Stock Market Liberalization and Earnings Management

-- Evidence from the Shanghai-Hong Kong Stock Connect

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Abstract. Using the Shanghai-Hong Kong Stock Connect (SHHKConnect) as an exogenous shock, this paper investigates the impact of stock market liberalization on earnings management in China. By employing the propensity score matching difference-in-difference (PSM-DID) method, we find that the implementation of the SHHKConnect could lower the extent of earnings management for connected firms. The robustness check is conducted and valid. Our study contributes to a deeper understanding of the economic consequences of stock market liberalization and thereby providing implications for policymakers.

Keywords: Shanghai-Hong Kong Stock Connect; Earnings Management; PSM-DID.

1. Introduction

Recently, there have been several instances of accounting scandals and failures in corporate governance. Consequently, earnings quality has become a long-standing subject of debate in both policy as well as academic circles. The issue of managers' incentives to manipulate financial statements, commonly referred to as earnings management, has been extensively studied (Healy and James, 1999; Cohen and Zarowin, 2010; Toms, 2019). While that prior research has mostly focused on the measures of earnings management at the consolidated financial statement level, this study examines the role of stock market liberation on earnings management especially discretionary accrual decisions.

In fact, it has been a major policy focus in numerous emerging countries implementing stock market liberalization to attract foreign investment (Levine and Sara, 1998; Henry, 2000; Moshirian et al., 2021; Peng et al., 2021). On the one hand, some studies have found that stock market liberalization can restrain overinvestment (Peng et al., 2021), reduce the cost of equity capital (Henry, 2000), and exhibit a higher level of innovation output (Moshirian et al., 2021). On the other hand, other studies have suggested that it can also raise the risk of market volatility and has instead made the agency problem even worse (Levine and Sara, 1998). However, the question of how stock market liberalization affects earnings management remains largely unanswered.

Our study tries to deal with this question by evaluating the impact of the recent stock market liberalization reforms in China. Since the 2000s, China has accelerated the process of stock market liberalization. In 2003, the Chinese government launched the Qualified Foreign Institutional Investor (QFII) program, which allows foreign investors to buy Chinese stocks and bonds. In 2011, the RMB Qualified Foreign Institutional Investor (RQFII) program was introduced to enable foreign investors to use offshore RMB funds to invest in China's domestic markets. Furthermore, on November 17, 2014, the Chinese government made a decision to launch the SHHKConnect. This program allows investors in Hong Kong and mainland China to trade selected stocks listed on each other's exchange through designated brokers, which provides greater access for international investors to China's stock market and also gives mainland Chinese investors access to a wider range of investment opportunities.

2. Theory and Hypothesis

Theoretically, the SHHKConnect may affect earning management behaviors in several ways. First, foreign investors from developed markets may have an advantage in processing and interpreting

global information (Grinblatt and Keloharju, 2000). They can bring a different perspective and greater scrutiny to the companies they invest in, which can help uncover potential problems and encourage management to act in the best interest of all shareholders. Besides, foreign investors may have more experience with legal and regulatory frameworks that can help protect their interests and ensure that companies are held accountable for their actions (Cheng et al., 2010). Furthermore, foreign investors usually adhere to the value investing strategy. By focusing on the underlying value of a company and its potential for long-term growth, value investors can encourage companies to make decisions that are in the best interest of shareholders rather than just short-term gains for management (Piotroski, 2000). This can lead to better corporate governance and a more effective management team. As a result, after the opening of the stock market, a good information environment and effective supervision mechanisms together play an effective role in alleviating the principal-agent conflicts within enterprises and restraining the incentive for earnings management. Thus, we introduce a hypothesis as follows:

H1. After the implementation of SHHKConnect, connected firms tend to experience a lower extent of earnings management.

3. Data and Research Design

3.1 Sample and Data

Since SHHKConnect was officially implemented in 2014, we collected financial information from the CSMAR database for the period from 2011 to 2020. We exclude financial firms, firms specially treated, firms issuing H shares or B shares, firms included in the Shenzhen-Hong Kong Stock Connect Program, and firms with missing control variables. We also delete firms that were included or excluded from SHHKConnect after November 17, 2014. The final sample includes 10,490 year-stock observations covering 1,631 individual firms.

Descriptive analysis was conducted on all factors involved in the study. As shown in Table 1, The sample includes 1,631 listed firms with a total of 10,490 observations. The mean of *TREAT* is 0.213, which means the firms account for 21.3%. The mean of *POST* is 0.783, indicating that the sample hare after the implementation of SHHKConnect is 78.3%.

Table 1. Descriptive statistics

Variables	N	Mean	P50	Sd	Min	Max
DA	10490	0.114	0.0910	0.122	0	0.960
TREAT	10490	0.213	0	0.409	0	1
POST	10490	0.783	1	0.412	0	1
SIZE	10490	21.86	21.63	1.291	19.52	26.40
LEV	10490	0.427	0.416	0.209	0.0310	0.925
ROE	10490	0.0440	0.0590	0.140	-1.072	0.397
GROWTH	10490	0.138	0.0800	0.425	-0.660	4.330
TOP1	10490	0.335	0.311	0.141	0.0830	0.758
AGE	10490	2.153	2.303	0.803	0.693	3.332
TOBINQ	10490	2.039	1.592	1.558	0	17.73
BOARD	10490	2.124	2.197	0.201	1.609	2.708

3.2 Measuring of Earnings Management

Following Dechow et al. (1995) and Yung (2019), we use estimations of discretionary accruals (*DA*) to proxy earnings management. High levels may suggest that a firm is engaging in earnings management practices and that reported earnings may not accurately reflect the firm's true financial performance. The definition of this proxy is listed as follows.

$$\frac{TA_{i,t}}{ASSET_{i,t-1}} = \beta_1 \frac{1}{ASSET_{i,t-1}} + \beta_2 \frac{(\Delta REV_{i,t} - \Delta REC_{i,t})}{ASSET_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{ASSET_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

Where TA is total accruals, equaling the difference between net income and cash flows from operation, ΔREV is the change of revenue, ΔREC is the change of accounts receivables and PPE is the net fix assets. The scaler is the total assets in year $t-1$. Using Equation 1, we run the ordinary least-square method regression and keep residuals to use as *DA*.

3.3 Control Variables

Drawing on Dechow et al. (2010) and Peng et al. (2021), we control characteristic variables such as firm size, solvency, profitability, and listing ages, Specifically, firm size, marked as $SIZE$, is measured as the natural logarithm of a firm's total assets. Solvency, marked as LEV, is measured by the ratio of total liabilities to total assets. Profitability, marked as ROE, is measured by the ratio of net income to average net shareholders' equity. Growth rates, marked as GROWTH, is measured as the increase in sales of a firm between periods. Tobit's Q, marked as *TOBINQ*, is measured by the ratio of the total market value of a firm to the total assets value. Listing ages, marked as AGE, is measured by the natural logarithm of the firm's time to market. As for ownership structure variables, *TOP1* is measured by the ratio of the number of shares held by the largest shareholder to the total number of shares. And BOARD is measured by the natural logarithm of the number of boards of directors.

3.4 Methodology

To measure the effect of stock market liberalization scientifically and credibly, we follow Bertrand et al. (2004) and Moshirian et al. (2021) by developing the DID model of multi-dimensional fixed effects shown in Equation 2 to examine the impact of stock market liberalization on earnings management.

$$|DA|_{i,t} = \alpha_0 + \beta_1 TREAT * POST + \sum Control_{i,t} + \gamma_i + \mu_t + \varepsilon_{i,t} \qquad (2)$$

Where $|DA|_{i,t}$ represents the extent of earnings management. i represents the listed firm, t represents time. $POST$ represents whether the time is after the implementation of SHHKConnect. If it is, $POST = 1$ is defined, otherwise $POST = 0$. $TREAT$ represents whether it is a connected firm, if it is, define $TREAT = 1$, otherwise, $TREAT = 0$, $Control$ represents control variables, $\varepsilon_{i,t}$ is the error term. When analyzing regression results, this paper is interested in the coefficient of $TREAT * POST$. If the coefficient of $TREAT * POST$ is significant, it means that the implementation of SHHKConnect has significant effects on earnings management among connected firms.

4. Empirical Results

4.1 Baseline Results

Table 2 shows the regression results of both DID and PSM-DID methods. Column (1) is the regression result of DID model without fixed effects and Column (2) is the regression result of DID model considering both control variables and fixed effects. The estimated coefficients of *TREAT*POST* are -0.022 and -0.037, which are significantly negative at the 1% level. It means that SHHKConnect decreases the extent of earnings management.

To reduce the estimation bias of the DID method due to sample selection bias, Column (3) – (4) shows the results of the PSM-DID model based on the matching propensity scores. Both estimated coefficients of *TREAT*POST* are significantly negative at the 1% level with or without the inclusion of fixed effects, which indicates that the implementation of SHHKConnect lower the level of earnings management among connected firms. H1 is verified.

4.2 Robustness Check

Satisfying the parallel trend hypothesis is a central prerequisite for using the DID model (Bertrand et al., 2004). According to Figure 1, the regression coefficients of *DA* between 2012 and 2013 are close to zero, while significantly negative after 2014. It is suggested that there is no evidence of differences between both groups before the implementation of SHHKConnect.

Table 2. Baseline model regression results

Variables	DID		PSM-DID	
	(1)	(2)	(3)	(4)
	DA	DA	DA	DA
*TREAT*POST*	-0.022***	-0.037***	-0.020***	-0.035***
	(-3.06)	(-4.05)	(-2.79)	(-3.75)
SIZE	0.006**	0.028***	0.005*	0.026***
	(2.04)	(4.31)	(1.70)	(3.61)
LEV	0.034***	0.029	0.038***	0.025
	(2.87)	(1.35)	(3.18)	(1.11)
ROE	-0.009	-0.024*	-0.002	-0.018
	(-0.64)	(-1.95)	(-0.12)	(-1.01)
GROWTH	-0.000	-0.013***	-0.001	-0.012***
	(-0.10)	(-3.92)	(-0.19)	(-3.65)
TOP1	-0.019	-0.056	-0.018	-0.068*
	(-1.38)	(-1.63)	(-1.27)	(-1.86)
AGE	0.065***	0.151***	0.066***	0.151***
	(25.31)	(19.90)	(25.94)	(19.39)
TOBINQ	0.001	0.002*	0.001	0.002
	(0.71)	(1.76)	(0.75)	(1.27)
BOARD	-0.031***	0.021	-0.031***	0.024
	(-3.40)	(1.44)	(-3.42)	(1.58)
Constant	-0.090	-0.867***	-0.081	-0.808***
	(-1.63)	(-6.13)	(-1.36)	(-5.29)
Year FE	No	Yes	No	Yes
Firm FE	No	Yes	No	Yes
Observations	10,490	10,370	9,982	9,854
Adjusted R-squared	0.211	0.462	0.223	0.465

Note: T-statistic in the parenthesis; ***, **, * are significant at the levels of 1%, 5%, and 10%, respectively.

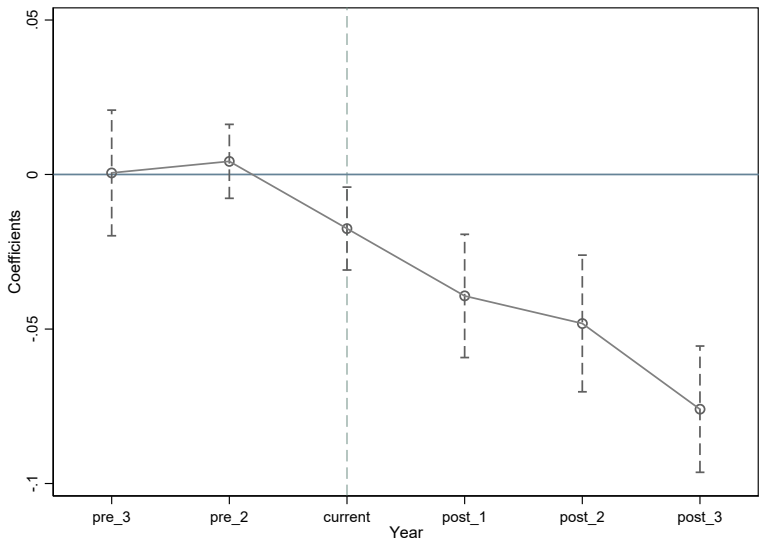

Fig 1. Parallel trend test result

5. Conclusion

In this paper, we address the issue that how stock market liberalization affects earnings management by taking SHHKConnect as an exogenous shock. We obtain the main conclusion that stock market liberalization can significantly reduce earnings management.

The policy implications of this paper are as follows. First, policymakers may expand the scope of eligible stocks to promote greater transparency and accountability under SHHKConnect. Second, clear guidelines and regulations for financial reporting, auditing, and disclosure behavior that apply to both markets need to be established. However, understanding the mechanisms through which SHHKConnect affects earnings management is still an open research question. Further research in this area is warranted.

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