporary Accounting Research 38, 208–241. doi:https://doi.org/10.1111/1911-3846.12628.
Seo, H.J., Kim, H.S., Kim, Y.C., 2012. Financialization and the slowdown in korean firms' r&d investment. Asian Economic Papers 11, 35–49. doi:https://doi.org/10.1162/ASEP_a_00160.
Su, K., Liu, H., 2021. Financialization of manufacturing companies and corporate innovation: Lessons from an emerging economy. Managerial and Decision Economics 42, 863–875. doi:https://doi.org/10.1002/mde.3278.
Sun, D., 2024. Can common institutional ownership deter corporate fraud? evidence from china. Applied Economics Letters , 1–5doi:https://doi.org/10.1080/13504851.2024.2331680.
Wang, S., Zhang, X., Cebula, R.J., Foley, M., 2024a. Cross-shareholding, managerial capabilities, and strategic risk-taking in enterprises: A game or a win-win? Finance Research Letters 62, 105228. doi:https://doi.org/10.1016/j.frl.2024.105228.
Wang, Z., Zhou, S., Zhou, Y., Yang, H., 2024b. The impact of ceos' early-life experience on the financialization of non-financial firms: Evidence from the great chinese famine. International Journal of Finance & Economics 29, 1609–1626. doi:https://doi.org/10.1002/ijfe.2755.
Xie, Z., Du, J., Wu, Y., 2022. Does financialization of non-financial corporations promote the persistence of innovation: evidence from a-share listed manufacturing corporations in china. Eurasian Business Review 12, 229–250. doi:https://doi.org/10.1007/s40821-021-00193-x.
Yang, B., Pu, Y., Su, Y., 2020. The financialization of chinese commodity markets. Finance Research Letters 34, 101438. doi:https://doi.org/10.1016/j.frl.2020.101438.
Yao, S., Guo, X., Sensoy, A., Goodell, J.W., Cheng, F., 2024. Collusion or governance? common ownership and corporate risk-taking. Corporate Governance: An International Review 32, 645–669. doi:https://doi.org/10.1111/corg.12562.
Zhang, X., Zheng, X., 2024. Does carbon emission trading policy induce financialization of non-financial firms? evidence from china. Energy Economics 131, 107316. doi:https://doi.org/10.1016/j.eneco.2024.107316.
Zhao, Y., Su, K., 2022. Economic policy uncertainty and corporate financialization: Evidence from china. International Review of Financial Analysis 82, 102182. doi:https://doi.org/10.1016/j.irfa.2022.102182.
Zheng, D., Lei, L., Wang, L., Li, X., 2024. Inhibiting or promoting: The impact of corporate social responsibility on corporate financialization. International Review of Economics & Finance 89, 1404–1421. doi:https://doi.org/10.1016/j.iref.2023.08.022.
Zhu, S., Lu, R., Xu, T., Wu, W., Chen, Y., 2024. Can common institutional owners inhibit bad mergers and acquisitions? evidence from china. International Review of Economics & Finance 89, 246–266. doi:https://doi.org/10.1016/j.iref.2023.07.045.