Income smoothing and industrial sector

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ABSTRACT

This paper discusses the results of a study that was conducted to investigate the income smoothing behavior in differences industries. Eckel's Income Smoothing Index (1981) is used to determine the presence of artificial income smoothing behavior. The descriptive statistics are used to develop a profile of the sampled companies. Then the univariate test is conducted to investigate any significant systematic differences between companies that smooth their reported income and companies that do not. Finally, this study use logistics regression to investigate the factors associated with income smoothing practices.Results shows that industrial and technology companies smooth income more than other types of industries. The findings also indicate that income smoothers tend to be large companies with high ownership control.

Introduction

Income smoothing has been defined as either the intentional or deliberate dampening of fluctuations about some level of earnings that is currently considered to be normal for a firm (Biedleman, 1973). Kosc (1981) referred income smoothing as a mean used by management to diminish the variability of a stream of reported income numbers relative to some perceived target stream by the manipulation of artificial (accounting) or real (transactional) variables.

When income is deliberately or artificially smoothed, inadequate or misleading income disclosure may be the result. Consequently, investors may not get sufficient accurate information about earnings to evaluate the returns and risks of their investments (Ashari et al. 1994). Elias (2002) quoted the former Chairman of the Securities and Exchange Commission (SEC), Arthur Levitt's speeches in late 1998 as saying that the overall consequences of earnings management, specifically income smoothing is the erosion of trust between shareholders and companies. Levitt also noted that deception is employed to obscure actual financial volatility. Hence, there is a need for financial reporting users, especially investors to understand this phenomenon.

Despite the growing body of literature in income smoothing, little attention has been devoted to the relationship between industrial sector and income smoothing making it as interesting topic to be studied.

The remainder of this paper is organized as follows. In the next section discuss about prior research on income smoothing practice is held and related studies on relationship between industrial sector, firm size, profitability and ownership structure and develops a number of research hypotheses. This is followed by section outlining the methodology employed, which is followed by results and a discussion of the findings. The conclusion of the study later is drawn in section five.

Literature review and hypothesis development

Factors effecting income smoothing

Previous studies emphasized on the factors associated with income smoothing, such as industrial sector, company size, ownership control, growth, age, nationality, profitability and leverage. Moses (1987) and Wan Ismail et al. found that company size is positively related with income smoothing practices. They concluded that smaller companies were likely to be subjected to less public scrutiny than larger companies. This may be due to the effect of a large company's performance to the investors, tax authority, creditors, bankers, employees and the public at large. Archibald (1967) suggested that high proportion of companies smoothed their income when their profitability was relatively low. White (1970), Ashari et al. (1994) and Tseng and Lai (2007) also supported the results. Income smoothing activities is also said to be significantly associated with ownership structure. Moses (1987) and Beattie et al. (1994) suggests a negative association between smoothing and the level of managerial ownership. Meanwhile, Wan Ismail et al. (2003), and Kim at al. (2003) documented that the firms that had preceding positive earnings are more likely to manipulate earnings to keep the consecutive earnings growth trend.

Industrial sector and income smoothing

Previous studies also suggested that companies from different industries smooth income in varying degrees. Companies in different industries face different economical and operational operations that may affect income smoothing ability of the companies and their motivation to smooth income (Atik, 2008). Belkaoui and Picur (1984) studied the effect of dual economy on income smoothing and found that a higher degree of smoothing of income numbers exhibited by firms in the periphery sector than firms in the core sector as a reaction to differences in opportunity structures, experiences, and environmental uncertainty. Firms in the periphery sector face a more restricted opportunity structure and a higher degree of environmental uncertainty than firms in the core sector. According to Belkaoui and Picur (1984), the sectors classification resulted from the creation during the late 19th and early 20th centuries of a core industrial sector dominated by large oligopolistic corporation. The smaller firms and less competitive environment are considered the peripheral sector.

However, Albrecht and Richardson (1990) do not found any difference between core and periphery sector as to the incidence

of income smoothing. The possible reason for that result is because some firms that were necessarily classified as either core or periphery may have dual characteristics and consequently were misclassified. Argued similarly, Kim et al. (2003) and Atik (2008) suggested that no substantial difference in earning manipulation is observed in different industries. Meanwhile, Ashari et al. (1994) found that companies in more risky industries have greater opportunities and greater predisposition to smooth their income. The above discussions and arguments lead to the study's hypothesis:

H: Income smoothing is associated with the industrial sector of companies.

Methodology

Data

The sample comprises the Bursa Malaysia non-financial public listed companies, which have a complete set of data from 2002 to 2006. This five years period is used to minimize classification error (Wan Ismail et al, 2003). Apart from that, this study excludes companies that were listed later than the year 2002 or delisted during the period 2002-2006. 120 companies were randomly selected by using disproportionate stratified random sampling in order to get better representation of data from each industry segment. 36 companies are further eliminated due to ambiguous data.

Income Smoothing Descriptor

The coefficient and variation method developed by Eckel (1981) is employed to determine the presence of artificial income smoothing. A number of previous studies including Albrecht and Richardson (1990), Ashari et al. (1994), Booth et al. (1996), Wan Hussin and Ripain (2003) and Wan Ismail et al. (2003) used this method to determine the presence of income smoothing. Eckel's index is calculated as follow:

Income smoothing index $= \left| CV_\Delta Inc / CV_\Delta Sales \right|$

Where:

ΔInc	=	One period changes in income
$\Delta Sales$	=	One period changes in sales
CV	=	Coefficient of variation for variable
	=	$\dfrac{\sqrt{Variance}}{Mean}$

Smoother $\qquad = \qquad CV_\Delta Inc / CV_\Delta Sales < 1$

Three possible income smoothing objectives will be examined in this study. They are operating profit (OP), profit before income tax (PBIT), and net profit (NP). These three income smoothing objectives are as identified by Ashari et al. (1994).

Statistical Test

Several statistical methods are used to investigate the factors affecting income smoothing practices. Firstly, the descriptive statistics are used to develop a profile of the sampled companies. Then the univariate test is conducted to investigate any significant systematic differences between companies that smooth their reported income and companies that do not. Finally, this study use logistic regression to investigate the factors associated with income smoothing practices. The logit model is considered appropriate because the dependent variable is nominally measured (dichotomous) and the independent variables are either intervally or nominally measured.

The logit model can be expressed as follow:

SMOOTHER $= B_0 + B_1 INDUSTRY + B_2 SIZE + B_3 PROFIT + B_4 OWNERSHIP + B5 GROWTH + e$

Where:

SMOOTHER = 1=smoother, 0=Non smoother

INDUSTRY = 1 - Hotel, Construction and Properties
2 - Plantations and Infrastructure
3 - Industrial and Technology
4 - Consumer and Trading&Services companies.

SIZE = Total assets

PROFIT = Basic Earnings per Share

OWNERSHIP = Percentage of the management shareholdings

GROWTH = Change in sales in percentage

e = Error

In this study, industrial sectors are categories into four groups based on level of riskiness. Group 1 includes Hotel, Construction and Properties. Group 2 are Plantations and Infrastructure. Group 3 includes Industrial and technology companies and group 4 includes Consumer and Trading & Services companies. Hotel, construction and properties industry is highly competitive, and very reactive to economic condition and political events. Plantations sector depend heavily on commodities price and very exposed to natural disaster, while infrastructure industries depend heavily on economic condition and government policies. Industrial and technologies companies in Malaysia can be saying as protected sector since it receives a lot of incentives from government. Consumer, and trading & services are rather 'safe' sector because they are involved with in demand products.

Result and discussion

Descriptive statistics

Table 1 shows the frequencies of income smoothers by industrial sector. The table shows that more income smoothers come from plantation and infrastructure, industrial and technology sector with 66.7% smoothers. Compared with that, consumer and trading & services have 59.3% smoothers while the most risky industries like hotel, construction and properties only have 57.1% smoothers. These results indicate that more than 50% of the companies in every industrial sector smooth their income.

Table 1: Frequencies of income smoothers by industrial sector

Industries	Smoother		Non Smoother		Total	
	No	Percent	No	Percent	No	Percent
Hotel, Construction & Properties	12	57.1	9	42.9	21	100
Plantations & Infrastructure	8	66.7	4	33.3	12	100
Industrial & Technology	16	66.7	8	33.3	24	100
Consumer and Trading&Services	16	59.3	11	40.7	27	100
TOTAL	52		32		84	

Univariate test result

Table 2 shows the result of univariate test when profit before income tax is taken as income smoothing objectives. Industrial sectors are significant at 10% significant level. This evidence is similar to expectation that different industrial sector will have different smoothing behavior. However, the result indicates that income smoothing is most common among companies in the industrial and technology sector which are not categorized as risky industries. This is contradictory to result found by Ashari et al. (1994) who found that the incidence of income smoothing is greater in companies in more risky industries (hotels and properties).

Table 2: Comparison of means (PBIT)

Variables	Status	Mean	Std. deviation	Mean Differences	t. value
Size	Smoother	2040246	4188159	908767	1.267
	Non Smoother	1131478	1710540		
Profitability	Smoother	8.42	32.21	-2.37	-0.383
	Non Smoother	10.79	24.32		
Growth	Smoother	0.07	0.29	-0.09	-0.563
	Non Smoother	0.16	0.15		
ownership	Smoother	32.78	23.53	6.90	1.356
	Non Smoother	25.87	22.98		
				Mean square	Sig
Industrial				0.531	0.094*

The table indicate significance at 10% (*) level.

Logistic Regression Analysis Results

The logit model for Net Profit as an income smoothing objectives is significant (p<0.05) with R^2 equals to 0.127 and adjusted R^2 of only 4.7%. This indicates that only 4.8% of the total variance in income smoothing practices is explained by these set of five variables.

However, as can be seen in Table 3, only Industry1, SIZE and OWNERSHIP are significantly associates with income smoothing behavior. At a significant level of 10%, Industry 1 (Hotel, Properties and Construction) is negatively associates with income smoothing practices. This is contradictory to previous research done by Ashari et al. (1994) who suggested that companies in more risky industries (hotel and properties) have greater tendencies to smooth income. On the other hand, SIZE and OWNERSHIP is positively associates with income smoothing practices at 5% significant level. It proves that larger firms with more ownership control have more tendencies to smooth their income.

When Profir Before Tax is taken as income smoothing objectives, only Industry1 and OWNERSHIP is significantly associates with income smoothing practices. The result is in agreement with the result of Net Profit as income smoothing objective. Further, when Operating Profit is examine as income smoothing objective, only PROFIT is significantly associates with income smoothing behavior. With 10% significant level, PROFIT is negatively related with income smoothing practices. This indicates that smoothers tend to have lower profit than non smoothers

Table 3: Logit Analysis Result.

Model		Unstandardized Coefficient B	Std Error	Standardized Coefficients	t	sig
Net Profit	(Constant)	0.388	0.114		3.404	0.001
	Industry 1	-0.231	0.147	-0.200	-1.571	0.06*
	Industry 2	-0.009	0.210	-0.006	-0.041	0.484
	Industry 3	-0.041	-0.142	-0.038	-0.293	0.386
	SIZE (Total Assets)	0.008	000	0.239	1.917	.0.0295**
	PROFIT	-0.002	0.002	-0.097	-0.780	-0.219
	GROWTH	-0.055	0.072	-0.088	-0.767	0.223
	OWNERSHIP	0.005	0.002	0.215	1.915	0.0295**
R Square = 0.127 Adjusted R Square = 0.047						
Profit Before Tax	(Constant)	0.366	0.112		3.259	0.002
	Industry 1	-0.327	0.145	-0.284	-2.260	0.0135**
	Industry 2	0.081	0.207	0.057	1.230	0.349
	Industry 3	0.073	0.139	0.066	0.523	0.603
	SIZE (Total Assets)	0.008	000	0.151	1.230	0.111
	PROFIT	-0.002	0.002	-0.097	-0.789	0.217
	GROWTH	-0.043	0.071	-0.069	-0.611	0.272
	OWNERSHIP	0.005	0.002	0.212	1.913	0.0295**
R Square = 0.151 Adjusted R square = 0.073						
Operating Profit	(Constant)	0.436	0.115		3.783	0.000
	Industry 1	-0.157	0.149	-0.136	-1.056	0.147
	Industry 2	0.060	0.212	0.042	0.283	0.389
	Industry 3	0.142	0.143	0.129	0.995	0.162
	SIZE (Total Assets)	2.415E-008	000	0.150	1.195	0.118
	PROFIT	-0.003	0.002	-0.180	-1.436	0.078*
	GROWTH	-0.067	0.073	-0.106	-0.915	0.812
	OWNERSHIP	0.002	0.002	0.108	0.957	0.170
R Square = 0.110 adjusted R Square = 0.028						

The table indicate significance at 5% level (**), and 10% (*) level.

SIZE: Total Assets, PROFIT: Earning per share, GROWTH: percentage of changes in sales, OWNERSHIP: percentage of managerial ownership

Overall, the logit analysis results indicate that INDUSTRY TYPE, SIZE, OWNERSHIP and PROFIT are associated with income smoothing practices. Only GROWTH are not significant. The negative relationship between Hotel,Construction and Properties with income smoothing is differ from study done by Ashari et al. (1994). This may be because, during the period under study, the 9th Malaysia Plan (9MP) has been launched which jump started a stronger economy and revive the construction and properties industry while hotel industry were enjoyed government aggressive tourist promotion. Meanwhile, other type og industries operated in challenging environment due to intense competition and high raw material price. The escalating of oil price, energy and

production cost do give a negative impact to their operation. The higher degree of uncertainties faced by other industrial sector gives them more opportunity to smooth their income. As Albrecht and Richardson (1990) stated that different conclusion may be drawn from studies using different length time intervals and different times.

The findings of positive relationship between income smoothing practices and firm size are consistent with previous studies done by Moses (1987) and Wan Ismail et al. (2003). This may due to the argument that large companies are subjected to greater public attention and could possibly have larger fluctuations in earnings compared to smaller companies. In addition to that, large firms may face more pressure to report positive earnings or earning increase, have more bargaining power in negotiation with auditors, have higher abilities to maneuver given wide range of accounting treatment available, and have stronger management power to make it easier to manipulate earnings (Kim et al. 2003).

Smoothers also tend to be from companies with more ownership control. This result supports the argument that as the percentage of managerial ownership increases, the ability of outside owners to discipline managers' decreases. Hence, managers would have more discretion to alter reported income in such a manner as to enhance their own personal well being. The result support previous studies done by Carlson and Bathala (1997) and Morck et al. (1988).

Conclusion and Limitations

Generally, the purpose of this study is to give understanding about income smoothing practice in Malaysia. It may explain that income smoothing behavior is caused by several factors which may be different from other countries.

Using a five years period to measure the smoothing behavior, this study found significant associations between income smoothing practices in Malaysia and industrial sector. The results show that income smoothing is most common among companies in the industrial and technology sector which classified as safe sector. This is contradictory to result found by Ashari et al. (1994), who found that the incidence of income smoothing is greater in companies in more risky industries (hotels and properties). The different conclusion may be drawn because of the different length time intervals and different time periods used.

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