EARNIN QUALITY AFTER PRIVATIZATION AND IT'S DRIVERS A COMPARISON BETWEEN PRIVATE-OWNED AND STATE-OWNED PUBLIC COMPANIES

LU Jiuqin, Hangzhou Dianzi University, Xiasha High Education Zone, Hangzhou, China 310018,
Fudan University, 220 Handan Road, Shanghai, 200433
+86 571 86919013, Email: 071025023@fudan.edu.cn
HUI Fengting, Zhejiang University of Science and Technology, 318, Liuhe Road, Hangzhou, China 310023,
+86 571 85070608, Email: huifengting@zust.edu.cn

Abstract: Scale privatization since mid-90s have brought about many positive benefits such as higher productivity, unemployment avoidance, and efficient governance structure. However, through empirical evidence of private owned public company and its pair sample, the paper finds earning quality decreases after privatization. The drivers are both operating environment and manager's opportunism. But different environment factor and discretionary factor contribute difference. Based on both private owned public company and its pair sample and only private owned public company sample, environmental factors show different effects while size, operating cycle and negative profit ratio indicates insignificant effect, and discretionary accrual presents significant effect on earning quality decreases. The result suggests manager's opportunism is an important driver.
Key Words: Privatization; Earning quality; Driver.

I. INTRODUCTION

Private-owned enterprises have been the driven force of economic development since the scaled-privatization from mid 1990s (Feng Fengcai, Zhangqun & Wang Bo, 2000). Privatization brought about great increase on both profitability and productivity for enterprises without great unemployment problems (Hu Yifan, Song Min & Zhang Junxi, 2006). Due to the strong ability to balance other big shareholders, high efficiency structure of BOD (Board of Directors) and share motivation mechanism for top managers, Chinese private-owned public companies (POBC) have a more optimal governance structure than that of state-owned public companies (SOPC) (Chen Bin, et al, 2008). What is the subsequence of privatization from the view of capital market supervision and investor protection? Do POBC provide more high quality information? Does the information asymmetry weaken between big and small shareholders? What driven factors have strengthened or weaken information quality? This paper is trying to answer the above questions. By empirical test of privatized public companies and their pair samples between 1998 and 2000, this paper found that compared with SOPC in the same period, Chinese POPC had lower earning quality because of insider control and industry restructure. The distinctive driving factors of earning quality decreasing were the amount of accrual and the volatility (measured by standard deviation of a continuous 5 years) of accrual, earning and income. Other factors as enterprises' size, operational cycle and ratio of negative profit had no obvious impact on earning quality. Discretionary accrual, which could be manipulated by managers, also had obvious impact on earning quality. If we use DD, MDD and FDD models to measure earning quality independently, factors as the amount of accrual, the operational fluctuating factors as accrual, earning and income and discretionary accrual will have a different level of impact on earning quality. The first contribution of this paper increases the credibility of measurement by using DD, MDD and FDD models at the same time; The second contribution enriches the study of earning quality and the sequences of privatization by studying the driving forces of the decrease of earning of POPC from the view of operational environmental factors and manager's opportunism selection; The third one provides a start point for further research of this field by dual categorization of samples so as to outlook the impact of operational fluctuating factors on the decrease of earning quality.

II. THEORY REVIEW AND ASSUMPTION DEVELOPMENT

i. Theory Review and Assumption Development

The POPC in China come into the market directly by IPO or by "Acquisition of Shells", and the later is the privatized public companies. The process of privatization is a progressive ones without reform the original system but to build a new system, which different from former Soviet Union and East-European countries. But we faced the same problems as those of former Soviet Union and East-European countries--heavy insider controlling (IC) (Qinmu Changyan, 1994; Qin Yinyi, 1995). IC theory was further explored by combining Chinese state-owned enterprises reformation with study the case of insider control (Fei Fangyu, 1996b). Some of the cases of IC in China were deeply studied (Chen Xiangyong, 2000). In a transmit economy, the actual IC is endogenous as the managers have strong control over the enterprises, and no external party has the decisive power to fire the managers due to their poor performance or normal risk. Employees rely heavily on their employers which in turn protect their benefits and positions. Under such

a situation that IC hold big enough assets or shares, any external strategic decisive pressure would meet strong resistance if it has negative impact on the position of insiders and their benefits. In such cases, it is no use to apply shareholder power or authority. The direct result of IC is that shareholder's interest, therefore the efficiency, is harmed by insiders (Yuan Yongbo, 2005). As earning quality is not so easily manipulated as earning, that its decrease might be the reason of post-privatization operational environmental changes as industry change, immigrate of new culture, new operation policy and new market. IC theory discloses us the benefit of insiders in a transform enterprise.

Earning quality is defined as high-quality if: 1) it is persistence, which is based on the time feature of earning; or 2) it explains the economic meaning of the related transactions and events precisely; or 3) the amount of current cash is more than the realized income or profit. Earning quality is also defined as the co-relationship between profitability and the ability of cash follow (Green, 1999) and the co-relationship between accrual and cash. Dechow & Dichev defined earning quality by using the measurement differential of accrual and cash, and argued that smaller differential lead to high earning quality (Maureen F. Mcnichols, 2002). This paper uses the last definition which takes the quality of accrual decided by the measurement differential between accrual and cash as the measure of earning quality.

Earning quality of public company is a signal. Bad earning quality leads to frequently arbitrage and litigation from SEC, higher debit and equity cost, less foreign equity and future returns (Paul K. Chaney, Mara Faccio & David Parsley, 2008). Healy and Whalen (1999), Dechow, et al. (1996), Richardson et al. (2003), and Dechow et al.(1996) argued that managers influence direction and degree of accrual. Fan and Wong (2002) found the limited information content of reported earning, and suggested the result was driven by protective influences. Family holding company had more motives and strong ability to manipulate earning to deprive more value from small shareholders. Wang (2006) found that the founding family ownership is highly related with higher earning quality.

After privatization, agent problems derived from the ownership structure of POPC was not so critic (Su Qilin, 2004). The final controller of POPC generally controlled more shares by little investment by a pyramid structure (Zhang Hua, Zhang Junxi & Song Jiao, 2004). For POPC, its share is not so concentrated, with manager group controlled the BOD (member of BOD is identical with high rank manager), chairman rarely changed, both independent directors and members of Board of Supervisors held more shares, and CEO with shares frequently replaced. But on a whole, CEO and managers of POPC were weak in independent, and easily being controlled by the holding shareholders (Ding Min, 2005). Therefore, the differential of goverance structure between SOPC and POPC popularly exists, while the differential of earning quality between the two is distinct only in the industry which had strong competition (Xiao Lili, 2007).

The privatization of state-owned enterprises takes the strategies of selling of management power, selling of holding position, quota sale of state share, placement, auction and transferring on agreement of state share, etc (Kong Yuxin, 2003). According to Hu Yifan's survey of nearly 300 state-owned enterprises during 1996-2001 (2006), those state-owned enterprises which had good performance would be firstly privatized. But generally, directly IPO companies have a tiny better performance than that of indirect listed ones, and POPC operates at a lower efficiency level and does not have higher efficiency than SOPC (Xie Baisan, Xie Shuguang, 2003), as the government always privatizes those state-owned enterprises that had the least efficiency so as to maximize social benefit, e.g. Zhongtian Toucheng, Huitong Group and Minfufa were the heavy loss state-owned enterprises which came into the market by re-organizing. Even more such enterprises were changed into POPC by this way since the reformation of share distribution. On the aspect of goverance structure, it is popular that big share holders of POPC harm the benefit of small share holders, although POPC has a clear ownership, as the cases of ST Lengguang, Xichang Electric Power, ST Chundu and Star Electricity. Based on what we have discussed above, we can make the following forecasting:

Assumption 1: there exist distinctive earning quality differentials between POPC and non-POPC.

Earning quality could be measured by operation fluctuation (operational environment) and discretionary accrual (manager's discretionary accrual factor). Operation fluctuation might happen frequently, and it does not co-related with accounting policy, and free of manager's control (Michelle Liu ， Peter Wysocki. 2007). Dechow and Dichev (2002), Hribar and Nichols (2007) testified that accrual quality was closely co-related with operation fluctuation, while the measurement of discretionary accrual was solely related to manager's skill to estimate accrual differential and the variables as to cater for the analysts, quality of auditor, issue of share and closer indebt article, which embodied manager's opportunism (Patricia M. Dechow and Ilia D. Dichev. 2002). Francis et al. (2005) argued operation fluctuating factors such as innate accrual, or operational environment, or commercial model or economic fundamentals, while standard deviation of residual as discretionary accrual factor. Hence, operational fluctuating is totally different from discretionary accrual, and then we could have assumption 2.

Assumption 2: the impact of operational factors and discretionary accrual on the decrease of earning quality is different.

ⅱ. Operational Fluctuation and the Measurement of Earning Quality.

This paper uses the fluctuation of the magnitude of accruals, accrual, cash flow, income and earning, the size of enterprise, operational cycle, the frenquency of negative profit as standards of measurement of operational fluctuation, as the usage by Dechow and Dichev (2002), Francis et al. (2005), and Michelle Liu et al. (2007). Specification and calculation of variables are shown in table 1.

	Variable	Abbr. of Variable	Description of Variables	Definition
1	Earning Quality	AQ	Measured by accrual quality	Standard deviation of residual of a continuous 5 years period calculated by DD、MDD、FDD
2	Std. Dev. of accrual	SDA	The extent of accrual change	5 years standard deviation of TCA calculated by MDD
3	Magnitude of accruals	MA	The amount of accruals	The average of TCA for 5 years, calculated by MDD
4	Std. Dev. of CFO	SDC	The extent to which cash flow changes	The ratio of current cash flow to current average total assets, the standard deviation of 5 years.
5	Std. Dev. of Sales	SDS	The extent to which sales income changes	The ratio of current sales income to current average total assets, the standard deviation of 5 years.
6	Std. Dev. of Earn	SDE	The extent to which earn changes	The ratio of current earning to current average total assets, the standard deviation of 5 years.
7	Total Assets	TA	Measured by total assets	natural logarithm of total assets
8	Average Operation. Cycle	AOC	The length of operation cycle	Turnover of receivables plus turnover of inventory, minus turnover of payables.
9	Proportion of earnings that are negative for each firm	POE	Weight of negative profit	Current negative profit divided by average total assets
11	Discretionary Accrual	$\varepsilon_{j,t}$	Manager could manipulate	Residual of current accrual regress to innate accrual factors
		DA	Manager could manipulate	Discretionary accrual of performance adjustment $REDCA_{j,t}= TCA_{j,t} – EPTCA_{j,t}$
10	Ownership	POSOC	Private owned or state owned before a company come into the market.	Dummy variable, its value is 0 for private owned and 1 for state owned
11	Privatization type	PT	Come to the market by IPO or by re-organization	Dummy variable, its value is 0 if by IPO and 1 if by re-organization

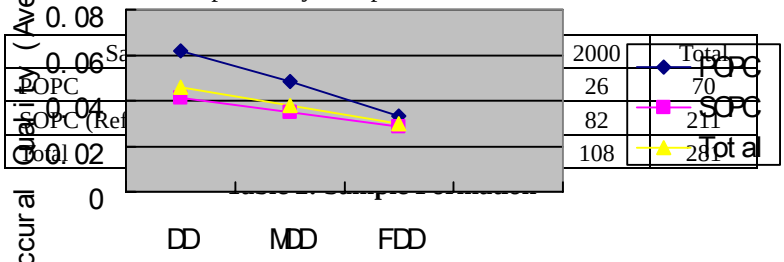
Table1: Definition of Variables

As regard to earning quality, this paper uses standard deviation of residual of a continuous 5 year period of DD, MDD and FDD model as a measurement of earning quality (table 1). A lower standard deviation means a higher earning quality, vise versa. Developed by Dechow and Dichev, DD model① connects current operating capital with cash flow of the past, present and future periods; McNichol (2002) modified DD model by adding revenue change and property, plant and equipment (PPE) as new variables. In MDD②, operation capital accrual reflects manager's estimation of cash flow and the extent by which accrual was transferred into cash, revenue change and fixed assets change (Jennifer Francis, Ryan LaFond, Per Olsson, Katherine Schipper. 2005). FDD model③ was modified from MDD and regards the constant term c_j in MDD as fixed effect c (Pemma Lee and Ronald W. Masulis. 2008). The weakness of DD model is that it neglects the possibility that the manager could manipulate cash collecting time and the possible differential between economic result and cashing time. MDD model added income change and depreciation change into DD model, as the two factors affect the expectation to form current accrual, also overpass the direct effect on operational cash flow. Thus, MDD increases the model's ability to explain and decreases the measurement errors. In FDD model, c_j is constant coefficient which can show the enterprises' invisible, time changing features such as accounting policy and cash flow. FDD model uses panel regression, to control not only heteroscedasticity but also the autocorrelation of random residual [16]. This paper uses the three models at the same time as measurement of earning quality, and uses discretionary accrual as the substitute measurement for residual.

III. SAMPLE COLLECTION AND ASSUMPTION TESTING

i. Sample Collection

First, we collect the samples of POPC and SOPC by IPO during 1998-2000 from CCERDATA and WIND. The reasons why we choose the period of 1998-2000 are those: 1) the large-scaled privatization of state-owned enterprises started from 1995, few samples before 1995 could be found; and 2) to eliminate the influence from the differential of new and old accounting standard while keep the latest data precisely to 2006. Private-owned enterprises refer to the POPC by IPO or re-organization on SSE (Shanghai Security Exchange) and SZSE (Shenzhen Security Exchange). SOPC come to the market by the same way at the same period would be the reference samples, exclude the following ones: 1) financial and insurance companies, 2) incomplete data companies, and 3) those has a standard deviation of residual bigger than 2. Sample companies are comparable as they come to the market or be privatized in the same year. We have 1405 annual data of all the samples; they are specified in table 2.



ii. Test of Assumptions

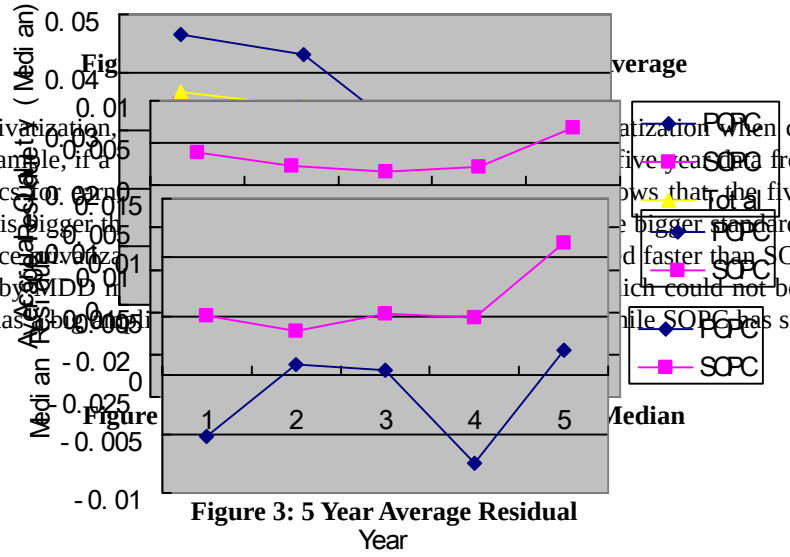


Figure 3: 5 Year Average Residual

Figure 4: 5 Year Median Residual

Due to the different time of privatization, [illegible] when calculate the residual by DD, MDD and FDD models, for example, if a [illegible] five years from 1999 to 2003. Figure 1 to figure 4 are descriptive statistics for earn[illegible]ows that the five year standard deviation of POPC since their privatization is bigger [illegible] bigger standard deviation means decreasing of earning quality of POPC since privatiza[illegible]d faster than SOPC. According to the annual change of residual (calculated by MDD m[illegible]ich could not be explained by the change of cash, income and fixed assets has bou[illegible]hile SOPC has small variation with a positive margin.

We can build a regression equation by using the principle that accrual quality is formed by operation fluctuation (innate factor) and discretionary accrual (standard residual as manager's discretionary accrual factor) as following:

$$AC_{j,t} = \alpha_{0,j} + \beta_{1,j} SDA_{j,t-1} + \beta_{2,j} MA_{j,t} + \beta_{3,j} SDC_{j,t+1} + \beta_{4,j} SDS_{j,t} + \beta_{5,j} SDE + \beta_{6,j} TA + \beta_{7,j} AOC + \beta_{8,j} POE + \varepsilon_{j,t} \quad (1)$$

In equation (1), the value of AC is the standard deviation of residual for continuous 5 years calculated by DD, MDD and FDD models, represents the earning quality of company j at time t. Calculations of other variables are shown in table 1.

Firstly, the results of regressive analysis of POPC and SOPC are in table 3. When the standard deviations calculated by DD and FDD models are regarded as the measurement of earning quality, discretionary accrual has a strong explanation to accrual than operational factors (0.100<0.314, 0.036<0.096), and they are almost the same when using MDD model.

	Earning Quality, by DD			Earning Quality, by MDD			Earning Quality, by FDD		
	Sum of Squares	df	F	Sum of Squares	df	F	Sum of Squares	df	F
Regression	.100	9	9.583***	.071	9	30.458***	.036	9	11.180***
Residual	.314	271		.070	271		.096	271	
Total	.414	280		.141	280		.132	280	

Note: *** means significant on the level of 1%

Table 3： Variance Analysis I

Secondly, the result of regression analysis of pure POPC is shown in table 4, in which, the members in brackets in column "Sum

of Squares" and "df" are the regression results after adding privatization way as a variable; Bracketed members in column (R) are adjusted R square. When the standard deviation calculated by DD and FDD is regarded as an measurement of earning quality, discretionary accrual has a strong explanation to accrual than operational factors (.106 **>** .061 , .021 **>** .018), when calculated by MDD, the explanation of discretionary accrual to accrual is only a half of that of operational factors (.20<.40).

	Earning Quality, by DD			Earning Quality, by MDD			Earning Quality, by FDD		
	Sum of Squares	df	F (R)	Sum of Squares	df	F (R)	Sum of Squares	df	F (R)
Regression	.061 (.073)	8(9)	4.355*** (5.161***)	.040 (.040)	8 (9)	14.964*** (13.118***)	.018 (.018)	8 (9)	6.407*** (5.808***)
Residual	.106 (.094)	61(60)		.020 (.020)	61 (60)		.021 (.021)	61 (60)	
Total	.167 (.167)	69(69)	(.28)	.060 (.060)	69 (69)	(.618)	.039 (.039)	69 (69)	(.385)

Note: *** means significant on the level of 1%

Table 4: Variance Analysis II

Variables	Earning Quality, by DD (t value)			Earning Quality, by MDD (t value)			Earning Quality, by FDD (t value)		
	Referent (N=281)	POPC (N=70)	Privatization method (N=70)	Referent (N=281)	POPC (N=70)	Privatization method (N=70)	Referent (N=281)	POPC (N=70)	Privatization method (N=70)
Constant	2.891***	2.128**	1.589	1.568	1.191	1.085	1.270	1.695	1.439
MA	-1.367	-1.264	-1.326	-3.138***	-1.238	-1.228	-2.113*	-1.106	-1.104
SDA	1.719*	2.524**	3.279***	2.664**	4.376***	4.284***	-4.452***	2.907***	3.066***
SDC	-.039	-2.058**	-2.912**	.350	-2.913***	-2.852**	4.673***	-3.031***	-3.193***
SDS	1.239	1.742*	1.574	3.964***	3.960***	3.885***	1.522	.685	.591
SDE	1.134	-.273	.276	3.518***	.621	.669	2.970**	.449	.641
TA	-1.567	-1.663	-1.803*	.221	-.782	-.782	.429	-.648	-.666
AOC	1.219	1.241	.859	.892	.243	.188	-.247	.324	.164
POE	.180	-.367	.295	1.528	.221	.290	.362	-.507	-.251
POSOC	-1.608			-2.075**			-.503		
PT			2.784**			.322			1.003

Note: ***means significant on level 1%; **, 5%; *,and 10%

Table 5： Comparison of Regression Coefficient

Thirdly, according to the coefficient of regression (*as in table 5,adjusted R Square of earning quality, MDD model is 61.8%, which is far bigger than 28% and 38.5% in DD and FDD respectively. Thus we just discuss about the regression result of earning quality in MDD model.*), the significant factors that influence earning quality are the amount of accrual, variability of accrual and variability of earning in the regression analysis of both POPC and SOPC, while in the pure POPC samples regression analysis, the significant factors are variability of accrual, variability of cash flow and the variability of sales income. The size of enterprises, operational cycle and the ratio of negative profit are insignificant factors that influence earning quality.

IV. ROBSUT TEST

To further confirm the different influence of operational factors and discretionary accrual to earning quality, we replace the measurement of discretionary accrual in equation 1 by the measurement developed by Chaney, Faccio and Parsley (2008) as follows:

$$REDCA_{j,t} = TCA_{j,t} - EPTCA_{j,t} \quad (2)$$

In which, TCA is total current accruals, EPTCA is expected total current accruals and REDCA is the performance-adjusted and recent discretionary accruals. TCA could be found in MDD, and EPTCA could be calculated by a equation④ using the coefficient estimated from regression⑤ of five years. The standard deviation of 5 year REDCA is the measurement of discretionary accrual. The result of test in table 6 is almost the same to table 5. Additionally, that the influence of discretionary accrual to earning quality is significant in the comparison analysis of POPC and SOPC (on 5% level) and insignificant in the pure analysis of POPC indicates different

managerial behavior between POPC and SOPC and similar behavior of POPC.

Variables	Earning Quality, by DD (t value)			Earning Quality, by MDD (t value)			Earning Quality, by FDD (t value)		
	Referent (N=281)	POPC (N=70)	Privatization method (N=70)	Referent (N=281)	POPC (N=70)	Privatization method (N=70)	Referent (N=281)	POPC (N=70)	Privatization method (N=70)
Constant	3.439***	1.925*	1.496	2.158**	.923	.890	1.955*	1.513	1.325
MA	-1.511	-1.168	-1.264	-3.289***	-1.105	-1.097	-2.281*	-1.018	-1.028
SDA	1.912*	2.268**	3.030***	2.858**	4.018***	3.830***	-4.271***	2.659**	2.785**
SDC	-.205	-1.820	-2.676**	.188	-2.582**	-2.428**	4.520***	-2.787**	-2.905**
SDS	1.089	1.979*	1.642	3.827***	4.274***	4.179***	1.358	.963	.817
SDE	.906	-.424	.168	3.296***	.381	.379	2.726**	.303	.489
TA	-2.159**	-1.451	-1.659	-.430	-.495	-.493	-.310	-.471	-.515
AOC	1.249	1.450	.966	.919	.625	.597	-.226	.540	.358
POE	.046	-.557	.159	1.403	-.087	-.069	.215	-.674	-.413
DA	2.225**	-.976	-.518	2.200**	-1.505	-1.458	2.475**	-.880	-.705
POSOC	-1.562			-2.033**			-.444		
PT			2.622**			.004			.851

Note: ***means significant on level 1%; **, 5%; *, and 10%

Table 6： Results of Robust Test

V. CONCLUSION, WEAKNESS AND EXPECTION OF FUTURE STUDY

First, by using DD, MDD and FDD models to calculate earning quality to make regression analysis, this paper finds that the most representative earning quality is that calculated by MDD. Second, the paper also finds that after privatization not only earning quality of POPC dropped by comparison test of POPC and SOPC but also dropped more quickly than SOPC, and the reasons lied on operational environment change as well as managerial opportunism. Of the operational environmental factors, significant ones that influence earning quality are the amount of accrual, variability of accrual and variability of earning; and in the pure POPC samples analysis, the significant factors are variability of accrual, variability of cash flow and the variability of sales income. The size of enterprises, operational cycle and the ratio of negative profit are insignificant factors that influence earning quality in both cases. Third, when using the standard deviation calculated by DD and FDD model as the measurement of earning quality, discretionary accrual had a strong explanation to earning than operational factors; when calculated by MDD, the two factors had almost same explanation.

The dropping of earning quality after privatization brought about new contents of operational environment and managerial opportunism. Not all of the operational environment factors would bring about the dropping of earning quality, while managerial opportunism selection would influence earning quality under all situations. Although privatization decreases the problem of agent (Su Qilin, 2004), severe problems exist that big shareholders harm the benefit of middle and small shareholders. Therefore, strengthening the supervision to managers and optimizing the operational environment factors as accrual, cash and sales income would better the earning quality of the enterprises.

Weaknesses of this paper are: 1) factors as accrual persistence, competition of a certain industry, concentration of shares, shares hold by the managers and the ratio of independent directors are neglected during the analyzing, and the analysis of the results of privatization are limited to operational environment and discretionary accrual; 2) When FDD model was applied, the constant item was regarded as changing individual company, thus the value of FDD was decreased; 3) When DD, FDD and MDD were applied, the condition that each group should have at least 20 enterprises was neglected, thus differentials might arise.

Operation fluctuating factors and managerial opportunism selection factors are different factors leading to the drop of earning quality. Variability of accrual, cash flow, revenue and earning may be related with macroeconomic environment, or with the enterprises' operation strategy and policy. Managerial opportunism selection may related with manager's compensation, personal objective and managing style and the mechanism to supervise the manager. Therefore, future study could focus on the factors which will affect operational fluctuation and discretionary accrual. Further study may explore that after privatization, how decrease of earning quality causes the increase of equity cost and debt cost, or change of investment efficiency.

Notes

DD、MDD、FDD moedels came from Gemma Lee et al (2008) and Michelle Liu and Peter Wysocki (2007). Calculation of DD model as follows:

$$TCA_{j,t} = \alpha_{0,j} + \beta_{1,j} CFO_{j,t-1} + \beta_{2,j} CFO_{j,t} + \beta_{3,j} CFO_{j,t+1} + \varepsilon_{j,t}$$

Of which,

$$TCA_{j,t} = \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t} \ ;$$
$$CFO_{j,t} = NIBE_{j,t} - TA_{j,t}$$
$$TA_{j,t} = \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t} - DEPN_{j,t}$$

$TCA_{j,t}$ is the total current accruals of company *j* at year *t*, $CFO_{j,t}$ is the cash flow of company *j* at year *t*; $NIBE_{j,t}$ is net earning (exclude extraordinary items) of company *j* at year *t*; is the gross accruals of company *j* for *t* years; $\triangle CA_{j,t}$ is the change of current assets of company *j* at year *t*; which equals current assets in year *t* minus that of year *t-1*; $\triangle CL_{j,t}$ is the change of current liabilities of company *j* at year *t*, which equals current liabilities in year *t* minus that of year *t-1*; $\triangle Cash_{j,t}$ is the cash change of company *j* at year *t*, which equals cash in year *t* minus that of year *t-1*; $\triangle STDEBT_{j,t}$ is the short-term debt change, which equals short-term debt in year *t* minus that of year *t-1*; $DEPN_{j,t}$ is depreciation and amortization expense company *j* at year *t*; and $PPE_{j,t}$ is gross value of land, plant and equipment of company *j* at year *t*. All of the variables are divided by average total assets which equals the average of total assets in year *t* and *t-1*. $\varepsilon_{j,t}$ is residual, the standard deviation of five years of which is the measurement of earning quality in this paper.

Calculation of MDD：

$$TCA_{j,t} = \alpha_{0,j} + \beta_{1,j} CFO_{j,t-1} + \beta_{2,j} CFO_{j,t} + \beta_{3,j} CFO_{j,t+1} + \beta_{4,j} \Delta \mathrm{Re}v_{j,t} + \beta_{5,j} PPE + \varepsilon_{j,t}$$

Of which:

$$TCA_{j,t} = \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t}$$
$$CFO_{j,t} = NIBE_{j,t} - TA_{j,t} \ ;$$
$$TA_{j,t} = \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t} - DEPN_{j,t}$$

$\triangle Rev_{j,t}$ is sales change of company *j* at year *t*; $PPE_{j,t}$ is gross value of land, plant and equipment of company *j* at year *t*. All of the variables are divided by average total assets which equals the average of total assets in year *t* and *t-1*. Other variables are defined as the same as in ①.

Calculation of FDD：

$$TCA_{j,t} = c_j + \beta_{1,j} CFO_{j,t-1} + \beta_{2,j} CFO_{j,t} + \beta_{3,j} CFO_{j,t+1} + \beta_{4,j} \Delta \mathrm{Re}v_{j,t} + \beta_{5,j} PPE + \varepsilon_{j,t}$$

j = 1, 2, 3, …. , 281 ; t = 1999, 2000, …. , 2005。c_j is fixed effect coefficient which can reflect the invisible enterprises features changing with time such as accounting policy, feature of cash flow, etc. Other variables are defined as the same as in

④ $$TCA_{j,t} = \alpha_j \frac{1}{Assets_{j,t-1}} + \beta_j \frac{\Delta netsale}{Assets_{j,t-1}} + r_j ROA_{j,t-1} + \beta_t YearDummnies + \varepsilon_{j,t}$$

Of which, $ROA_{j,t-1}$ income after tax divided by total assets of company *j* in year *t-1*. $\triangle$net sale is sales change, Year Dummies is a dummy variable; $Assets_{j,t-1}$ is the total assets of company j in year t-1, and TCA has the same meaning as in ①.

⑤ $$EPTCA_{j,t} = \hat{\alpha}_j \frac{1}{Assets_{j,t-1}} + \hat{\beta}_j \frac{\Delta netsale - \Delta AR}{Assets_{j,t-1}} + \hat{r}_j ROA_{j,t-1} + \hat{\beta}_t YearDummnies$$

Of which, $\hat{\alpha}_j$、$\hat{\beta}_j$、$\hat{r}_{j,t-1}$、$\hat{\beta}_t$ are the coefficients of correspondent variables estimated through④, $EPTCA$ is expected total current accruals, $\triangle$AR receivables change, and the other variables have the same meaning as in ④

REFERENCE

Chen Bin, Yu Jian, Wang Xinjin, Lai Jianqing, Empirical Study on the Development of Private-owned Public Companies in China, (R)，Institute of Shenzhen Stock Exchange, 2008.01.14 (Paper No. 0160)

Ding Min, Study on the Influences of Administration Structure Feature of Private-owned Public Companies to the Transparency of Accounting (D), 2005 (12).

Feng Fengcai, Zhangqun & Wang Bo, Market Economy Calling for Diversification of Equty Stake (J), *Management World* ,2000(2), PP: 202-203.

Gemma Lee and Ronald W. Masulis. 2008. Seasoned Equity Offerings: Quality of Accounting Information and Expected Flotation Costs (J), Working paper..

Hu Yifan, Song Min & Zhang Junxi, Performance Research of Privatization of Chinese State-owned Enterprises. (J) Economic Research Journal, 2006(7)：49-60.

Jennifer Francis, Ryan LaFond, Per Olsson, Katherine Schipper. 2005. The market pricing of accruals quality (J), Journal of Accounting and Economics 39 : 295–327

Kong Xinyu, Comparison of Privatization Ways of State-owned Enterprises, (D), Fudan University, 2003(5)

Maureen F. McNichols，2002.Discussion of the Quality of Accruals and Earnings: The Role of Accrual Estimation Errors，The

Accounting Review, Vol. 77 pp. 61-69

Michelle Liu，Peter Wysocki. 2007. Cross-sectional Determinants of Information Quality Proxies and Cost of Capital Measures (J)，the 2005 European Accounting Congress, the 2006 Conference on Financial Economics and Accounting, the 2007 American Accounting Association Annual Conference, Working paper.

Paul K. Chaney，Mara Faccio and David Parsley. 2008. The Quality of Accounting Information in Politically Connected Firms(J), working paper.

Patricia M. Dechow and Ilia D. Dichev. 2002. The Quality of Accruals and Earnings: The e Role of Accrual Estimation Errors (J), The Accounting Review Vol. 77 pp. 35-59

Su Qilin, Agent Problems, Company Administration and Company Value, Case Study of Private-owned Public Companies, (J)，China Industrial Economy, 2004 (4)

Xiao Lili, Analysis of the Relationship Between the Administration of Private-owned Public Companies and Earning Quality. (D). 2007(4).

Xie Baisan, Xie Shuguang, Deep Consideration of the Low Performance of Private-owned Public Companies in China, (J), Finance and Economics ,2003（1）

Yuan Yongbo, Study on the Administration Structure of Private-owned Public Companies in China. (D), 2005

Zhang Hua, Zhang Junxi, Song Jiao, The Influences of Separation of Ownership and Right of Control to the Enterprises Value, Empirical Study on Private-owned Public Companies in China. (J), Economics (Quarterly), 2004(3).