

An Empirical Study of Factors Affecting Sudden Deteriorations in Performance of Newly Listed Companies in China

Shiqing Xie^{1*} Jieqi Liu²

1. Department of Finance, School of Economics, Peking University, Beijing, 100871, China,

2. Analyst, Headquarters of Bank of China, Beijing, 100818, China

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ABSTRACT

Using the three Jones models, this paper analyzes earnings management in newly listed companies in China. We find that the use of earnings management practices is prevalent among firms in China and these practices increase the possibility of a sudden deterioration in performance (SDP) for the firm. The characteristics of the firm's underwriter or sponsor also significantly impact on the possibility of a SDP. Finally, we find that the financial data of newly listed companies are not good indicators of a SDP.

1. Introduction

Since the re-launch of initial public offerings (IPOs) in 2009, newly listed companies on China's stock market are increasingly likely to see a quick reversal in their performance in the first year after their IPO. By newly listed companies, we are referring to companies listed for less than one year. Statistics show that the proportion of newly listed companies that see a sudden deterioration in their performance was 15.15% in 2009, but this increased substantially to 41.84% in 2010. A sudden deterioration in performance, hereinafter referred to as a SDP, is often regarded as one of the factors that cause high volatility in newly listed companies' stock prices.

Most of the studies on SDPs of newly listed companies are associated with the issue of earnings management. Chaney and Lewis (1998) find that the performance of a newly listed company is positively related to income

smoothing practices before an IPO. Teoh et al. (1998) find that there is a trend of enhancing income through adjusting provision and depreciation policy. Aharony (2000) also finds that there is deliberate earnings management in companies undertaking an IPO. Since the SDP phenomenon in newly listed companies has only recently become prominent in the stock market in China, there are few studies that tackle this issue.

This paper contributes to the existing literature in two ways. First, this paper, to our knowledge, is the first to comprehensively analyze the factors affecting SDPs of newly listed companies in China's stock market. By employing the three Jones models, we find that earnings management is still widespread. This increases the possibility of a SDP. Second, we include the characteristics of a firm's underwriter or sponsor in the SDP model and find that these characteristics have a significant impact on

**Corresponding Author:*

Shiqing Xie,

associate professor, Ph. D. supervisor, Department of Finance, School of Economics, Peking University, and Ph. D. of the University of Maryland, USA;

Email: sxie@pku.edu.cn

a SDP.

2. The Models

2.1 Earnings Management Models

Since earnings management is one of the factors affecting SDPs of newly listed companies, we utilize an overall accrual model to measure a company's earnings management practices. Healy (1985) divides accounting earnings (*Earnings*) into operating cash flow (*CFO*) and total accrued surplus (*TA*), $Earnings = CFO + TA$. *TA* can be divided further into discretionary accruals (*DA*) and non-discretionary accruals (*NDA*), where $TA = DA + NDA$. *DA* is the degree to which earnings management occurs. Since *DA* is unobservable, the overall accrual model obtains *DA* by calculating *NDA* using the following three Jones models:

(1) The Jones Model

$$\frac{TA_{i,t}}{Asset_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{\Delta Sales_{i,t}}{Asset_{i,t-1}} + k_3 \frac{PPE_{i,t}}{Asset_{i,t-1}} + \epsilon_{i,t} \tag{1}$$

$OP_{i,t}$ is the operating profit of firm *i* at time *t*, $CFO_{i,t}$ is the cash flow of firm *i* at time *t*, $Asset_{i,t-1}$ is the total assets of firm *i* at time *t-1*, $\Delta Sales_{i,t}$ is the change in the main business income of firm *i* between time *t* and *t-1*, and $PPE_{i,t}$ is the fixed assets of firm *i* at time *t*.

From this we can obtain $NDA_{i,t}$ by substituting the estimated coefficients of Equation (1) into Equation (2):

$$NDA_{i,t} = \hat{k}_1 \frac{1}{Asset_{i,t-1}} + \hat{k}_2 \frac{\Delta Sales_{i,t}}{Asset_{i,t-1}} + \hat{k}_3 \frac{PPE_{i,t}}{Asset_{i,t-1}} \tag{2}$$

Equation (3) shows how $DA_{i,t}$ is calculated. This can then be used as a proxy for the use of earnings management in firms:

$$DA_{i,t} = \left(\frac{TA_{i,t}}{Asset_{i,t-1}} \right) - NDA_{i,t} \tag{3}$$

(2) The Modified Jones Model

Dechow et al. (1995) construct the modified Jones model by adding the change in accounts receivable, $\Delta ARE_{i,t}$, and subtracting the change in main business income, $\Delta Sales_{i,t}$, from the original Jones model. This is shown in Equation (4) below:

$$\frac{TA_{i,t}}{Asset_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{\Delta Sales_{i,t} - \Delta ARE_{i,t}}{Asset_{i,t-1}} + k_3 \frac{PPE_{i,t}}{Asset_{i,t-1}} + \epsilon_{i,t} \tag{4}$$

(3) The Extended Modified Jones Model

By adding the summation of intangible assets and other long-term assets, $IA_{i,t}$, to the modified Jones model, Lu (1999) constructs the following extended modified Jones model:

$$\frac{TA_{i,t}}{Asset_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{\Delta Sales_{i,t} - \Delta ARE_{i,t}}{Asset_{i,t-1}} + k_3 \frac{PPE_{i,t}}{Asset_{i,t-1}} + k_4 \frac{IA_{i,t}}{Asset_{i,t-1}} + \epsilon_{i,t} \tag{5}$$

2.2 Sudden Deterioration in Performance Model (SDP Model)

Based on the above earnings management models, we establish the following SDP model to analyze the impact of a number of factors on SDPs of newly listed companies:

$$SDP = \alpha_0 + \alpha_1 INDG + \beta_1 NETM + \beta_2 ASTT + \beta_3 EQTM + \beta_4 SALG + Y_1 FCAP + Y_2 CXSA + Y_3 UDWN + Y_4 UDWF + \delta DA + \epsilon \tag{6}$$

Since the dependent variable, *SDP*, is a discrete parameter, Equation (6) is a discrete choice model (DCM). As for the independent variables, we conclude that several factors with four categories affect SDPs of newly listed companies. We show this in Table 1 below.

Table 1. Factors Affecting a Sudden Deterioration in Performance (SDP)

Category	Variables	Definitions and Calculating Methods
Macro-industry factor	INDG	Industry sales revenue growth (quarter growth)
		Sales margin (net income divided by sales revenue)
Performance factors	NETM	Asset turnover (sales revenue divided by total assets)
	ASTT	
	EQTM	Equity multiplier (total assets divided by equity)
	SALG	
Financing factors	FCAP	Size of the financing
	CXSA	Asset level of underwriting agencies
	UDWN	Absolute number of underwriting business
	UDWF	Average expense
Financial manipulation factor	DA	Discretionary accruals earnings (residuals of Modified Jones model)

3. Analysis of Earnings Management

The data is from the Wind Financial Database and the sample period extends from the date IPOs were re-launched in 2009 to the end of 2012. In our study, we adopt the three Jones models to examine earnings management in newly listed companies, the regression results of which are shown in Table 2. The value in brackets is the p-value of the estimated coefficients. The regression results show that the three Jones models' explanatory powers are quite low. This means that *DA* has a greater

impact on the dependent variable.

Their t-test results which determine the earnings management are reported in Table 3. These results show that all of the mean residuals of *DA* are significant at the 5% level. Thus, we believe that earnings management is prevalent in newly listed companies in China. Since the modified Jones model has the smallest standard deviation, we use the regression residuals of this model to reflect the level of usage of earnings management practices in the SDP model.

Table 2. Regression Results of the Three Jones Models

Variable	Jones Model	Modified Jones Model	Extended Modified Jones Model
1/Asset	5201041 (0.0000)	7843204 (0.0000)	7774594 (0.0000)
Sales/Asset	0.1394 (0.0000)	- -	- -
PPE/Asset	-0.0502 (0.0002)	-0.0396 (0.0042)	-0.0418 (0.0083)
(Sales-ARE)/Asset	- -	0.1080 (0.0000)	0.1077 (0.0000)
IA/Asset	- -	- -	0.0167 (0.7683)
R-squared	0.1338	0.0668	0.0669
Adjusted R-squared	0.1318	0.0646	0.0636

Table 3. T-tests of Mean DA

Model	Test of Hypothesis: Mean=0.0000		
	Jones Model	Modified Jones Model	Extended Jones Model
Mean	0.0098	0.0124	0.0123
Standard Deviation	0.1170	0.1213	0.1213
t-statistics	2.4726	3.0175	2.9709
Prob.	0.0136	0.0026	0.0031

4. Factors Affecting a Sudden Deterioration in Performance

Table 4 reports the estimated results of Equation (6) using Probit and Logit regressions, respectively. The estimated coefficients display consistent signs, which indicate that model selection does not have a significant impact on the regression results. Most of them in the two regressions are not significant, with the exception of *CXSA*, *UDWF*, *UDWN*, and *DA*.

Therefore, we establish the following SDP model by excluding the insignificant variables:

$$SDP = \theta_0 + \theta_1 CXSA + \theta_2 UDWF + \theta_3 UDWN + wDA + \varepsilon \tag{7}$$

Table 5 reports the regression results, using Probit and Logit regressions, for Equation (7). The regression results show that all the estimated coefficients are significant at the 90% level. It is worth noting that these four variables are from the financing and financial manipulation categories, which means that the features of a firm's earnings management practices and the characteristics of a firm's underwriter or sponsor all significantly impact on SDPs of newly listed companies.

Table 4. Regression Results Using Probit and Logit Models

Variable	Probit Model				Logit Model			
	Coefficient	Std.Error	z-Statistic	Prob.	Coefficient	Std.Error	z-Statistic	Prob.
C	-1.747	0.789	-2.216	0.027	-2.954	1.343	-2.199	0.028
INDG	-0.005	0.006	-0.752	0.452	-0.009	0.011	-0.783	0.433
NETM	0.384	0.746	0.515	0.606	0.652	1.276	0.511	0.609
ASTT	-0.099	0.136	-0.726	0.468	-0.152	0.231	-0.655	0.512
EQTM	-0.001	0.021	-0.045	0.964	-0.001	0.033	-0.033	0.974
SALG	-0.293	0.204	-1.437	0.151	-0.522	0.381	-1.372	0.170
FCAP	0.000	0.000	-0.557	0.577	0.000	0.000	-0.519	0.604
CXSA	-0.840	0.263	-3.192	0.001	-1.412	0.456	-3.098	0.002
UDWN	0.005	0.003	2.024	0.043	0.009	0.004	2.047	0.041
UDWF	0.000	0.000	1.883	0.060	0.000	0.000	1.898	0.058
DA	0.808	0.342	2.364	0.018	1.298	0.567	2.288	0.022
McF. R2								
LR statistic	0.030	20.869	0.035		0.029	20.413	0.040	
Prob.								

Table 5. Regression Results Using Probit and Logit Models

Variable	Probit Model				Logit Model			
	Coefficient	Std.Error	z-Statistic	Prob.	Coefficient	Std.Error	z-Statistic	Prob.
C	-0.932	0.195	-4.779	0.000	-1.536	0.331	-4.640	0.000
CXSA	-0.795	0.258	-3.076	0.002	-1.355	0.450	-3.009	0.003
UDWF	0.000	0.000	1.804	0.071	0.000	0.000	1.833	0.067
UDWN	0.005	0.002	1.959	0.050	0.008	0.004	1.986	0.047
DA	0.681	0.331	2.058	0.040	1.088	0.547	1.988	0.047
McF. R2								
LR statistic	0.022	15.470	0.004		0.022	15.163	0.004	
LR Prob								

The negative estimated coefficient on *CXSA* indicates that the stronger the comprehensive strength of the sponsor, the smaller the possibility of a SDP. Strong sponsors tend to be more rigorous in their underwriting processes, thus the companies tend to be more reliable and less prone to short-term deteriorations in performance. In addition, the estimated coefficient on *UDWN* is positive, which indicates that the more IPO business underwriters have, the greater the possibility of a SDP. This means that if sponsors have a large amount of IPO business, they are more likely to underwrite bad quality companies. Finally, the estimated coefficient on *UDWF* is positive, which indicates that the higher the underwriting fee charged by underwriters, the greater the possibility of a SDP. This could be because the higher the underwriting fees companies pay, the more likely underwriters or sponsors are to add excessive packaging on IPO companies.

The coefficient on the earnings management proxy, *DA*, is positive, which means that the more earnings management conducted, the bigger the possibility of a SDP.

Before an IPO, companies have strong incentives to conduct financial packaging through earnings management practices in order to ensure the success of an IPO. After the IPO has been completed, newly listed companies may lose the motivation for further manipulation of earnings.

5. Conclusion

In this paper, we conduct an empirical analysis of the factors affecting SDPs of newly listed companies and have the following three main conclusions:

First, the use of earnings management is very common in the financial year prior to an IPO. In fact, the greater the use of earnings management practices, the higher the possibility of a SDP. Moreover, the new regulatory specifications on how to report companies' financial data introduced for the re-launch of IPOs in 2009 clearly did not have a significant impact as there have been no improvements in the validity or reliability of firm's financial data since the IPO re-launch.

Second, the characteristics of a sponsor also have a

significant impact on SDPs of newly listed firms. In the regression results from our SDP model, all of the three factors associated with underwriters or sponsors are significant, which indicates that underwriters or sponsors may be involved in the process of financial packaging for the firms they are underwriting.

Finally, our results indicate that the financial data of listed companies are not good indicators for predicting a SDP. Factors reflecting companies' performance do not significantly increase the possibility of a SDP. As a result, the information disclosed by companies undertaking an IPO cannot genuinely reflect their operating profits or risks.

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