

How Do Firms Use Information Disclosure to Cope with Financing Constraints? Evidence from Earnings Management Using Classification Shifting



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Abstract: This study empirically investigates the impact of financing constraints on earnings management using classification shifting (hereafter, classification shifting) based on a sample of A-share listed companies in China from 2003 to 2024. We find that, in order to alleviate financing constraints, management tends to engage more in classification shifting to smooth profits or enhance reported financial performance. Our study highlights that creditors and other stakeholders should pay close attention to firms' use of classification shifting as a means to cope with financing constraints.

Keywords: financing constraints, earnings management using classification shifting, information disclosure

1. Introduction

Financing constraints refer to the high external financing costs that firms face during the financing process, mainly caused by information asymmetry and agency problems in imperfect capital markets (Fazzari et al., 1988; Kaplan & Zingales, 1997). In addition, government intervention and financial market regulation are also significant factors influencing financing constraints in China (Shi et al., 2023). Financing constraints are widely recognized as a critical barrier to corporate development (Didier et al., 2021). According to the *Report on the Survey of Chinese Entrepreneurs (2021)*, financing constraints are a major obstacle to the growth of Chinese firms, particularly private and small-to-medium enterprises. Furthermore, prior research further confirms that financing constraints significantly affect corporate financial decisions, investment behavior, and innovation activities. For example, financing constraints lead firms to increase cash holdings, reduce investment efficiency, and suppress innovation (Feng et al., 2024; Iammarino et

al., 2009; Li et al., 2021).

However, prior studies have not sufficiently explored how firms use earnings management as a response to financing constraints. So far, only a limited number of studies have examined the effects of financing constraints on accrual and real earnings management (Lin & Li, 2020). However, compared with accrual and real earnings management, earnings management using classification shifting (hereafter, classification shifting) is more difficult to detect (Liao & Yuan, 2017). Therefore, in recent years, firms have increasingly relied on classification shifting rather than accrual or real earnings management (Yu & Feng, 2017). Accordingly, to address a gap in the literature, we empirically examine the impact of financing constraints on classification shifting.

Using data from A-share listed companies in China from 2003 to 2024, we find that, to alleviate financing constraints, management tends to engage more in classification shifting to smooth profits or enhance reported financial performance.

This study makes several contributions. First,

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understanding how firms use earnings management to cope with financing constraints is crucial for protecting creditor interests and maintaining capital market stability. Our findings highlight that creditors and other stakeholders should pay close attention to firms' use of classification shifting as a means to cope with financing constraints.

Second, while previous studies have widely examined the drivers and constraints of classification shifting (Fan et al., 2010; Lu & Bu, 2020; Malikov et al., 2019), they have largely ignored the direct influence of external financing factors. By revealing the effect of financing constraints on classification shifting, this study extends the literature on the determinants of classification shifting.

2. Institutional Background and Hypothesis Development

2.1. Financing constraints

Initially, Fazzari et al. (1988) defined financing constraints as firms' excessive reliance on internal cash flows for investment. However, Kaplan and Zingales (1997) argued that Fazzari et al. (1988) confused active liquidity management with true constraints and advocated defining financing constraints from the perspective of differences in financing costs. Today, financing constraints are commonly defined as the situation where firms face high external financing costs during the financing process, which is caused by a combination of factors such as information asymmetry, institutional environment, and firm-specific characteristics.

Prior studies have explored the economic consequences of financing constraints from several perspectives, including corporate financial decisions and performance, investment behavior and efficiency, and R&D innovation.

In terms of financial decisions and performance, Han and Zhou (2011) find that financing constraints increase corporate liquidity risk, prompting firms to hold more cash. Feng et al. (2024) find that financing constraints limit firms' financial flexibility, thereby affecting their operations and increasing business risk. Furthermore, Hovakimian and Titman (2003) point

out that financing constraints prevent firms from achieving an optimal capital structure, which is detrimental to performance. However, He (2015) argue that financing constraints may prompt managers to improve the efficiency of capital utilization, thereby enhancing managerial effectiveness and improving financial performance.

On corporate investment behavior and efficiency, Myers and Majluf (1984) reveal that higher external financing costs lead to suboptimal investment decisions. Fazzari et al. (1988) demonstrate that financing constraints increase the sensitivity of investment to cash flow, thus reducing the scale of corporate investment. Richardson (2006) also found that financing constraints are a major cause of underinvestment. Similarly, Li et al. (2021) and Zhao et al. (2022), using samples from Chinese firms, confirm the negative effect of financing constraints on both investment expenditure and efficiency.

In terms of R&D innovation, a large body of research suggests that financing constraints hinder firms from securing stable and sufficient funding for innovation, thereby suppressing innovation activities (Canepa & Stoneman, 2008; Iammarino et al., 2009). However, some studies suggest that financing constraints may compel firms to reduce agency costs or opt for lower-risk innovation projects, thereby reducing business risk and ultimately improving innovation performance (Lin et al., 2022).

While prior research has extensively explored how financing constraints influence financial decisions, investment behavior, and innovation, little attention has been paid to how firms use earnings management to cope with financing constraints. Only a few studies have examined the impact of financing constraints on accrual and real earnings management (Lin & Li, 2020). Given that classification shifting is more difficult to detect than accrual or real earnings management (Liao & Yuan, 2017), and that firms are increasingly engaging in classification shifting rather than other types of earnings management (Yu & Feng, 2017), we aim to fill this gap by empirically examining the relationship between financing

constraints and classification shifting.

2.2 Classification shifting

Classification shifting refers to the practice of adjusting the classification of financial statement items—without altering total earnings—to optimize core profitability indicators. Unlike accrual and real earnings management, classification shifting involves "reclassifying" rather than "fabricating" financial information, which makes it more concealed and harder to detect during audits.

The concept of classification shifting was first introduced by McVay (2006). McVay finds that firms tend to shift core expenses into non-recurring items to artificially inflate operating profit. This finding sparked extensive academic interest and laid the foundation for subsequent research.

Prior studies have extensively explored the factors influencing classification shifting and divide these factors into driving factors and constraining factors.

2.2.1 Driving factors of classification shifting

From the perspective of driving factors, firms' motives to engage in classification shifting include both external pressures and internal incentives.

External drivers mainly include earnings benchmarks and investor expectations. Fan et al. (2010) find that classification shifting in the fourth quarter among Chinese listed firms is closely linked to avoiding delisting risk. Haw et al. (2011) further reveal that the likelihood of expense manipulation increases significantly when earnings approach zero or an industry benchmark. Zalata and Roberts (2016), using samples from UK companies, show that managers reclassify selling expenses into special items to meet equity refinancing requirements for return on equity. Fan and Liu (2017) find that firms tend to shift operating costs to selling and administrative expenses to improve core profit. In terms of investor expectations, McVay proposes that classification shifting is used by firms to create an illusion of "sustainable growth." Additionally, classification shifting is more prevalent in the tech sector, where firms may capitalize R&D expenses to maintain high valuations. However, Lu and Bu (2020)

note potential endogeneity problems in studies linking classification shifting to investor expectations, highlighting the need for further investigation.

Internal incentives primarily stem from managerial motivations to protect their compensation or private benefits. Barua et al. (2010) find a significant relationship between classification shifting and executive equity incentives, especially when performance is near the threshold for bonus awards. Haw et al. (2011) also observe that the likelihood of classification shifting increases when executive compensation is tied to net income. Joo and Chamberlain (2017) find that classification shifting rises noticeably in years when equity incentive plans are implemented. Furthermore, Xie et al. (2019) further indicate that managers tend to defer current expenses into non-recurring losses prior to stock option exercise periods.

2.2.2 Constraining factors of classification shifting

From the perspective of constraints, two major restrictions on classification shifting behavior are debt covenant requirements and regulatory rules.

In terms of debt covenants, Fan et al. (2019) show that firms with high financial leverage significantly increase interest capitalization ratios as they approach debt covenant thresholds. Malikov et al. (2019) find that firms with syndicated loans reclassify lease expenses as investing outflows to avoid triggering acceleration clauses.

With regard to regulatory requirements, Fan et al. (2010) documented that Chinese listed companies reclassify expenses as "non-operating expenses" to improve core profit margins—especially in the fourth quarter—indicating a motive to avoid delisting or meet regulatory thresholds. Furthermore, Lu and Bu (2020) find that, to avoid delisting, Chinese firms tend to reclassify expenses to inflate net profit after deducting non-recurring gains and losses.

While prior studies have extensively examined the driving and constraining factors of classification shifting, they have largely ignored the impact of direct external financing factors. To fill this research gap, we focus on the impact of financing constraints on classification shifting.

2.3 Hypothesis development

Financing constraints are a core condition that shapes firms' financial decision-making. Based on the theory of information asymmetry, when the cost of external financing is significantly higher than that of internal capitals, firms are motivated to obtain resources by optimizing financial reporting (Fazzari et al., 1988). Classification shifting essentially exploits the flexibility of accounting standards to manipulate earnings (Healy & Wahlen, 1999). It is highly concealed and incurs lower costs compared to real earnings management (Zang, 2012), making it an effective tool for managers to pursue short-term interests under financing constraints.

Therefore, in order to alleviate financing constraints, managers may engage more in classification shifting to smooth profits or enhance reported financial performance.

Accordingly, we propose the following hypothesis:

Hypothesis a: *Financing constraints positively affect classification shifting.*

On the other hand, signaling theory suggests that persistent financial manipulation impair the quality of information disclosure (Teoh et al., 1998). When firms face financing constraints, managers may enhance financial reporting transparency to improve corporate reputation (Bushman et al., 2004), thereby accumulating reputational capital to reduce future financing costs (Titman & Wessels, 1988). Moreover, creditors may also impose tighter financial covenants to limit managerial discretion in financial reporting (Armstrong et al., 2010).

Therefore, to mitigate future financing constraints, managers may reduce classification shifting to enhance firm reputation and strengthen the trust of external stakeholders.

Accordingly, we also propose the following hypothesis:

Hypothesis b: *Financing constraints negatively affect classification shifting.*

3. Methodology

3.1 Sample selection

We focus on Chinese A-share listed companies, with all of the data being sourced from the China Stock Market and Accounting Research (CSMAR) database. The original sample data were screened for validity as follows: 1) Delete the finance company samples; 2) Delete the ST (special treatment) and PT (particular transfer) company samples; 3) Delete all samples with missing values.

Since data on firms' ownership types is only available from 2003 onward, the starting year of our sample period is set to 2003. Thus, we obtain 35,364 firm-year observations between 2003 and 2024. To mitigate the influence of outliers, we winsorize all of the continuous variables at the 1 % and 99 % levels.

3.2 The measurement of the financing constraints

We measure the level of financing constraints using the firm's external finance index (*WW_Index*) proposed by Whited and Wu (2006). The *WW_Index* is calculated as follows:

$$WW_Index = -0.091 * CF + DivPos + 0.021 * Lev - 0.044 * Size + 0.102 * ISG - 0.035 * SG \quad (1)$$

Where *CF* is the ratio of cash flow from operating activities to total assets; *DivPos* is a dummy variable that equals 1 if the firm pays cash dividends in the current period, and 0 otherwise; *Lev* is the ratio of long-term debt to total assets; *Size* is the natural logarithm of total assets; *SG* represents the firm's sales growth rate, and *ISG* denotes the industry-average sales growth rate.

3.3 The measurement of classification shifting

Following McVay we use unexpected core earnings (*UE_CE*) to measure the extent to which managers inflate core earnings through classification shifting. When managers shift operating expenses to special items that reduce profit, the reported core earnings will exceed the expected core earnings, resulting in unexpected core earnings. A higher value of *UE_CE* indicates a greater degree of classification shifting.

We estimate the following regression model with a minimum of 15 observations per industry per

fiscal year:

$$CE_{i,t} = \beta_0 + \beta_1 CE_{i,t-1} + \beta_2 ATO_{i,t} + \beta_3 Accruals_{i,t-1} + \beta_4 Accruals_{i,t} + \beta_5 \Delta Sales_{i,t} + \beta_6 Neg_ \Delta Sales_{i,t} + \varepsilon_{i,t} \quad (2)$$

where *CE* (core earnings) are calculated as: (Sales – Cost of Goods Sold – Selling and Administrative Expenses + Depreciation and Amortization) / Sales; *Accruals* represent accrual-based earnings; $\Delta Sales$ denotes the change in sales; *Neg_ΔSales* is a dummy variable that equals $\Delta Sales$ when $\Delta Sales < 0$, and 0 otherwise; *ATO* refers to the asset turnover ratio of net operating assets. The

residual from the model is defined as unexpected core earnings (*UE_CE*).

3.4 Control variables

Following Fang et al. (2016), we include the following control variables: the total liabilities divided by total assets (*Lev*), the natural logarithm of total assets (*Size*), cash flow from operations (*CFO*), return on assets (*ROA*), sales growth (*Growth*), ownership concentration (*Top1*), analyst coverage (*Analyst*), state ownership (*SOE*, which equals 1 if firm *i* is a state-owned enterprise, and 0 otherwise), and firm age (*Age*). In addition, we include industry and year fixed effects in the model to control for unobserved heterogeneity across industries and time.

3.5 Model

To test the hypothesis, we establish the multiple regression model below:

$$UE_CE_{i,t} = \beta_0 + \beta_1 WW_Index_{i,t} + \beta_2 Lev_{i,t} + \beta_3 Size_{i,t} + \beta_4 CFO_{i,t} + \beta_5 ROA_{i,t} + \beta_6 Growth_{i,t} + \beta_7 Top1_{i,t} + \beta_8 Analyst_{i,t} + \beta_9 SOE_{i,t} + \beta_{10} Age_{i,t} + Industry Dummies + Year Dummies + \varepsilon_{i,t} \quad (3)$$

4. Empirical results

4.1 Descriptive statistics

Variables	N	Mean	S. D.	Min	P25	Median	P75	Max
UE_CE	35,364	0.003	0.067	-0.207	-0.028	-0.000	0.030	0.255
WW_Index	35,364	-1.000	0.077	-1.223	-1.048	-0.998	-0.948	-0.824
Size	35,364	22.003	1.292	19.388	21.077	21.840	22.746	26.000
Age	35,364	2.730	0.382	1.609	2.485	2.773	2.996	3.434
Lev	35,364	0.476	0.213	0.058	0.316	0.478	0.627	1.060
CFO	35,364	0.044	0.074	-0.186	0.004	0.043	0.086	0.254
ROA	35,364	0.031	0.064	-0.294	0.011	0.032	0.060	0.194
Growth	35,364	0.202	0.498	-0.610	-0.021	0.118	0.293	3.315
Top1	35,364	35.631	15.183	9.270	23.590	33.325	46.210	74.570
SOE	35,364	0.477	0.499	0.000	0.000	0.000	1.000	1.000

Table 1. Descriptive statistics

Table 1 presents the descriptive statistics of the main variables. The results show that the mean and standard deviation of *UE_CE* are 0.003 and 0.067, respectively, indicating considerable variation in classification shifting across firms.

4.2 Baseline regression

Table 2. Baseline regression

Variables	(1) UE_CE	(2) UE_CE
WW_Index	0.057*** (4.472)	0.057*** (3.848)
Size	-0.001 (-0.781)	-0.001 (-0.671)
Age	0.002 (1.340)	0.002 (1.185)
Lev	0.026*** (11.354)	0.026*** (8.260)
CFO	0.230*** (41.386)	0.230*** (30.116)
ROA	0.207*** (29.113)	0.207*** (19.022)
Growth	-0.017*** (-17.965)	-0.017*** (-10.840)
Top1	-0.000*** (-3.198)	-0.000*** (-2.730)
SOE	-0.003*** (-3.185)	-0.003*** (-2.676)
Constant	0.047*** (5.579)	0.047*** (4.657)
Industry FE	Yes	Yes
Year FE	Yes	Yes
Adj_R-square	0.1206	0.1206
F	439.22***	221.00***
Cluster by firm	No	Yes
VIF	1.13-3.64	1.13-3.64
Observations	35,364	35,364

Note: ***, **, and * indicate significance at the 1 %, 5 %, and 10 % levels, respectively, or better.

Columns 1 and 2 of Table 2 present the regression results without and with firm-level clustered robust standard errors, respectively. The results show that the coefficient of *WW_Index* is 0.057 and significant at the 1% level.

The results in Table 2 indicate that, in order to alleviate financing constraints, managers tend to engage in classification shifting to smooth profits or enhance reported financial performance.

4.3 Robustness tests

4.3.1 Firm fixed effects model and 2SLS regression

Table 3. Firm fixed effects model and 2SLS regression

Variables	(1)	(2)	(3)	(4)
	UE_CE	UE_CE	WW_Index	UE_CE
	FE Model	RE Model	First Stage	Second Stage
WW_Index	0.050** (2.367)	0.063*** (4.949)		
Ind_Mean			0.178*** (10.058)	
Pre_WW_Index				0.090*** (2.756)
Constant	0.067*** (3.505)	0.047*** (5.903)	0.230*** (13.598)	0.044*** (2.974)
Control Variables	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	No	No
Adj_R-square	0.1252	0.1233	0.8634	0.1170
F/Wald chi ²	150.63***	3904.74***	6598.18***	1981.97***
Cluster by firm	Yes	Yes	Yes	Yes
Hausman test	chi2=396.42 (P=0.000)		-	-
VIF	1.23-4.10	1.02-3.11	1.13-3.67	1.13-3.67
Observations	35,364	35,364	35,364	35,364

Note: ***, **, and * indicate significance at the 1 %, 5 %, and 10 % levels, respectively, or better.

To further control for the impact of individual heterogeneity on the results, we employ both fixed effects and random effects models that account for firm-level effects. The Hausman test reported in Table 3 indicates that the fixed effects model is more appropriate. The results from the fixed effects model in Column 1 of Table 3 show that the coefficient of *WW_Index* is 0.050 and significant at the 5% level, suggesting that after controlling for firm-specific effects, financing constraints still have a significantly positive impact on classification shifting.

Furthermore, we further address potential endogeneity issues using a two-stage regression. We use the mean WW index of all other firms in the same industry in year *t*, excluding firm *i* (*Ind_Mean*), as an instrumental variable. Firms within the same

industry are likely subject to similar financing environments and credit policies, making *Ind_Mean* highly correlated with the financing constraints faced by firm *i*. However, firm *i*'s classification shifting behavior is not directly affected by the financing constraints of its industry peers. Columns 3 and 4 of Table 3 present the results of the two-stage regression, showing that *Ind_Mean* has a significant positive effect on *WW_Index*, and the predicted value of *WW_Index* (*Pre_WW_Index*) has a significantly positive effect on *UE_CE*. Therefore, the two-stage regression results provide further support that firms facing greater financing constraints are more inclined to engage in classification shifting.

4.3.2 Other robustness tests

Table 4. Other robustness tests

Variables	(1)	(2)	(3)	(4)
	UE_CE	UE_CE	UE_CE	UE_CE
	2009≤Year≤2024	Alternative measures of financing constraints		
WW_Index	0.050*** (3.629)			
FC_Index		0.004** (2.131)		
KZ_Index			0.002*** (5.384)	
SA_Index				0.010*** (3.411)
Constant	0.027*** (3.032)	-0.044*** (-2.607)	-0.041*** (-4.034)	-0.053*** (-4.101)
Control Variables	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj_R-square	0.1004	0.1384	0.1395	0.1388
F	284.40***	250.52***	250.73***	250.31***
Cluster by firm	Yes	Yes	Yes	Yes
VIF	1.22-3.83	1.13-3.64	1.13-3.64	1.13-3.64
Observations	29,003	35,364	35,364	35,364

Note: ***, **, and * indicate significance at the 1 %, 5 %, and 10 % levels, respectively, or better.

To control for the impact of the 2008 global financial crisis on the financing environment, creditors' lending decisions, and corporate financing behavior, we re-examine the hypothesis using data from 2009 onward. Column 1 of Table 4 presents the regression results based on the 2009–2024 sample period, showing that the coefficient of *WW_Index* is 0.050 and significant at the 1% level, indicating a significant positive relationship between financing constraints and classification shifting.

In addition, Columns 2 to 4 of Table 4 report the results using alternative measures of financing constraints, namely the *FC_Index*, *KZ_Index*, and *SA_Index*. The results show that the coefficient of *FC_Index* is 0.004 and significant at the 5% level; the coefficient of *KZ_Index* is 0.002 and significant at the 1% level; and the coefficient of *SA_Index* is

0.010 and significant at the 1% level. These results suggest that firms facing higher financing constraints are more likely to engage in classification shifting.

5. Conclusions

This paper performs an empirical study on the impact of financing constraints on classification shifting, using a sample of A-share listed companies in China from 2003 to 2024. We find that, in order to alleviate financing constraints, managers tend to engage more in classification shifting to smooth profits or enhance reported financial performance.

Understanding how firms use earnings management to cope with financing constraints is of great importance for protecting creditors' interests and maintaining the stability of capital markets. By revealing the relationship between financing constraints and classification shifting, our study

highlights that creditors and other stakeholders should pay close attention to firms' use of classification shifting as a means to cope with financing constraints.

Acknowledgement

This research was funded by: Research Start-up Fund for High-level Talents of Taizhou University (Grant No. TZXYQD2023006/A)

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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How to Cite: Li, K., Wang, Y., Chen, F., Hu, R. & Tang, K. (2025). How Do Firms Use Information Disclosure to Cope with Financing Constraints? Evidence from Earnings Management Using Classification Shifting. *Journal of Global Humanities and Social Sciences*, 6(6), 235-244
<https://doi.org/10.61360/BoniGHSS252018740602>